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Red Signal Overruns

At or Near New Carrollton Rail Yard, Rhode Island Ave-Brentwood Station, and West Falls Church Station

January 3, 2024 – February 13, 2024 – February 15, 2024

Document Purpose:

This WMSC written report on WMATA Metrorail's safety event investigations 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 and, if necessary, feedback and revision, describes the investigation activities, identifies factors causing or contributing to the safety events, 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 reports) as a unified item for adoption at the Washington Metrorail Safety Commission meeting on September 17, 2024.

WMSC staff recommend adoption of these investigations.

Red Signal Overruns

In 2023, Metrorail reported 9 red signal overruns. This included events involving passenger trains and events involving maintenance vehicles.

As of September 1, 2024, there have been 12 such events reported in 2024. Due to this concerning safety data trend, the WMSC has increased discussions with Metrorail personnel and data review, including the WMSC's review and monitoring that identified a red signal overrun involving a passenger train near the Brentwood Rail Yard on July 16, 2024 that would not otherwise have been reported to the WMSC and investigated to identify opportunities to reduce the risk of recurrence.

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

- Inadequate communications practices including incomplete instructions and repeat backs
- Poor radio communications transmission quality
- Non-compliance with written operational rules and procedures
- A lack of training and supervisory oversight to ensure compliance with safety rules and procedures
- Inadequate training, including Metrorail's lack of physical characteristics and territory familiarization and qualification requirements
- Inadequate design and processes to ensure that governing signals are visible to train operators, and that only an appropriate number of cars for safe operations are stored on a given track

- Inadequate training and certification practices to ensure that each train operator understands and applies the safety requirements that must be met in order to safely pass a red signal, including the necessary permission and communication
- Inadequate design of engineering controls intended to reduce the risk of red signal overruns and other unauthorized movement, specifically the Stop and Proceed Mode (Mode Awareness Tool) continuing to authorize movement after other operational actions such as door operation
- Loss of/lack of focus and situational awareness

As a result of these investigations, Metrorail implemented corrective actions including:

- Rail Operations distributed a reminder of required actions and procedures in the event of a loss of communication
- Track and Structures distributed a bulletin on required procedures when communication is interrupted or broken
- Metrorail added red signal overrun prevention radio announcements
- Metrorail conducted a Red Signal Overrun Campaign of focused communications with train operators
- Metrorail is seeking resources to build and implement a Point and Call defensive ops program.
- Metrorail required personnel to receive reinstruction and refresher training

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

- CAP C-100 addresses the finding that Metrorail is not maintaining a fully functioning radio communications system in all rail yards and shops (Scheduled completion date October 2026).
- 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 (Scheduled completion September 2025).
- C-0268 addresses the finding that Metrorail is not performing its train operator certification activities reliably and consistently in accordance with its safety requirements specified in its Agency Safety Plan and the associated Performance Standardization on Program Manual. Therefore, Metrorail is not ensuring that its trains are only operated by personnel who have demonstrated the skills required to do so safely (Scheduled CAP completion March 2026, interim steps required by the WMSC's February 2024 Train Operator Certification Order were implemented between March and July 2024)

The WMSC and Metrorail's Safety Department continue to discuss with Railcar Engineering the opportunity to improve engineering controls, such as Stop and Proceed Mode on existing railcars or the next generation of railcars, the 8000 Series, so that it resets after actions such as door operation or key up/key down if feasible. Metrorail designed Stop and Proceed Mode (Mode Awareness Tool) to ensure that operators acknowledged that they would be moving a train with zero speed commands prior to doing so, as this is only allowed with specific permission from the control point due to the risk of collision or derailment.

Metrorail is conducting safety certification work that may lead to the use of Automatic Train Operation in specific circumstances. Metrorail's initial concept of operations includes multiple scenarios where manual mode will continue to be required as the safest mode of operation. These include mode of operations in single-tracking, in pocket tracks, outside of passenger service, when work crews are on the roadway, in low-adhesion conditions such as inclement weather, when moving in rail yards or between rail yards and terminals, when provided certain blocks by rail traffic controllers, and in other conditions to reduce the risk of collisions, red signal overruns, and other safety events. The immediate preceding actions in the events described below would not have changed if these events took place following activation of Automatic Train Operations in the Metrorail system. As work progresses on the safety certification of Automatic Train Operations, Metrorail will finalize concept of operations which will then determine the development of or update to operating rules and procedures as well as the development of associated training materials prior to completing the safety certification of the activation of Automatic Train Operations.

Safety event summaries:

W-0329 – New Carrollton Rail Yard – January 3, 2024 (WMATA ID: E24005)

An Equipment Operator and Flagperson improperly moved a maintenance consist made up of a prime mover and flatcar past a red signal in the New Carrollton Rail Yard without permission. The radio communications during the event demonstrate communications system challenges in this location.

The recordings demonstrate that the Interlocking Operator granted an absolute block to move the consist to signal D99-42. The Equipment Operator repeated back the instructions. However, when the vehicle moved a few minutes later, there was no recorded communication between the Equipment Operator and Flagperson. The Vehicle Operator stated in an interview that they radioed to the Flagperson, did not get a verbal repeat back, but saw the Flagperson provide a proceed hand signal with a flashlight. The Equipment Operator also stated in an interview that they typically receive permission to move all the way to the station platform without encountering a red signal in the rail yard. The Flagperson stated in an interview that they assumed the block was provided to the station platform, as they could not hear all communications due to radio signal issues. Metrorail procedures require personnel to take action only when direction is clear. Metrorail procedures also require positive communications between a vehicle operator and flag person. If communication is lost, the operator is required to stop.

As the consist was moving in the intended absolute block area, the Flagperson identified a red signal ahead of the consist and a train ahead, and communicated over the radio that there was a red signal. The Equipment Operator did not respond to this communication, and the Flagperson did not apply the brake available to them as required by Metrorail procedures. In an interview, the Flagperson stated they thought the red signal governing their vehicle's movement was meant for a train on an adjacent track. The crew moved the consist beyond that red signal as they proceeded toward New Carrollton Station. The Interlocking Operator then observed a red signal overrun indication on the control panel and directed the crew to stop. The WMSC appreciates the Interlocking Operator's response. The consist stopped 320 feet beyond the signal, after passing through two switches and entering a third switch. The Interlocking Operator reported the event. Subsequent investigation identified that the switches were aligned for the movement. During the investigative activities, responding investigators also had radio communications system challenges. However, Metrorail's Office of Radio Communications stated no trouble was found. Metrorail is in the process of implementing a corrective action plan to address a WMSC finding on Metrorail not maintaining functional

communications systems across its rail yards. Metrorail is also in the process of implementing corrective action plans to address findings from the WMSC's Communications Audit, which identified that Metrorail repeatedly states that no trouble is found despite documented evidence of system failures.

W-0330 – Rhode Island Ave-Brentwood Station – February 13, 2024 (WMATA ID: E24124)

A Train Operator moved their train past a red signal outside Rhode Island Ave-Brentwood Station following incomplete communications loops and repeat backs as trains were receiving permission from a Rail Traffic Controller to pass red signals at a different location nearby, Fort Totten Station, due to a signal issue at that interlocking.

The Radio Rail Traffic Controller began to contact the operator of Train 127, but was interrupted by the operator of Train 110. The Rail Traffic Controller granted a permissive block to Train 110, but the operator of Train 127 stated in response to the permissive block and permission to proceed to the next station that they copied (they did not repeat back the instructions that they believed to be for them, and the instructions did not include permission to pass a red signal). The Train Operator of Train 110 did not respond. The Rail Traffic Controller did not address this incomplete response, and did not ensure that multiple communications with these or multiple other operators during the service disruption at Fort Totten included required use of Train ID, location, and track number. The Radio Rail Traffic Controller had previously directed Train 127 to hold at Rhode Island Ave-Brentwood Station, but the operator had not responded. The Train Operator did not hold at the station. The Radio Rail Traffic Controller had been certified the week before this event. During the response to the emergency, control center supervisors directed a different controller with more experience to take over the radio controller position.

An Assistant Operations Manager in the control center identified Train 127's movement toward the red signal. The Rail Traffic Controller said that the train would have to wait at the red signal due to a backup of trains ahead. About one minute later, after the train passed the red signal, the Rail Traffic Controller contacted the train operator and directed them to stop the train. The operator incorrectly stated that they had been given a permissive block to pass the signal. Train 127 had passed the signal. In accordance with Metrorail's procedures to address this emergency, as passing a red signal in this fashion can cause a derailment, Metrorail moved the more than 175 riders on the train to the rear of the train and evacuated them to a rescue train, Train 125.

Due to this and subsequent actions by the train operator outside of this safety event, Metrorail permanently disqualified this train operator from train operations.

W-0331 – West Falls Church Station – February 15, 2024 (WMATA ID: E24130)

During multiple service disruptions on the Orange Line (arcing, smoke, and evacuation in area of Eastern Market Station, and smoke between West Falls Church and Dunn Loring Stations, each the subject of separate investigations), a Train Operator of a Vienna-bound train on Track 2 was directed to move riders to a different train in the center track (Track 3) at West Falls Church Station and then operate that train toward Vienna Station via single-tracking on Track 1.

The Train Operator had identified the smoke ahead of the train when departing West Falls Church Station with their original train on Track 2, and were then told to reverse ends to move the train back to the station on Track 2. The Rail

Traffic Controller instructed the operator to direct the passengers to move to the other train, and to key up (turn on controls of) that other train. After the operator and riders boarded the train in the center track, and the Rail Traffic Controller explained the single-tracking, the Train Operator repeated back the instructions. However, after riders were on the train, the operator closed the doors and moved the train past a red signal without permission. The Rail Traffic Controller, who was working alone initially due to the Button Rail Traffic Controller having gone to the restroom, had not yet set a route for the train to Track 1.

The switches were aligned for movement into the rail yard, not onto track 1, which the Train Operator identified after moving the train. The Radio Rail Traffic Controller received a red signal overrun alarm. Seconds later the Train Operator reported that the track was aligned to West Falls Yard and stopped the train. The Rail Traffic Controller directed the Train Operator, with the assistance of another operator who was at the station, to evacuate riders back to the platform via the cars that were still within the station. Approximately 34 riders were evacuated via a regular passenger door directly to the platform.

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

FINAL REPORT OF INVESTIGATION A&I E24005

Date of Event:	January 3, 2024
Type of Event:	O-8: Red Signal Overrun
Incident Time:	00:52 hours
Location:	New Carrollton Yard, Signal D99-42
Time and How received by SAFE:	01:01 Hours, Mission Assurance Coordinator (MAC)
WMSC Notification Time:	01:38 Hours
Responding Safety Officers:	Office of Safety Investigations (OSI)
Rail Vehicle:	Prime Mover 43 (PM-43), Flatcar 533 (F-533)
Injuries:	None
Damage:	None
Emergency Responders:	None
SMS I/A Incident Number:	20240103#113714

Table of Contents

Abbreviations and Acronyms

AIMS	Advanced Information Management System
ARS	Audio Recording System
ATCM	Automatic Train Control Maintenance
CCTV	Closed-Circuit Television
CTEM	Car Track Equipment Maintenance
IO	Interlocking Operator
OSI	Office of Safety Investigations
MICC	Metro Integrated Command and Communication Center
MOR	Metrorail Operating Rulebook
NOAA	National Oceanic and Atmospheric Administration
PM	Prime Mover
RTRA	Office of Rail Transportation
ROCC	Rail Operations Control Center
SAFE	Department of Safety
SMS	Safety Measurement System
TRST	Office of Track and Structure
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 Wednesday, January 3, 2024, at 00:52 hours, an Office of Track and Structures (TRST) Equipment Operator operating Prime Mover (PM) 43 while pushing Flatcar 533 (F-533), overran signal D99-42 displaying a red aspect within New Carrollton Yard. PM-43 was traveling from the TRST Building towards New Carrollton Station; the Equipment Operator was assisted by a Flagman directing their movements.

Before the event, at 00:45 hours, the Interlocking Operator (IO) granted PM-43 an absolute block from signal D99-82, displaying a lunar aspect to signal D99-42, displaying a red aspect. The Equipment Operator acknowledged and repeated the instructions.

At 00:52 hours, the IO observed PM-43 with F-533 overrun signal D99-42 and directed them to stop movement. PM-43 with F-533 came to a complete stop 320 feet beyond signal D99-42. PM-43 with F-533 traversed switches 31, 29A, and 27A.

The IO reported the incident to the Metro Integrated Command and Communication Center (MICC). The MICC dispatched a TRST Supervisor, Automatic Train Control Maintenance (ATCM) personnel, Office of Safety Investigations (OSI) personnel, and Car Track Equipment Maintenance (CTEM) personnel to assist with the scene.

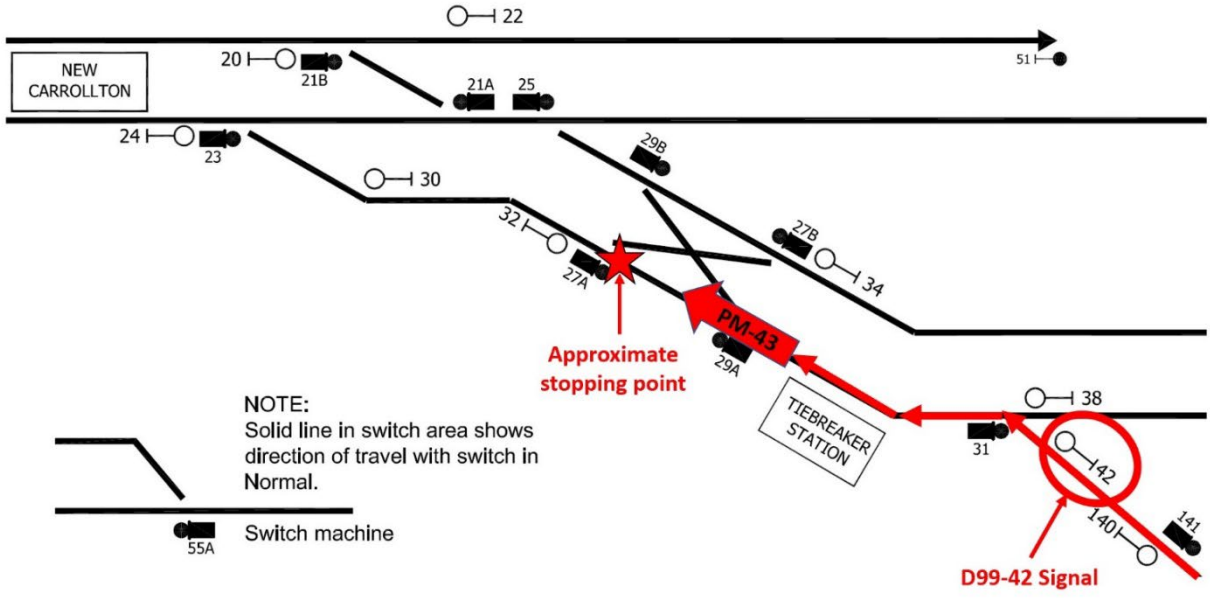
The ATC personnel reported to the MICC that the switches were in normal position and that there were no damages to the switches. Third rail power was energized within the New Carrollton Yard, and the PM-43 with F-533 was removed from service. CTEM personnel performed a post-incident inspection of PM-43 with F-533, and no faults were found.

The probable cause of the Red Signal Overrun event at New Carrollton Yard on January 3, 2024, was that the Equipment Operator and the Flagman failed to adhere to verbal instructions and written procedures, resulting in the overrun of the signal D99-42. Another causal factor was radio communication issues, contributing to PM-43 failing to stop before the D99-42 signal (Red).

Incident Site

D99-42 Signal is located within the New Carrollton Yard and governs rail vehicle movement from the yard to New Carrollton Station. (Orange Line).

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 and document review.

- Formal Interviews – SAFE interviewed three (3) individuals as part of this investigation. 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:
  - Equipment Operator
  - Flagman
  - Interlocking Operator

- Informal Interviews – Collected through conversations with individuals during the investigation to provide background and supporting information. Written statements were reviewed by 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:
    - Equipment Operator Training Records
    - Flagman Training Records
    - Equipment Operator Certifications
    - Flagman Certifications
    - Equipment Operator 30-day work history review
    - Flag Person 30-day work history review
    - Metrorail Operating Rulebook (MOR)
    - National Oceanic and Atmospheric Administration (NOAA)
    - Rail Operations Control Center (ROCC) Incident Report

- System Data Recording Review – Collection of information contained in Metro Data Recording Systems. This data includes:
    - Audio Recording System (ARS) playback Phone and Radio OPS2, New Carrollton Yard (NCYD[1]).

Investigation

On Wednesday, January 3, 2024, at 00:52 hours, a TRST Equipment Operator operating PM- 43 while pushing F-533 overran signal D99-42, displaying a red aspect in the New Carrollton Yard. PM-43 with F-533 was traveling from the TRST building to New Carrollton Station and was assisted by a Flagman directing their movements. Before the red signal overrun event, PM-43 was attempting to leave the rail yard and head to their work location.

The Audio Recording System (ARS) revealed that at 00:45 hours, the IO instructed PM-43 with F-533 to move under an absolute block from signal D99-82 displaying a lunar to signal D99-42 showing a red aspect. The Equipment Operator acknowledged the absolute block with repeat back confirmation. No audio recording was captured of the Equipment Operator repeating the absolute block instruction to the Flatcar Flag Person when the unit was moved.

At 00:52 hours, the IO observed[2] PM-43 with F-533 overrun signal D99-42 and directed them to stop moving. PM-43 with F-533 stopped 320 feet beyond signal D99-42. PM-43 with F-533 traversed switches 31, 29A, and 27A.

The IO reported the incident to the MICC. The MICC dispatched a TRST Supervisor, ATC personnel, OSI personnel, and CTEM personnel to assist with the scene. ATC personnel informed the MICC that all switches were in normal position and that there were no damages to the switches. After a few moments, the IO deactivated the power supply to the third rail within the New Carrollton Rail Yard.

According to ARS, at 02:08:46 hours, the IO made blanket announcements the third rail power would be energized within the New Carrollton Yard, and PM-43 with F-533 was removed from service.

Chronological Event Timeline

[1] NCYD is the rail yard located at New Carrollton with its radio channel.
[2] An alarm on the control panel was activated, notifying the IO that a red signal was overrun.

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

Time	Description
00:45:34 hours	Interlocking Operator: The Interlocking Operator instructed the Equipment Operator of PM-43 to move under an absolute block from the storage track at D99-82 (Lunar) to D99-42 (Red). The Equipment Operator inquired if they could clear signal D99-40. The Interlocking Operator corrected the Equipment Operator and stated they had a block from D99-82 (Lunar) to D99-42 (Red). The Equipment Operator acknowledged that the D99-42 signal was red. [Radio – NCYD]
00:50:36 hours	Flagman: stated "Red Signal PM-43[3]" to the Equipment Operator, who failed to respond to the transmission. [Radio -NCYD][4]
00:52:36 hours	Interlocking Operator: Directed PM-43 to stop the unit after overrunning the D99-42. [Radio – NCYD]
00:52:56 hours	Interlocking Operator: Notified the Button RTC that PM-43 overran signal D99-42 (Red). [Phone – Ops 2]
00:55:03 hours	Button RTC: Notified the AOM of the Red Signal Overrun. [Phone – Ops2]
00:59:23 hours	MAC: Notified the Safety Director on-call of the Red Signal Overrun. [Phone – MAC]
01:01:19 hours	MAC: The MAC notified the Washington Metropolitan Safety Commission (WMSC) of the Red Signal Overrun via voicemail and requested an Event Scene Release. [Phone – MAC]
01:08 hours	WMSC Scene release was received. [MAC]
01:38:12 hours	OSI arrived at the New Carrolton Rail Yard. The Interlocking Operator requested the Investigator to change their location due to radio distortion. [Radio – NCYD]
01:40:37 hours	ATCM: Reported located at New Carrolton Rail Yard. [Radio – NCYD]
01:58:52 hours	Interlocking Operator: Confirmed with the MICC that they de-energized the entire Rail Yard after PM-43 overran the red signal. [Phone – MAC]
02:08:46 hours	Interlocking Operator: Announced that power would be restored in New Carrolton Yard. [Radio – NCYD]
02:22:20 hours	Interlocking Operator: Instructed PM-42 with F-533 from D99-40 (Lunar) to clear the D99-82. Equipment Operator #2 acknowledged with a 100% repeat back. [Radio – NCYD]
02:24:08 hours	ATCM: Requested the Interlocking Operator to exercise switches 29 and 27. The Interlocking Operator executed the request. ATCM confirmed there was no damage to the switches and cleared the roadway. [Radio – NCYD]
02:28:38 hours	Equipment Operator #2: Reported that PM-43 with F-533 was clear of signal D99-82. [Radio – NCYD]

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

Track and Structures (TRST)
Adopted from Maximo report.

The Office of Track and Structures completed an inspection of PM-43 and F-533. The parking brake pressure was 90 PSI, and flat car brakes were at 100 PSI. Both parking and service brakes

[3] D99-42 was the red signal and the stopping point of the absolute block.
[4] The equipment Operator did not stop the movement of PM-43 or respond to the radio communication from the Flagman.

passed testing. Despite a red signal overrun event, all wheels remained on track. A rolling test confirmed the flat car's ability to stop the entire consist. Flat car brake tests passed at 1050 RPM, and PM-43's brake test passed at 1200 RPM. No defects or damage were found.

Office of Systems Maintenance, Office of Radio Communications (COMR)
Adopted from Maximo report.

The Office of System Maintenance, Office of Radio Communications conducted comprehensive radio checks from New Carrollton control tower to personnel standing by at D99-42 signal and walked from track 3 to D99-42, performing radio checks along the way. All radio check transmissions were loud and clear. No radio trouble was found.

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

Equipment Operator

- The Equipment Operator stated they were given an absolute block up to the D99-42 signal (Red).
- The Equipment Operator stated that they repeated the absolute block to the Flatcar Flag Person but did not hear them acknowledge the block. However, they began flagging them to move with their flashlight.
- The Equipment Operator stated that they are usually given a complete lead from the storage track to the platform and rarely receive an absolute block to a red signal in the rail yard.

Flatcar Flag Person

- The Flatcar Flag Person stated that there were radio signal communication issues.
- The Flatcar Flag Person stated that they did not hear the absolute to the red signal due to the radio signal issues and assumed the absolute block was up to the platform at New Carrollton Station.
- The Flatcar Flag Person stated they gave the Equipment Operator the proceed signal even though they were unaware of the instructions.
- The Flatcar Flag Person reported seeing the red D99-42 signal and attempted to notify the Equipment Operator but only heard the 'red signal' transmit.
- The flag person on the flatcar mentioned that they usually receive an absolute block from the rail yard to the platform rather than a red signal.

Interlocking Operator

- The Interlocking Operator stated they gave PM-43 an absolute block up to D99-42 signal red due to their being to trains on both platforms of New Carrollton Station.
- The Interlocking Operator stated that the Equipment Operator initially repeated the absolute block incorrectly but correctly after the second time.

- The Interlocking Operator stated they observed[5] PM-43 pass D99-42 signal red and instructed them to stop their movement.

Weather

At the time of the incident, NOAA recorded the temperature at 35°F, with mostly cloudy skies, winds six mph, and 64% humidity. The weather did not contribute to this incident (Weather source: NOAA) – Location: New Carrollton, MD.

Related Rules and Procedures

Metro Operating Rulebook (MOR)

3.3 Signals Requiring a Stop Rail vehicles shall not be operated past or closer than a point 10 feet in approach of an interlocking signal or lamp displaying a red aspect, a red flag, or a dark interlocking signal, except at a bump post or entering a pocket track, or unless authorized by the Rail Traffic Controller or the Interlocking Operator and the move is consistent with customer safety.
4.1.1 When there is a conflict between any groups of signals (fixed, cab, speed readouts, flagging, portable), Rail Vehicle Operators shall be governed by the most restrictive indication and shall immediately inform the Rail Traffic Controller of the conflict.

8.11.1.1 Positive communications shall be established between the operator and the vehicle flag person.

8.11.1.2 Rail Vehicle Operators shall confirm that the flag person clearly understands each authorized move before proceeding.

8.11.1.3 If communication is lost, the Rail Vehicle Operator shall bring the vehicle to a stop.

11.4.2 Roadway Maintenance Machines shall approach all interlocking signals prepared to stop.

11.5.5 When occupying controlled track, Roadway Maintenance Machines must not pass interlocking signals without additional authority.

11.17.2 When giving signals from a leading flat car that is being pushed, the vehicle flag person must use a white lamp or flag or give verbal instructions using a radio.

11.18.4.3 The distance of the movement must be specified in 75-foot “car lengths” and the movement must stop in one-half (1/2) the distance last received unless additional instructions are received.

11.18.4.6 If instructions are not understood or continuous radio contact is not maintained, the movement must be stopped immediately. The movement may not be resumed until a. The misunderstanding has been resolved, and b. Radio contact has been restored, or c. Communication has been achieved by hand signals or other procedures.

Human Factors

[5] An alarm on the control panel was activated.

Fatigue

Equipment Operator

SAFE 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 Equipment Operator reported feeling fully alert at the time of the incident. The Equipment Operator reported experiencing no symptoms of fatigue in the time leading up to the incident.

Flatcar Flag Person

SAFE 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 Flatcar Flag Person reported feeling moderately alert at the time of the incident. The Flatcar Flag Person reported experiencing no symptoms of fatigue in the time leading up to the incident.

Interlocking Operator

SAFE 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 Interlocking Operator reported feeling fully alert at the time of the incident. The Interlocking Operator reported experiencing no symptoms of fatigue in the time leading up to the incident.

Fatigue Risk

Equipment Operator

SAFE 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 Equipment Operator reported keeping a regular sleep schedule in the days leading up to the incident. The Equipment Operator worked the overnight shift in the days leading up to the incident. The Equipment Operator was awake for four hours and three minutes at the time of the incident. The Equipment Operator reported six hours of sleep in the 24 hours preceding the incident. The off-duty period was sixteen hours, which provided an opportunity for 7-9 hours of sleep. This was more than the employee's usual workday sleep durations. The Equipment Operator reported no issues with sleep. The Equipment Operator worked the overnight shift in the days leading up to the incident.

Flatcar Flag Person

SAFE 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 Flatcar Flag Person reported keeping a regular sleep schedule in the days leading up to the incident. The Flatcar Flag Person worked the overnight shift in the days leading up to the incident. The Flatcar Flag Person was awake for nine hours and twenty-eight minutes at the time of the incident. The Flatcar Flag Person reported seven hours and thirty minutes of sleep in the 24 hours preceding the incident. This was less than the employee's usual workday sleep duration. The off-duty period was sixteen hours, which provided an opportunity for 7-9 hours of sleep. The Flatcar Flag Person reported no issues with sleep.

Interlocking Operator

SAFE 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 Interlocking Operator reported keeping a regular sleep schedule in the days leading up to the incident. The Interlocking Operator worked the overnight shift in the days leading up to the incident. The Interlocking Operator was awake for five hours and twenty-eight minutes at the time of the incident. The Interlocking Operator reported seven hours of sleep in the 24 hours preceding the incident. The off-duty period was sixteen hours, which provided an opportunity for 7-9 hours of sleep. This was more than the employee's usual workday sleep durations. The Interlocking Operator reported no issues with sleep. The Interlocking Operator worked the overnight shift in the days leading up to the incident.

Post-Incident Toxicology Testing

WMATA's Drug and Alcohol Program determined that the Equipment Operator complied with and was not in violation of the Drug and Alcohol Policy and Testing Program 7.7.3/6.

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

Findings

- PM-43 with F-533 contained two occupants, the Equipment Operator and the Flagman.
- The IO granted an absolute block from signal D99-82 (Lunar) to signal D99-42 Signal (Red), which the Equipment Operator acknowledged.
- PM-43 with F-533 overran signal D99-42 (Red), then stopped 320 feet beyond the signal.
- The IO de-energized the third rail power in the New Carrollton Rail Yard.
- Radio Communication was distorted on NCYD OPS.

Immediate Mitigation to Prevent Recurrence

- Third rail power was de-energized in the New Carrollton Yard, and all train movement stopped.
- ATC personnel inspected switches 31, 29A, and 27A and reported that all switches were normal and no damages were found.
- The Equipment Operator, Flagman, and Interlocking Operator were removed from service.
- WMATA is working to replace the radio communications system in all rail yards and shops.

Probable Cause Statement

The probable cause of the Red Signal Overrun event at New Carrollton Yard on January 3, 2024, was that the Equipment Operator and the Flagman failed to adhere to verbal instructions and written procedures, resulting in the overrun of the signal D99-42. Another causal factor was radio communication issues, contributing to PM-43 failing to stop before the D99-42 signal (Red).

Drafted By: SAFE 710 – 02/02/2024
Reviewed By: SAFE 707 – 03/04/2024
Approved By: SAFE 707 – 03/04/2024

Recommended Corrective Actions

Corrective Action Code	Description	Responsible Party	Estimated Completion Date
113714_SAFECAPS_RTRA_001	Develop a Lesson Learned – Loss of Communication actions and procedures to follow.	RTRA SRC	Completed
113714_SAFECAPS_TRST_001	Develop and distribute re-instruction bulletin on broken communication and procedures.	TRST SRC	Completed
113714_SAFECAPS_TRST_002	Re-instruct the Flagman on the loss of communication procedures (MOR 8.11.1.1 & 8.11.1.1)	TRST SRC	Completed
WMSC_21_C0100	WMATA to replace the radio communications system in all rail yards and shops.	COMM	Ongoing

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.

Equipment Operator

The Equipment Operator has been a WMATA employee for six (6) years and in the position of Equipment Operator for the same duration. The Equipment Operator holds an RWP Level 4 that expires in August 2024.

The Equipment Operator reported experiencing radio transmission difficulties while receiving instructions from the IO. They said they prepared to depart the maintenance bay by aligning the switches.

According to their account, they were given an absolute block up to the D99-42 signal, which was red. The Equipment Operator repeated the absolute block via radio to the Flatcar Flag Person, who did not repeat it but instead signaled them to proceed with a flashlight. The Equipment Operator said they did not see the D99-42 signal until after passing it.

The Equipment Operator said they rarely receive an absolute block to a red signal in the rail yard. Most of the time, they are given a complete lead from the storage track to the platform.

Flatcar Flag Person

The Flatcar Flag Person has been a WMATA employee for 1.5 years and in the position of Track Repair D for the same duration. The Flatcar Flag Person holds an RWP Level 2 that expires in July 2024.

According to the Flatcar Flag Person, they assisted in aligning the switches to enable the departure of PM-43 from the maintenance bay. The Flatcar Flag Person further reported that the Equipment Operator descended from the operator cab and informed him that the radio was not functioning, preventing the receipt of signals.

Per the Flatcar Flag Person's account, they returned to the open end of the flatcar to flag while the Equipment Operator returned to the operator cab after receiving an absolute block. The Flatcar Flag Person mentioned they did not hear the absolute block clearly, so the Equipment Operator had to sound the horn. They stated that since they had set the alignment, they sounded their horn back and started flagging the Equipment Operator with the flashlight to proceed.

According to the Flatcar Flag Person, they saw the signal D99-42 red and noticed a train on the right side of the signal. The Flag Person tried to inform the Equipment Operator about the red signal, but they only heard the phrase "red signal" being transmitted. The Flag Person mentioned that the Equipment Operator stopped moving PM-43 after passing the red signal. The Flag Person explained that they usually get an absolute block to the platform and thought the red signal was meant for the train on their right.

Lastly, the Flag Person reported hearing the IO requesting PM-43 to stop.

Interlocking Operator

The Interlocking Operator has been a WMATA employee for 15 ½ years and in the position as an Interlocking Operator for 5 ½ years. The Interlocking Operator holds an RWP Level 2 that expires in October 2024.

The Interlocking Operator reported setting a lunar signal PM-43 at D99-82 with an absolute block up to D99-42 signal red due to two trains on the platform at New Carrollton Station. According to the Interlocking Operator, the Equipment Operator repeated the absolute block incorrectly, so they had to repeat the instructions to the Equipment Operator. The Interlocking Operator stated that the Equipment Operator repeated the absolute block correctly the second time. They observed PM-43 begin to move and set the yard leads for the trains on the platform to move into the New Carrollton Rail Yard.

The Interlocking Operator reported that they recorded the time when PM-43 commenced moving. Afterward, they observed[6] that PM-43 crossed the D99-42 signal despite being red. Consequently, the Interlocking Operator instructed PM-43 to stop. They also informed the MICC and their supervisor about the incident, stating that PM-43 had overrun a red signal.

The Interlocking Operator said they de-energized third rail power in the Rail Yard because they were trained to treat a red signal overrun as a derailment.

[6] An alarm on the control panel was activated.

Drafted By: SAFE 710 – 02/02/2024
Reviewed By: SAFE 707 – 03/04/2024
Approved By: SAFE 707 – 03/04/2024

Appendix B – MICC Report (redacted)

View Approved Incident Report

INCIDENT ID: 20240030RANGE1

DATE	TIME	LINE	ITEM
2024-01-03	0053	Orange	1

LOCATION (STATION/YARD)
New Carrollton Yard (D99)

LOCATION/CHAIN MARKER (If Applicable)

REPORTED BY
Interlocking Operator [redacted] (D99)

TRAIN ID	DIRECTION	TRACK NUMBER	DEPTS NOTIFIED
PM43	N/A	N/A	Everbridge Alert/Messaging

CAR NUMBERS (XXXX-XXXX)
Lead Car

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

TRBL CODE	RESP CODE
RSIG-RED SIGNAL OVERRUN	TRK

TYPE INCIDENT
Red signal overrun (D99-42)

ACTION PLAN
Stop All Vehicle Movement, Dispatch Track Supervisor and ATC, Notify SAFE

DELAYS IN MINUTES

LINE	INCIDENT	TRAIN	TOTAL DURATION
0	0	0	0

TRIPS MODIFIED

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

FIVE PRIMARY CONSOLE INDICATIONS

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

INCIDENT CHRONOLOGY

TIME	DESCRIPTION
0053	Interlocking Operator [redacted] (D99) informed the MICC that PM43 Operator [redacted] #029151 overran red signal D99-42. As a result, no vehicle movement could move in or out of the yard. AOM, SAFE, ROIC, MOC, MTPD, and all concerned personnel were notified.

Image 1 - MICC Report redacted page 1 of 2.

View Approved Incident Report

0148	ATC 276 reported to the MICC no damage to any switch points or ATC equipment and the track were good for vehicle movement.
0244	Track Operator, Flagman and Interlocking Operator transported for post incident procedures.

MAXIMO TICKET#
8721172

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

SUPERINTENDENTS OR ASSISTANTS SECTION

ADDITIONAL FOLLOW-UP CORRECTIVE ACTIONS OR REMARKS

FOLLOW-UP INFORMATION OBTAINED FROM SUPPORT DEPARTMENTS

NOTIFICATIONS/PAGE GROUPS #1/CEO ☐ #2/DGM &BELOW ☐

ADDITIONAL NOTIFICATIONS MADE BY PHONE

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

Image 2 - MICC Report redacted page 2 of 2.

Washington Metropolitan Area Transit Authority
Maintenance and Material Management System
Work Order Details

Work Order #: 18328271
Type: CM

Status: INPRG
01/03/2024 04:04

Work Description: Ran signal in NC Yard
Job Plan Description:

Work Information

Asset:	MPM43	PM43, PRIME MOVER, HARSCO, 354C, S/N 6100882, 4	**Owning Office:**	CTEM	**Parent:**
Asset Tag:	MPM43		**Maintenance Office:**	CTEM-NCAR-HVYR	**Create Date:** 01/03/2024 04:01
Asset S/N:	6100882		**Labor Group:**	CTEM-NCAR-HVY	**Actual Start:** 01/03/2024 04:04
Location:	1230	D99, NEW CARROLLTON YARD	**Crew:**		**Actual Comp:**
Work Location:	13938	D90, NEW CARROLLTON YARD, BUILDING (B), CTEM SHOP	**Lead:**		**Item:** CTEM49200006
Failure Class:	CTEM009	TRUCKS / DRIVE_TRAIN	**GL Account:**	WMATA-02-33380-50499070-041-**********-*****-OPR**	
Problem Code:	2439	N/A CODE (TRUCK SYSTEM)	**Supervisor:**	[redacted]	**Target Start:**
Requested By:			**Requestor Phone:**		**Target Comp:**
Chain Mark Start:			**Chain Mark End:**		**Scheduled Start:**
Create-Mileage:	0.0		**Complete-Mileage:**	0.0	

Task IDs

Task ID	
10	inspect unit , ran signal 1/3/2023 PM43 Pushing F533 Out of NC yard. PM43 Pushing F533 ran signal D99 – 42 Unit did not split a switch or do any damage to track or equipment. On arriving. Checked brake pressure, 90psi for main and 100psi for flat car brakes. Parking brake was applied, and service brake was released, and flat car brake was released. Transmission was on the automatic mode. Made sure all wheels still on track (at time was not fully clear if ran through switch) After safety released unit, perform a flat car rolling test while going back to storage, flat car stopped whole consist, after getting in storage performed flat car brake test, passed 1050rpm, performed a standing Brake test on PM43, passed at 1200 rpm. Got call at 1:40 am Cleared into storage at Tag unit out post incident – Safety-[redacted] Assistant super intendent of track[redacted] Operator of PM43-[redacted] Flagman of F533 –[redacted] Mechanic –[redacted] Operator and flagman that removed unit to storage was[redacted]

Component: 000-400 CTEM-CAR TRACK EQUIPMENT (NON-REVENUE VEHICLES) **Work Accomp:** INSPECTED **Reason:** INSPECTION **Status:** INPRG **Position:** **Warranty?:** N

WT_plust_woprint.rptdesign 01/3/2024 22:46

Image 3 - Work Order from CTEM page 1 of 2.

Washington Metropolitan Area Transit Authority
Maintenance and Material Management System
Work Order Details

Work Order #: 18328271
Type: CM

Status: INPRG
01/03/2024 04:04

Work Description: Ran signal in NC Yard
Job Plan Description:

Actual Labor

Task ID	Labor	Start Date	End Date	Start Time	End Time	Approved?	Regular Hours	Premium Hours	Line Cost
10	[redacted]	01/03/2024	01/03/2024	01:00	02:30	N	01:30	00:00	$64.79
						Total Actual Hour/Labor:	01:30	00:00	$64.79

Failure Reporting

Cause	Remedy	Supervisor	Remark Date
		[redacted]	

Remarks:

WT_plust_woprint.rptdesign 01/3/2024 22:46

Image 4 - Work Order from CTEM page 2 of 2.

Appendix D – Scene Photographs

Image 5 – D99-42 Signal displaying a red aspect in the New Carrollton Yard.

Image 6 – Signal D99-42 and adjacent Signal D99-38.

Image 7 – PM-43 stopped 320 feet beyond the D99-42 Signal.

Image 8 – Photo illustrating PM-43 pushing Flatcar 533.

Image 9 – Photo of Flatcar 533 adjacent to D99-32 Signal.

Appendix E – RTRA Lesson Learned

Office of Rail Transportation

Lessons Learned

RTRA OFFICE OF RAIL TRANSPORTATION

metro

Looking back, to effectively move forward

February 13, 2024
Number: RTRA-303-10-00

Improper Radio Communication & Train Movement Leads to Collision

INCIDENT SUMMARY

On Wednesday, January 17, 2024, at approximately 8:11am, Train 606 encountered a brake problem near Greensboro Station, track #1. After extensive troubleshooting, the train was offloaded and moved to West Falls Church Yard via third car operation. Upon entering the yard, permission was granted for the train to be stored on track #2. While still using third car operation, all of the required safety stops were conducted before the train made contact with the bump post.

There were no reported injuries or damages to equipment as a result of this occurrence.

ROOT CAUSE

Improper movement of train with no radio communication.

Upon review of audio recordings, there were lengthy periods of time where radio communication between the operator and flagman was not maintained as required, and the train continued to move. In some instances, a "proceed" command was not given for up to 19 seconds while the train continued to move. The command for the last safety stop was given at 09:19:16, the next transmission was made at 09:19:26 but was inaudible. It is believed that the collision with the bump post occurred shortly thereafter.

RULE(S) VIOLATED

MOR 11.18.4.6 If instructions are not understood or continuous radio contact is not maintained, the movement must be stopped immediately. The movement may not be resumed until: a. The misunderstanding has been resolved, and b. Radio contact has been restored, or c. Communication has been achieved by hand signals or other procedures.

LESSONS LEARNED

What happened…	*What should have happened…*
The flagman failed to give the "proceed" command at frequent intervals. The command was provided at frequencies ranging from 6-19 seconds.	The flagman should have provided the command at frequent and consistent intervals (i.e., every 3-5 seconds)
The operator continued operating the train despite lengthy periods of not receiving "proceed" commands.	The operator should have stopped the train when radio communication was not heard.
The flagman attempted to get as close to the bump post as possible	Upon clearing the signal, the flagman should have secured the train vs going to the bump post (as a best practice).

RECOMMENDATIONS

- ✓ Ensure operating personnel understand the importance of maintaining radio communication when moving trains, particularly during 3rd car operations.
- ✓ Always remember, to follow MOR 11.18.4.6 when radio communication becomes distorted or is not heard.

Image 10 - Lesson Learned RTRA-303-10-00.

Appendix F – RTRA Lesson Learned

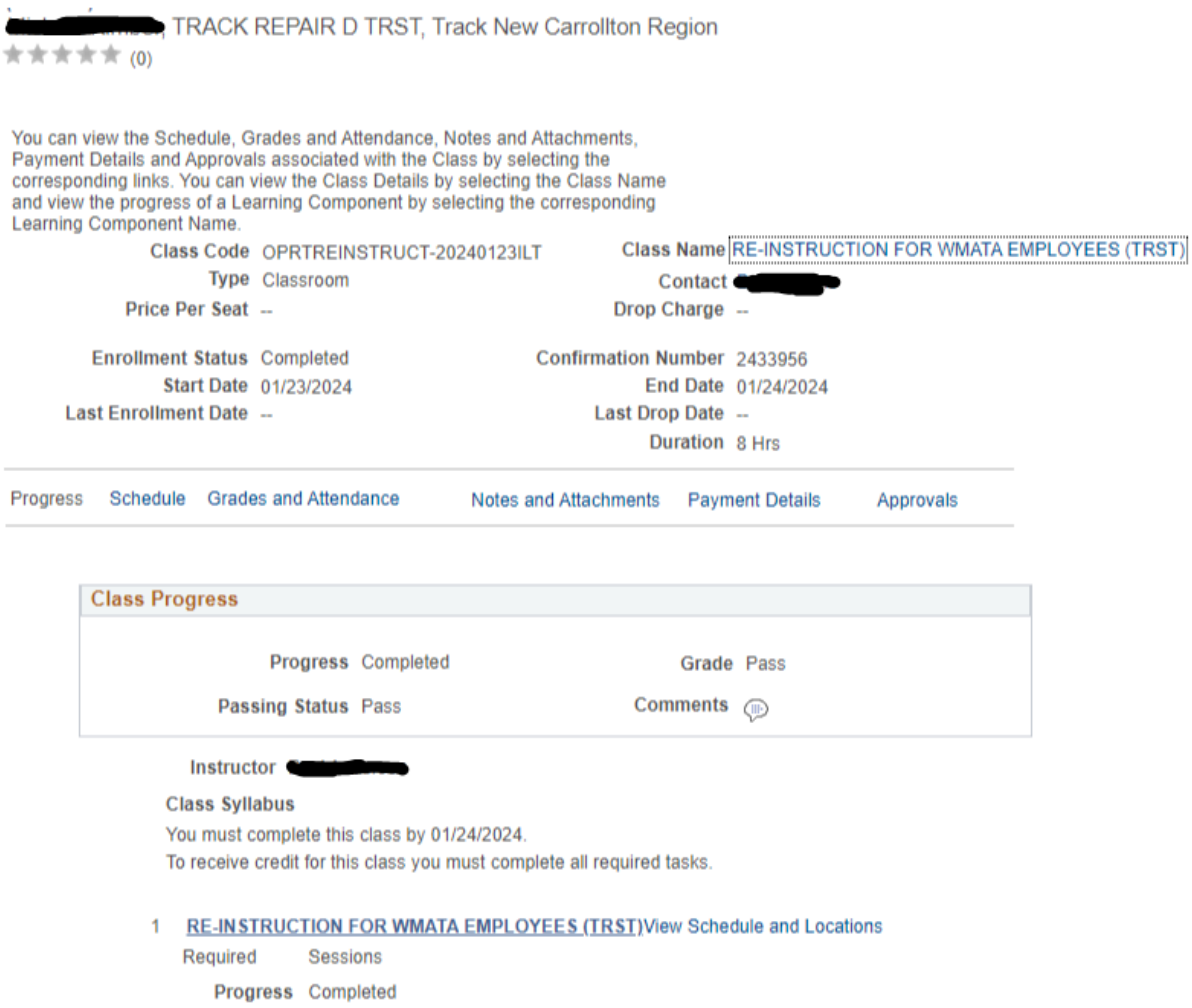


Image 11 – TRST Completion of Re-Instruction Training.

Appendix G – Why-Tree Analysis

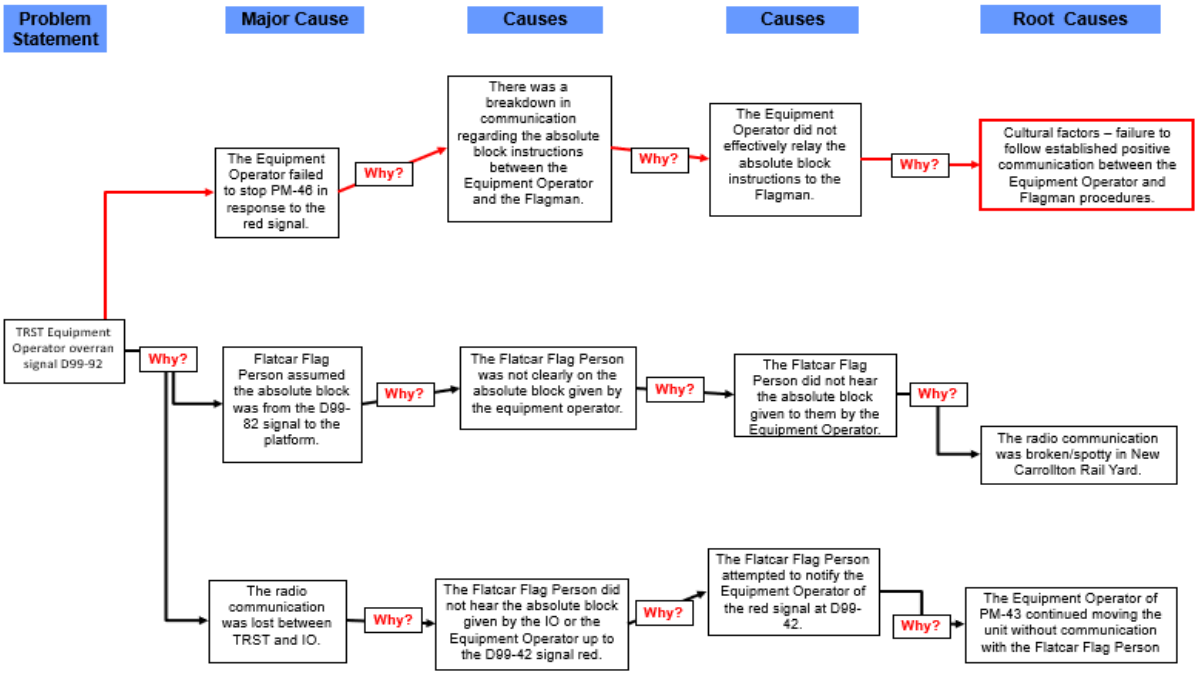


Image 10 - Root Cause Analysis.

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

FINAL REPORT OF INVESTIGATION A&I E24124

Date of Event:	February 13, 2024
Type of Event:	O-8, Red Signal Overrun
Incident Time:	16:38 Hours
Location:	Rhode Island Avenue Station, track 2 Signal B04-02, Chain Marker (CM) 174+94
Time and How received by SAFE:	16:42 Hours, Mission Assurance Coordinator (MAC)
WMSC Notification Time:	16:44 Hours
Responding Safety Officers:	Office of Safety Investigation (OSI)
Rail Vehicle:	Train ID 127 [L3229-28x3131-30x3273-72T]
Injuries:	None
Damage:	None
Emergency Responders:	Metro Transit Police Department (MTPD)
SMS I/A Incident Number:	20240213#114759MX

Rhode Island Avenue Station – Red Signal Overrun

February 13, 2024

Table of Contents

Abbreviations and Acronyms

AIMS	Advanced Information Management System
ARS	Audio Recording System
CCTV	Closed-Circuit Television
CMOR	Office of the Chief Mechanical Officer
IIT	Incident Investigation Team
MICC	Metro Integrated Communication and Command 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
SAFE	Department of Safety
SMS	Safety Measurement System
SOP	Standard Operating Procedure
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 Tuesday, February 13, 2023, at 16:38 hours, a Red Signal Overrun event occurred when Train ID 127 [L3229-28x3131-30x3273-72T] passed red signal B04-02.

Due to a signal problem at Fort Totten Station, trains were passing red signals at that location, and the switches were clamped. This caused a backlog of trains as they approached Brookland Station and Takoma Station. The Radio Rail Traffic Controller (RTC) #1 was granting trains an absolute block and permission to pass the signals B06-08 and B06-02 (red). Additionally, the trains approaching Brookland Station were slowed down by a red signal at B04-02.

Radio RTC #1 attempted to contact the Train Operator of Train ID 127 but was interrupted by the Train Operator of Train ID 110, who reported a loss of speed commands. As Radio RTC #1 began to grant Train ID 110 a permissive block to the turnback, the Train Operator of Train ID 127 simultaneously responded to Radio RTC #1's initial call request. Radio RTC #1 repeated the permissive block by stating, "Train ID 110 has a permissive block to the turnback, pick up speed commands, and continue to the next station." The Train Operator of Train ID 127 reported that they acknowledged the instructions by stating, "I copy, affirmative," not repeating the instructions given by Radio RTC #1.

The Metro Integrated Communication and Command (MICC) Center Assistant Operations Manager (Rail 3) contacted the Button RTC to confirm the status of Train ID 127, as the train appeared to be approaching red signal B04-02 according to the Advanced Information Management System (AIMS). Radio RTC #1 contacted Train ID 127 and verified if the train had passed the signal B04-02. The Train Operator responded that they were given a permissive block to pass the signal B04-02 red.

Radio RTC #1 requested Train ID 127's location and asked the operator to stop the train's movement. Train ID 125 was instructed to offload customers at Brookland Station.

Radio RTC #2 took over the radio communication and made a blanket announcement: "*Stand by. There is an emergency; make good announcements to the customers".* Train ID 127 was instructed to key down and move all customers aboard the train from the Shady Grove end to the lead car on the Glenmont end of the train. After Train ID 125 offloaded the customers, they were granted an absolute block to Train ID 127 to rescue 175 passengers from the train.

Following Standard Operating Procedure (SOP) 102-1, 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 Train Operator from duty for post-incident testing.

In adherence to the Office of the Chief Mechanical Officer (CMOR) Incident Investigation Team (IIT) Operations Administrative Policy (OAP) 102.06, the MICC took Train ID 127 out of revenue service for post-incident investigation. This action followed the Rail Vehicle Event Investigation Policy, ensuring a thorough examination of the incident.

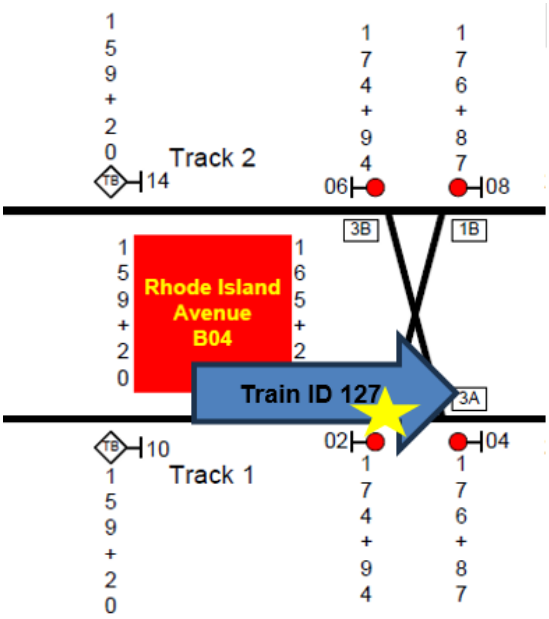
The probable cause of the Red Signal Overrun event on February 13, 2024, at Rhode Island Avenue Station was the Train Operators' lack of communication. Specifically, the Train Operator did not follow the established Radio Transmission & Reception Procedures, which required

repeating radio transmissions to ensure that the intended receiver received the message completely. Additionally, Radio RTC #1 failed to establish communication between various Train IDs, as they failed to repeat the Train ID, location, and track number.

Incident Site

Rhode Island Avenue Station, Track 1, B04-02 signal at CM 174+94

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 and 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 Traffic Controller Radio #1
  - Rail Traffic Controller Radio #2
  - Rail Traffic Controller Button
  - Train Operator (Train ID 127)

- 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:
    - Train Operator Training Records
    - Train Operator Certifications
    - Train Operator 30-day work history review
    - Metrorail Operating Rulebook (MOR)
    - National Oceanic and Atmospheric Administration (NOAA)
    - MICC Incident Report
    - Maximo Data

- System Data Recording Review – Collection of information contained in Metro Data Recording Systems. This data includes:
    - ARS (Audio Recording System) playback, including OPS 1 Radio and phone.
    - The Office of Chief Mechanical Officer (CMOR) Incident Investigation Team (IIT) Vehicle Monitoring and Diagnostic System (VMDS)

Investigation

Formal interviews revealed that before the Red Signal Overrun incident, there was a signal problem at the Fort Totten Station interlocking that led Rail Traffic Controllers (RTC) to direct Train Operators to pass red signals over clamped switches at that location when it was safe to do so. Trains passing red signals under the direction of the RTCs led to a train backlog as they approached Brookland Station and Takoma Station. To manage the situation, Radio RTC #1 granted trains absolute blocks to pass the red signals B06-08 and B06-02.Additionally, trains approaching Brookland Station were slowed down by a red signal at B04-02.

According to Audio Recording System (ARS), at 16:37:14 hours, Radio RTC #1 attempted to contact Train ID 127 but was interrupted by Train ID 110 reporting no speed commands. When Radio RTC #1 began to give Train ID 110 a permissive block to the turnback, Train ID 127 simultaneously responded to Radio RTC #1's initial call request. Radio RTC #1 repeated the permissive block by stating, "Train ID 110 has a permissive block to the turnback, pick up speed commands, and continue to the next station." Train ID 127 reported that they acknowledged the instructions by stating, "I copy, affirmative," not repeating the instructions given by Radio RTC #1.

ARS also revealed at 16:37:52 hours, Rail 3 contacted the Button RTC to confirm the status of Train ID 127 as the train appeared to be approaching red signal B04-02 on AIMS. Radio RTC #1 contacted Train ID 127 and verified if the train had passed signal B04-02. The Train Operator reported that they were given a permissive block to pass the signal B04-02 red.

At 16:39:02 hours, Radio RTC #1 requested Train ID 127's location and that the operator stop the train's movement. Train ID 125 was instructed to offload customers at Brookland Station.

At 16:44:25 hours, Radio RTC #2 [1]took over radio communication to handle the emergency incident and announced, "*Stand by. There is an emergency; make good announcements to the customers."* Train ID 127 was instructed to key down and move all customers aboard the train

[1] Radio RTC 1 certified as of February 5, 2024.

from the Shady Grove end to the lead car on the Glenmont end of the train. After Train ID 125 offloaded customers, they were given an absolute block to Train ID 127 to rescue 175 passengers from the train. Train ID 127 was removed from service and transported to Glenmont Rail Yard. There was no damage or injuries.

Chronological Event Timeline

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

Time	Description
16:35:32 hours	Radio RTC 1: Requested Train 127 to hold two minutes at Rhode Island Avenue station after servicing the station. [Radio, OPS 1]
16:37:14 hours	Radio RTC 1: Attempted to contact Train ID 127 at Rhode Island Avenue Station, track 1. Train ID 110: Reported no speed commands. *Simultaneously* Train ID 127: The Train Operator stated, "*I'm here central; what do you need?*" Radio RTC 1: Gave Train ID 110 a permissive block to the turnback and, with speed commands, could continue. Train ID 127: The Train Operator stated, "I copy that, affirm." [Radio, Ops 1]
16:37:52 hours	Rail 3: Requested the status of Train ID 127 due to the red signal ahead of the train. Radio RTC 1: Acknowledged that Train ID 127 pulled off the platform of Rhode Island Avenue Station but reported they would have to wait due to the back of trains going towards Fort Totten. [Phone, Ops1]
16:39:02 hours	Radio RTC 1: Requested Train ID 127 location and requested that the operator stop the train's movement. Train ID 127: Reported that the train is stopped. Radio RTC 1: Requested confirmation Train ID 127 passed B04-02 signal. Train ID 127: Reported that they were given a permissive block to pass the B04-02 signal. Radio RTC 1: Reported Negative; permission was not granted. [Radio, OPS 1]
16:41:25 hours	Radio RTC 1: Requested Rail Supervisor location. [Radio, OPS1]
16:42:07 hours	Radio RTC 1: Requested Train ID 127 not to move the train and to continue making announcements to the customers that the train is holding. [Radio, OPS1]
16:42:15 hours	MAC: Notifies SDOC of the Rd Signal Overrun. [Phone, MAC]
16:42:36 hours	Radio RTC 1: Requested the Rail Supervisor to contact them via telephone. [Radio, OPS1]
16:43:55 hours	Radio RTC 1: Requested the Train Operator to give them a radio check on their handheld radio, key the train down, and make announcements to the customers. Train ID 127: Requested confirmation on what announcements should be made to the customers. [Radio, OPS1]
16:44:14 hours	MAC: Notified WMSC of Red Signal Overrun event. [Phone, MAC]
16:44:25 hours	Radio RTC 2: *Blanket announcement to all train operators – "Stand by there is an emergency and make good announcements to the customers."* [Radio, OPS1]

Time	Description
16:46:14 hours	Train ID 127: Requested confirmation of instruction to key the train down. Radio RTC 2: Acknowledged and confirmed. Request the lead railcar number. Train ID 127: Advised the lead railcar 3229. Radio RTC 2: Requested the Train Operator to key the train down and move all customers aboard the train from the Shady Grove end of the train and then to the lead car on the Glenmont end of the train. [Radio, OPS1]
16:46 hours	*MICC Alert email notification*
16:47:20 hours	ATCM: Dispatched from Brentwood Rail Yard to Rhode Island Avenue Station. [Phone, Ops1]
16:48:10 hours	Train ID 125: Train Operator reported they were clear of customers on track 1 at Brookland Station. Radio RTC 2: Requested confirmation that they were ready to move on the Shady Grove end of the train. Train ID 125: Confirmed and acknowledged. Radio RTC 2: Granted an absolute block no closer than 10 feet of the disabled Train ID 127, utilizing yard procedures and safety stops. Train ID 125: Acknowledged with 100% repeat back. [Radio, OPS1]
16:51:09 hours	Radio RTC 2: Requested a passenger count and if anyone needs medical assistance, as the customers are being escorted to the lead railcar. Train ID 127: Acknowledged. [Radio, OPS1]
17:04:14 hours	ATCM: Notified MICC Button RTC that they were at the B04 CM B1 179+00 access gate. [Phone, Ops 1]
17:09:02 hours	Radio RTC 2: *Blanket announcement to all train operators – "Train service has been suspended between NoMa-Gallaudet and Rhode Island Avenue Station. Shuttle bus service has been provided."* [Radio, OPS1]
17:10:00 hours 17:11:37 hours	Radio RTC 2: Made several requests for recovery progress updates from both Train ID 125 and Train ID 127. [Radio, OPS1]
17:11:38 hours	Train ID 127: Reported that they were still loading passengers onto the recovery train (Train ID 125). [Radio, OPS1]
17:19:40 hours	Train ID 125: Reported that the passenger count that was removed from the disabled train (Train ID 127) was 427 passengers and one (1) that was disabled in a wheelchair. They reported that they would verify that the disabled train was completely clear of passengers and then key up on the Glenmont end of the train consist. Radio RTC 2: Acknowledged. [Radio, OPS1]
17:20:16 hours	Rail Supervisor: Reported they arrived on the platform at Rhode Island Avenue Station with RTRA Assistant Superintendent, RTRA Station Supervisor, and a Safety Investigator. [Radio, OPS1]
17:25:12 hours	Radio RTC 2: Granted Train ID 125, a permissive block to Brookland Station, track 1. [Radio, OPS1]
17:27:47 hours	ERT: Notified Rail 2 that they arrived on the platform of Rhode Island Avenue Station. [Phone, Ops1]
17:28 hours	WMSC: A scene release was issued to WMATA. [Phone, MAC]

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:

Based on VMDS data, Train ID127 serviced Rhode Island Avenue, track #1, opening Left-side doors with Auto Door Operation. After the doors were closed, the Master Controller was moved to a P5 Power position, and the train began to move towards Brookland station.

396 feet after departing Rhode Island Avenue station, the Regulated and Limiting speed limits dropped to 0 MPH, activating the overspeed alarm and applying the Full-service brake at the B4 Brake rate.

The train comes to a complete stop 438 feet after departing Rhode Island Avenue. Stop and Proceed is then activated. The Master Controller is moved to the P5 Power position, and the train moves towards Brookland Station.

The Train speed increases to 16 MPH, the overspeed alarm is activated, and the Full-service Brake applies the B4 Braking Rate, bringing the train to a complete stop after traveling an additional 179 feet.

Stop and Proceed is again activated, the Master Controller is placed in a P4 Power position, and the train moves towards Brookland again. The Master Controller is moved to Coast, then back to P2.

The train passes signal B04-02 at a speed of 13 MPH while moving to a P2 power position. Full-service brake applies a B4 Braking Rate, bringing the train to a complete stop 199 ft. beyond the B04-02 signal. There were no faults with the train that contributed to the cause of the red signal overrun incident; the train performed as commanded.

See the timeline below:

Time	Description of Events
16:32:55.920	Train ID 127 came to a complete stop at Rhode Island Ave station, Track 1.
16:32:59.692	Left Doors opened by Auto Door Operation.
16:33:13.792	Left Door Close Pushbutton is activated, closing left side doors.
16:33:29.199	The Master Controller was placed in the P5 power position, and the train began to move towards Brookland Station.
16:33:58.132	Limiting and Regulated Speed limits drop from 15 MPH to 0 MPH, creating an overspeed condition, and the Full-service Brake applies a B4 Braking rate. The train speed was 9 MPH 396 feet after departing Rhode Island Avenue.
16:34:02.736	The train came to a complete stop after traveling 438 feet after departing Rhode Island Avenue station.
16:34:35.312	Stop and Proceed activated.

Time	Description of Events
16:34:37.228	The Master Controller was placed in the P5 power position, and the train began to move toward Brookland Station.
16:34:45.544	Stop and Proceed De-activated
16:34:45.704	The train speed increases to 16 MPH, the overspeed alarm is activated, and the Full-Service Brake applies the B4 Rate. The train speed was 16 MPH.
16:34:53.215	The train stopped after traveling an additional 179 feet after departing Rhode Island Avenue station.
16:34:55.611	Stop and Proceed activated.
16:34:57.500	The Master Controller was placed in the P4 Power position, and the train began to move to Brookland Station.
16:35:04.500	The Master Controller was moved to the Coast position; the train speed was 10 MPH, 661 feet after departing Rhode Island Avenue.
16:35:16.136	The Master Controller moved to the P2 Power position; after departing Rhode Island, the train's speed was 9 MPH, 830 feet.
16:35:22.148	The Master Controller was placed in the B2 Braking position, and the train speed was 13 MPH.
16:35:24.128	The train passed the B04-02 signal at 13 MPH as the Master Controller was being moved to the P2 power position.
16:35:28.316	Stop and Proceed de-activated, and Full-Service Brake applies B4 braking rate.
16:35:38.900	The train comes to a complete stop after traveling 199 feet beyond the B04-02 signal, an additional 556 feet after departing Rhode Island Avenue station, and a total of 1,173 feet traveled after Rhode Island Station.

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

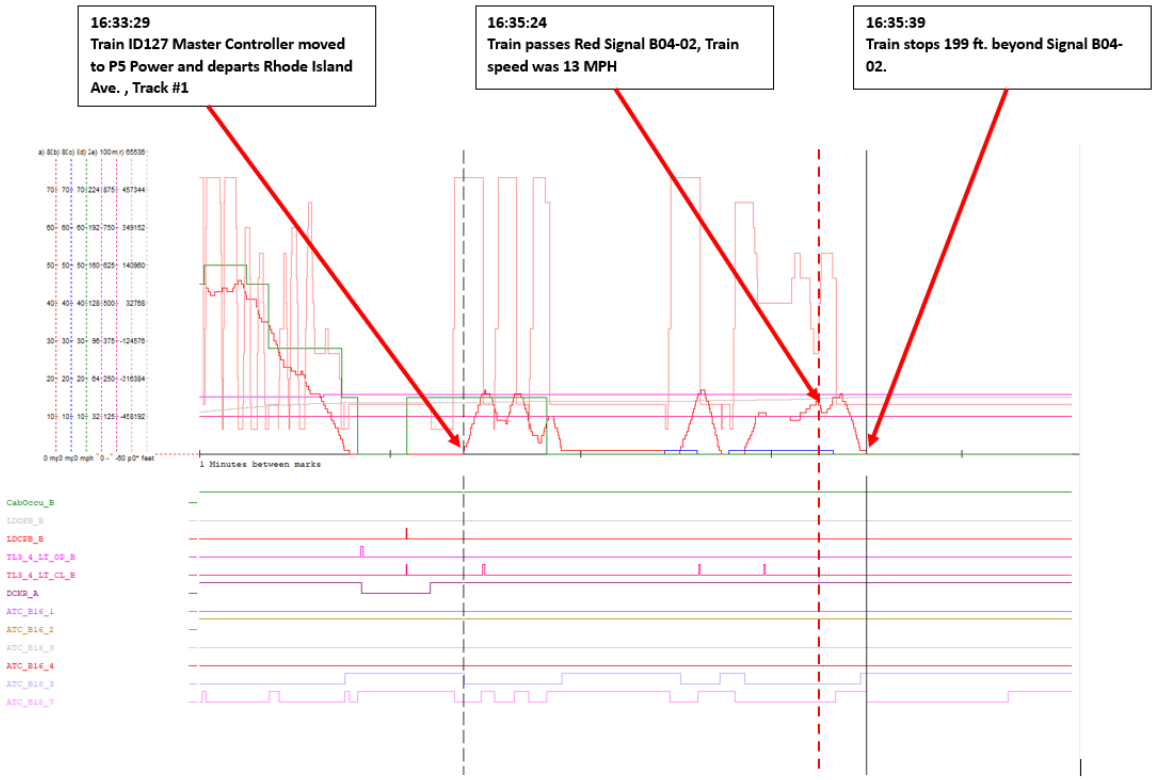


Table 1 - depicted when Train ID 127 passed the B04-02 signal red.

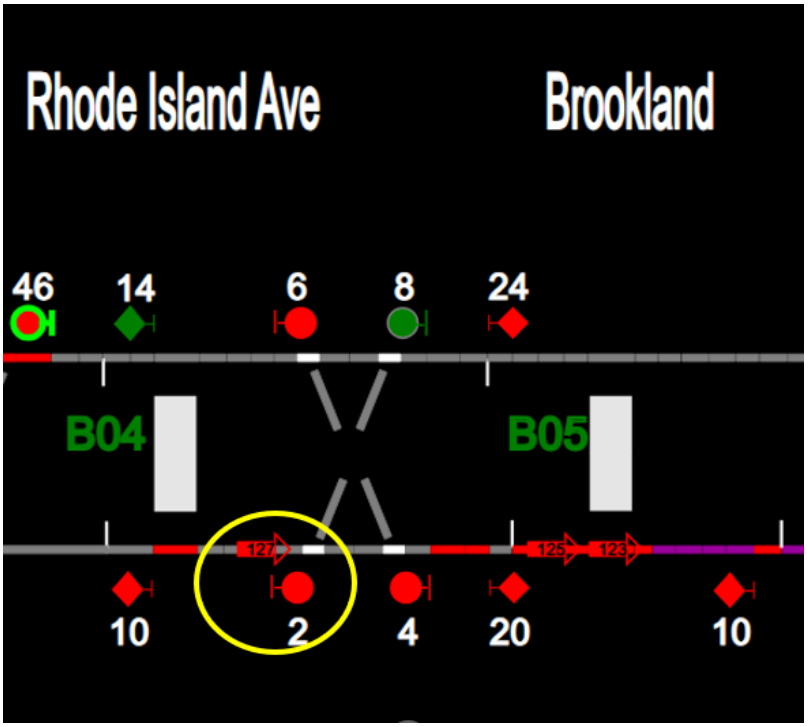


Image 1 - Depicts Train ID 127 approaching B04-02 signal red.

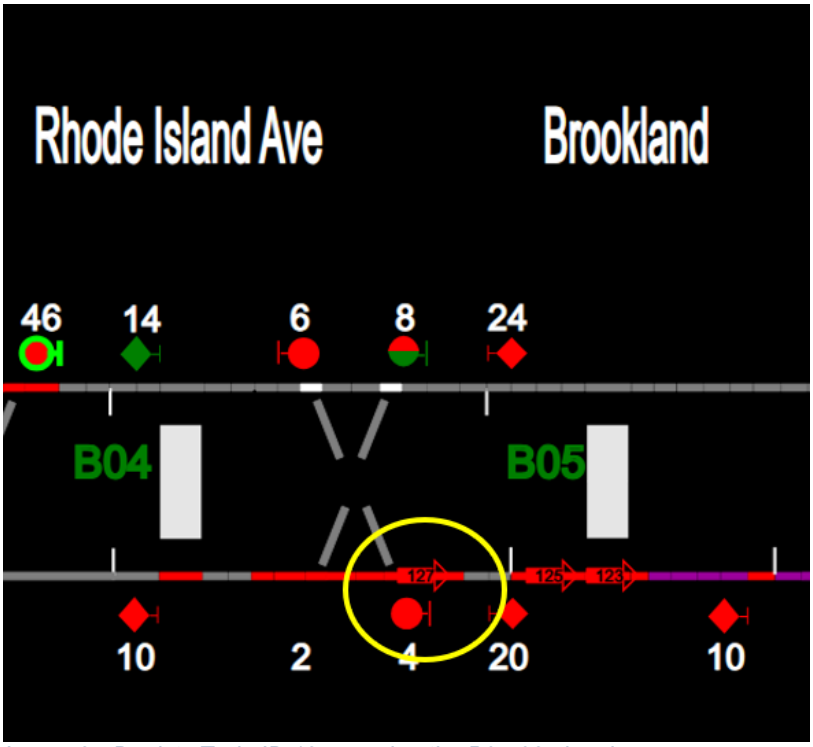


Image 2 - Depicts Train ID 127 passing the B04-02 signal.

Office of Systems Maintenance, Office of Radio Communications (COMR)

The Office of System Maintenance, Office of Radio Communication (COMR) conducted a comprehensive radio check on both tracks from Rhode Island Avenue Station to Brookland Station. All radio checks were loud and clear[2].

Office of Rail Transportation (RTRA)
Adopted from RTRA report:

The Train Operator received a 10-day suspension for the Red Signal Overrun event.

RTRA Division records determined that the Train Operator has committed several previous safety violations to include:

- Station Overrun on August 8, 2023, at Stadium Armory Track #2 by one door leaf.
- Station Overrun and Improper Door Operation on October 27, 2023, at Wheaton Track #1. The Train Operator reported the station overrun after servicing the station, which resulted in doors off the platform.

After a 10-day suspension the Train Operator requested additional training with a Line Platform Instructor (LPI), which was agreed to by management and the shop steward. On December 1, 2023, a volatile verbal altercation between the operator and the LPI, where the operator used obscenities. During subsequent interviews, the operator displayed combative and erratic behavior. The operator has a history of unpredictable behavior, including repeatedly asking the same question and showing signs of mental instability. As a result, a medical evaluation referral was submitted on December 14, 2023.

Upon examination of all the records related to this inquiry, it was concluded that the gravity of the infraction committed warrants the termination of the Train Operator's employment with the Washington Metropolitan Area Transit Authority.

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.

Train Operator
- Train Operator stated that the RTC was speaking with several different trains.
- The Train Operator stated the radio communication was intermittent.
- The Train Operator stated they thought they were given permission to continue through the red signal.

Button RTC
- Button RTC stated that Fort Totten interlocking was clamped, and trains passed a red signal on track 2.
- Button RTC stated speed couplers were turned from Brookland to Fort Totten track 1 and Fort Totten Station track 2.

[2] See Maximo WO# 18406837.

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- Button RTC stated they dropped the B04-02 signal red after Train ID 125 passed it to prevent trains from backing up between Brookland and Fort Totten.
- Button RTC stated speed couplers were turned in the area due to the ballast settling.

Radio RTC #1

- Radio RTC 1 stated they attempted to contact Train ID 127 at Noma-Gallaudet and Rhode Island Avenue Station to slow them down on their approach to Brookland Station.
- Radio RTC 1 stated they were certified as an RTC on February 5, 2024, and were not working alongside an On-the Job Training Instructor (OJTI).
- Radio RTC 1 stated that the initial alarm from the AIMS screen notified them of the Red Signal Overrun.

Radio RTC #2

- Radio RTC 2 stated they worked as directed before the incident and on OPS 2.
- Radio RTC 2 stated they were asked to step in on the incident as the Radio RTC because the RTC handling the incident was new and would assist them with the incident.
- Radio RTC 2 stated they took over the incident when Train ID 127 was moving their customers to the lead car to prepare to be evacuated to rescue Train ID 125.
- Radio RTC 2 stated that trains were being turned back at Noma-Gallaudet Station and Takoma Station due to trains passing a red signal at Fort Totten Station.

Weather

At the time of the incident, NOAA recorded the temperature at 47 ° F. Weather was not a contributing factor in this incident (Weather source: NOAA – Location: Washington, D.C.).

Related Rules and Procedures

Metrorail Operating Rulebook (MOR)

12.4.3 Personnel shall not take any action until they are positive that all radio transmissions or receptions are heard, fully understood, and acknowledged. Individual radio transmissions shall always be repeated by the receiver so the transmitter can confirm that the message was received completely and by the intended receiver.

12.4.4 Whenever the transmitter has completed their transmission and is turning the airtime over to the receiving party for acknowledgment or reply, they are to end their communication with the word “over.”

12.4.5 Positive Identification must be established prior to transmitting a message. Positive identification includes the transmitter stating their Train/Equipment Number or Unit ID Number, location, and track number at the beginning of a transmission and the receiver repeating back the Train/Equipment Number or Unit ID Number, location, and track number when acknowledging the radio call.

12.4.6 Rail Traffic Controllers shall acknowledge employees by repeating the train number, location, and track.

12.4.7 When communicating with Rail Vehicles, personnel are to identify the train ID or unit ID by the complete number series. This method of positive train/unit identification shall be consistently used when transmitting and acknowledging information.

12.4.8 When an employee is communicating with Rail Operations Control, Central will close out a communication loop by saying, “Central, out.”

Human Factors

Fatigue

Train Operator

SAFE 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 Train Operator reported feeling fully alert at the time of the incident and experiencing no symptoms of fatigue in the time leading up to the incident.

Radio RTC #1

SAFE 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 Rail Traffic Controller #1 reported feeling fully alert at the time of the incident and experiencing no symptoms of fatigue in the time leading up to the incident.

Button RTC

SAFE 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 Rail Traffic Controller reported feeling fully alert at the time of the incident and experiencing no symptoms of fatigue in the time leading up to the incident.

Fatigue Risk

Train Operator

SAFE 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 Train Operator reported keeping a regular sleep schedule in the days leading up to the incident. The Train Operator worked the evening shift in the days leading up to the incident. The employee was awake for five hours and three minutes at the time of the incident. The employee reported ten hours of sleep in the 24 hours preceding the incident. This was less than the employee's usual workday sleep duration. The off-duty period was fourteen hours which provides an opportunity for 7-9 hours of sleep. The employee reported no issues with sleep.

Radio RTC #1

SAFE 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 Radio Rail Traffic Controller #1 reported some variation in the sleep schedule in the days leading up to the incident. Working the morning shift the week prior, then transferring to the evening shift the week of the incident. The Radio Rail Traffic Controller #1 performed day and night work in the days leading up to the incident. The Radio Rail Traffic Controller #1 was awake for eight hours and thirteen minutes at the time of the incident. The Radio Rail Traffic Controller #1 reported eight

hours and thirty minutes of sleep in the 24 hours preceding the incident. The off-duty period was sixteen hours and eleven minutes, which provided an opportunity for 7-9 hours of sleep. This was more than the employee's usual workday sleep durations. The Radio Rail Traffic Controller #1 reported no issues with sleep. The Radio Rail Traffic Controller #1 worked the evening shift in the days leading up to the incident.

Button RTC

SAFE 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 Button Rail Traffic Controller reported keeping a regular sleep schedule in the days leading up to the incident. The Button Rail Traffic Controller worked the evening shift in the days leading up to the incident. The Button Rail Traffic Controller was awake for eight hours and twenty-eight minutes at the time of the incident. The Button Rail Traffic Controller reported eight hours and twenty-five minutes of sleep in the 24 hours preceding the incident. The off-duty period was sixteen hours and 15 minutes, providing an opportunity for 7-9 hours of sleep. This was more than the employee's usual workday sleep durations. The Button Rail Traffic Controller reported no issues with sleep. The Button Rail Traffic Controller worked the evening shift in the days leading up to the incident.

Post-Incident Toxicology Testing

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

Findings

- The incident involved Train ID 127 passing red signal B04-02.
- Radio RTC 1 became certified as an RTC on February 5, 2024.
- A signal problem at Fort Totten Station led to trains passing red signals at that location and switches being clamped, causing a backlog of trains approaching Brookland Station and Takoma Station.
- Radio RTC 1 attempted to contact Train ID 127 but was interrupted by Train ID 110. There was confusion when Train ID 127 responded simultaneously with Train ID 110, leading to potential miscommunication.
- Train ID 127 did not repeat back the permissive block instructions to Radio RTC before moving.

Immediate Mitigation to Prevent Recurrence

- The train was removed from service for post-incident inspection.
- The Train Operator was removed from service.

Probable Cause Statement

The probable cause of the Red Signal Overrun event on February 13, 2024, at Rhode Island Avenue Station was the Train Operators' lack of communication. Specifically, the Train Operator did not follow the established Radio Transmission & Reception Procedures, which required repeating radio transmissions to ensure that the intended receiver received the message completely. Additionally, Radio RTC #1 failed to establish communication between various Train IDs, as they failed to repeat the Train ID, location, and track number.

Recommended Corrective Actions

Corrective Action Code	Description	Responsible Party	Estimated Completion Date
114759_SAFECAPS_MICC_001	The Rail Traffic Controller #1 attended refresher training on the importance of always receiving a proper repeat back.	RAIL SRC	Completed
114759_SAFECAPS_MICC_002	The Rail Traffic Controller #1 attended refresher training on not using red signals as a traffic management tool.	RAIL SRC	Completed
114759_SAFECAPS_MICC_003	Disseminate directive from MICC Director on Red Signal Overrun prevention announcements.	RAIL SRC	Completed
114759_SAFECAPS_MICC_004	Red Signal Overrun prevention announcements incorporated into Rail 1 Safety Briefings.	RAIL SRC	Completed
114759_SAFECAPS_RTRA_001	Increased Red Signal Overrun Discussions distributed to Rail Operations Supervisors to address recent red signal overrun incidents, aiming to raise awareness and provide directives for preventing future occurrences through increased dialogue and proactive measures.	RTRA SRC	Completed
114759_SAFECAPS_RTRA_002	Train Operator was permanently disqualified from train operations.	RTRA SRC	Completed

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.

Train Operator

The Train Operator has been a WMATA employee since April 23, 2023, and worked as a Train Operator since September 13, 2023. The Train Operator holds an RWP Level 2 certification and was last certified in

The Train Operator stated they heard the RTC speaking with several different trains, and then they heard Train ID 127, to which they responded to go ahead. What do you need central? Following that they heard you have a permissive block to continue on.

The Train Operator stated that the radio communication with the RTC was broken. The Train Operator stated they were given permission to pass red signals at Fort Totten Station but stated they were given permission to continue on from Rhode Island Avenue Station through the red signal.

Button RTC

The Buttons RTC has been a WMATA employee and worked as an RTC for five years. The Buttons RTC holds an RWP Level 4 certification and was last certified in July 2023.

The Button RTC stated that the interlocking was clamped to Fort Totten Station, and trains passed a red signal on track 2. Button RTC said speed couplers were turned from Brookland to Fort Totten track 1 and Fort Totten Station track 2. Due to the speed couplers being turned, trains began to get back up going into Fort Totten Station, track 1. Button RTC stated they saw a backup of the train going toward Fort Totten as Train ID 125 had just cleared the B04-02 signal on the approach to Brookland Station. The Button RTC stated the signal on the AIMS system was reading half green/half red, so they initiated a red signal command on the B04-02 signal before Train ID 127 could reach the platform at Rhode Island Avenue Station and to make sure they would lose speed commands to give the Radio RTC time to talk each train through the congested area of Brookland track 1 to Fort Totten, track 1.

The Button RTC stated that Train ID 127 appeared to have moved through the red signal. They asked the Radio RTC to confirm if they stopped before or after the signal. It was confirmed that the train did pass the B04-02 signal red.

Radio RTC 1

Radio RTC 1 has been a WMATA employee for six years and worked as an RTC for six months. Radio RTC 1 was certified as an RTC on February 5, 2024, and holds an RWP Level 4 certification.

The Radio RTC 1 stated trains were passing a red signal at Fort Totten, track 1, and intermittently on track 2. The Radio RTC 1 said speed couplers were turned from Brookland to Fort Totten track 1 and Fort Totten Station track 2. Trains were being asked to hold in approach to Brookland for

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spacing. They stated that they attempted to contact Train ID 127 to have them hold at Rhode Island Avenue Station to no avail.

The Radio RTC 1 stated Train ID 110 identified themselves in approach to Takoma Station with no speed commands, and they were given a permissive block to the turnback upon picking up speed commands they could continue. The Radio RTC 1 stated they gave Train ID 108, track 2 at Fort Totten, permission to pass B06-08 signal red.

Radio RTC 1 stated they attempted to contact Train ID 127 as they approached Rhode Island Avenue Station, but they did not respond. Following that, they went back to communicating with Train ID 110 and never heard back from Train ID 127.

Radio RTC 1 stated that while communicating with another train, they noticed Train ID 127 had moved from the platform at Rhode Island Avenue Station. They asked Train ID 127 for their location and were told that the train had passed the signal and was given permission.

Radio RTC 2

Radio RTC 2 stated they were working as directed on OPS 2 when the Red Signal Overrun event occurred. They were asked to take over the incident as the Radio RTC due to the current RTC being newly certified as an RTC.

Radio RTC 2 stated they picked up when Train ID 127 was moving customers to the lead railcar and preparing to be evacuated to rescue Train ID 125. Radio RTC 2 stated they were turning trains back at Noma-Gallaudet Station and Takoma Station because trains passed a red signal at Fort Totten. Radio RTC 2 said they instructed Train ID 125 to make safety stops in approaching Train ID 127 as they would in a recovery process to get close to the train and rescue the customers. The customers were transferred to Train ID 125. The Radio RTC 2 checked for injured passengers, and the incident ended.

Drafted By: SAFE 710 – 03/01/2024
Reviewed By: SAFE 707 – 04/15/2024
Approved By: SAFE 707 – 04/15/2024

Appendix B – MICC Report (redacted)

View Approved Incident Report

INCIDENT ID: 2024044RED3

DATE	TIME	LINE	ITEM
2024-02-13	1638	Red	3

LOCATION (STATION/YARD)	LOCATION/CHAIN MARKER (If Applicable)	REPORTED BY
Rhode Island Ave-Brentwood (B04)		AIM Display

TRAIN ID	DIRECTION	TRACK NUMBER	DEPTS NOTIFIED
127	O/B	1	Everbridge Alert/Messaging

CAR NUMBERS (XXXX-XXXX)
Lead Car

3329-3328	3131-3130	3272-3273	-
Caused Issue ☐	Caused Issue ☐	Caused Issue ☐	Caused Issue ☐

TRBL CODE	RESP CODE
RSIG-RED SIGNAL OVERRUN	RTR

TYPE INCIDENT
Red Signal Overrun

ACTION PLAN
Remove Train from Service, Dispatched ATC, ERT, and Safe Inspect Interlocking, Rescue Customers, Turnback Service at Fort Totten Station and Noma-Gallaudet Station

DELAYS IN MINUTES

LINE	INCIDENT	TRAIN	TOTAL DURATION
30	49	97	0

TRIPS MODIFIED

PARTIAL	GAP TRAIN	LATE DISPATCHES	REROUTED	NOT DISPATCHED	OFFLOADS
8	0	0	0	0	5

FIVE PRIMARY CONSOLE INDICATIONS

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

INCIDENT CHRONOLOGY

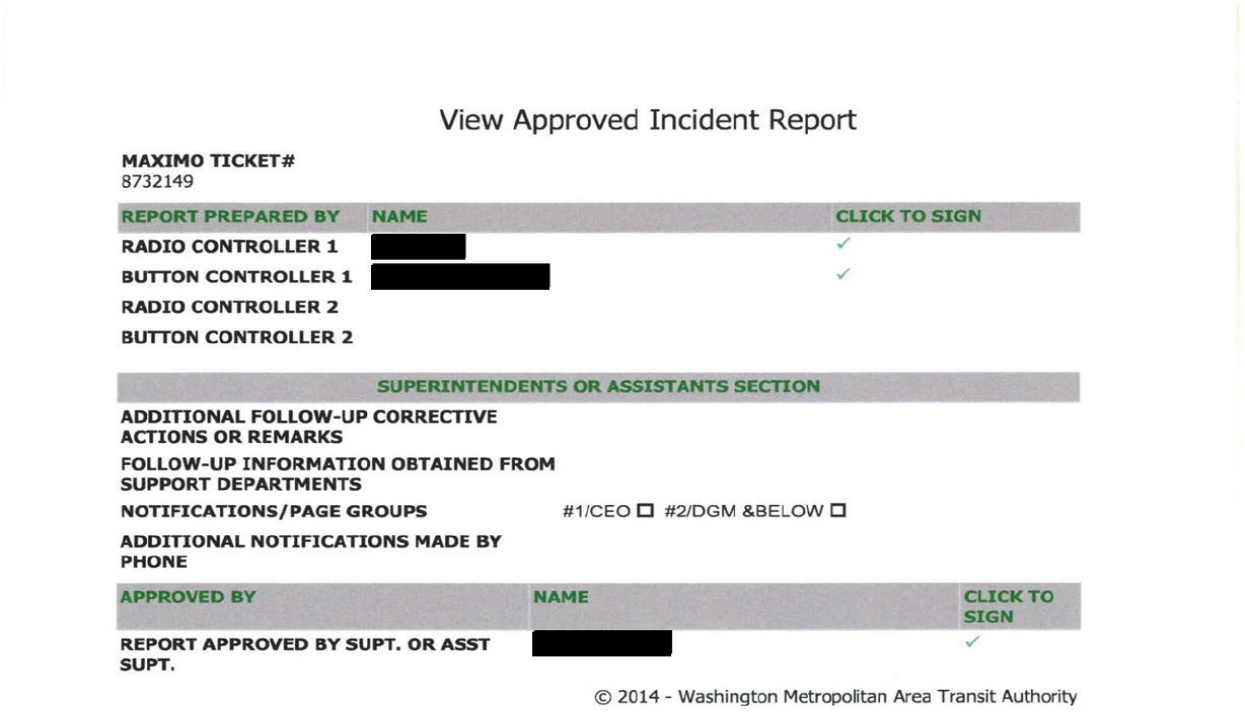
TIME	DESCRIPTION
1638	AIMS displayed Train 127 Operator overran signal B04-02 red. MICC instructed Operator [redacted] A99) to stop the train. MICC dispatched RTRA Supervisor. AOM, ROIC, SAFE and all concerned personnel notified.

Figure 1 - MICC report redacted page 1 of 3.

View Approved Incident Report

1639	Train 125 Operator instructed to offload and verify clear of customers.
1640	All trains in approach to Rhode Island Ave were instructed to hold on platforms for further instructions
1647	Announcements made for service suspension between Noma Gallaudet (B35) and Brookland-CUA (B05). Temporary terminal established at Noma Gallaudet. All red line trains operating between Shady Grove and Noma Gallaudet. Train ID 129 first train in service from Noma Gallaudet to Shady Grove.
1649	Train 125 operator verified clear of customers and was given absolute block no closer than 10ft of the disabled train utilizing safety stops. RTRA Supervisor [redacted], Unit [redacted] on scene at B35 to assist with trains offloading.
1653	Train 125 given absolute block no closer than 2 feet of the incident train using close in procedures.
1654	Temporary terminal service established at Fort Totten. Train ID 110 offloaded at Fort Totten back in service to Glenmont.
1659	Train 110 started moving in revenue service from Fort Totten to Glenmont.
1700	ATC 2266 on scene at Rhode Island Avenue to assist with incident.
1703	Train ID 108 instructed to offload verifying clear of customers.
1707	Train ID 108 verified clear of customers.
1708	Shuttle bus service established with Bus 3200 at NoMa-Gallaudet.
1720	RTRA Supervisor [redacted], SAFE, ERT [redacted], Assistant Superintendent [redacted], ATC [redacted] and ATC [redacted] on scene at Rhode Island Ave.
1722	Unit 56 on scene at Fort Totten to assist with temporary terminal operations.
1724	Train 725 Operator verified all customers clear of incident train and aboard 725 rescue train. Train ID 725 given permissive block to Brookland track 1.
1726	Train ID 125 Operator verified offload customers at Brookland track 1.
1729	ATC [redacted] granted Local Signal Control at B04 to verify the position and clamp switches 1b and 3b in the normal for a straight through move.
1737	ATC clamped switches B04 1B and 3B in the normal and stood by in a place of safety for train movement on track 2.
1738	Train 108 back in service at Brookland track 2 in the direction of Shady Grove.
1739	Foul Time protection setup and granted for RTRA Supervisor [redacted] Unit [redacted], Safe and ERT [redacted] track 1 Rhode Island to board the incident train.
1743	RTRA Supervisor [redacted] relinquished Foul Time track 1 at Rhode Island Avenue.
1747	Train 108 Operator given permission to pass B04 signal red verifying 1B and 3B clamped.
1751	ATC [redacted] reported no visual damage to switches 1A and 3A at Rhode Island Avenue. ERT [redacted] request permission to move train over switches speeds no greater than 5mph.
1802	Unit [redacted], RTRA Supervisor [redacted] operating 727 to clear B04 04 signal under permissive block to Brookland track 1.
1811	ATC [redacted] verified switches B04 1B and 3B unclamped.
1815	Train 727 cleared B04 interlocking and continued on non-revenue to Glenmont Yard.
1818	ATC [redacted] placed B04 interlocking back in service.
1822	Normal Service from Shady Grove to Glenmont resumed.
1837	Incident train 727 stored in Glenmont yard on track 8.

Figure 2 - MICC report redacted page 2 of 3.



View Approved Incident Report

MAXIMO TICKET#
8732149

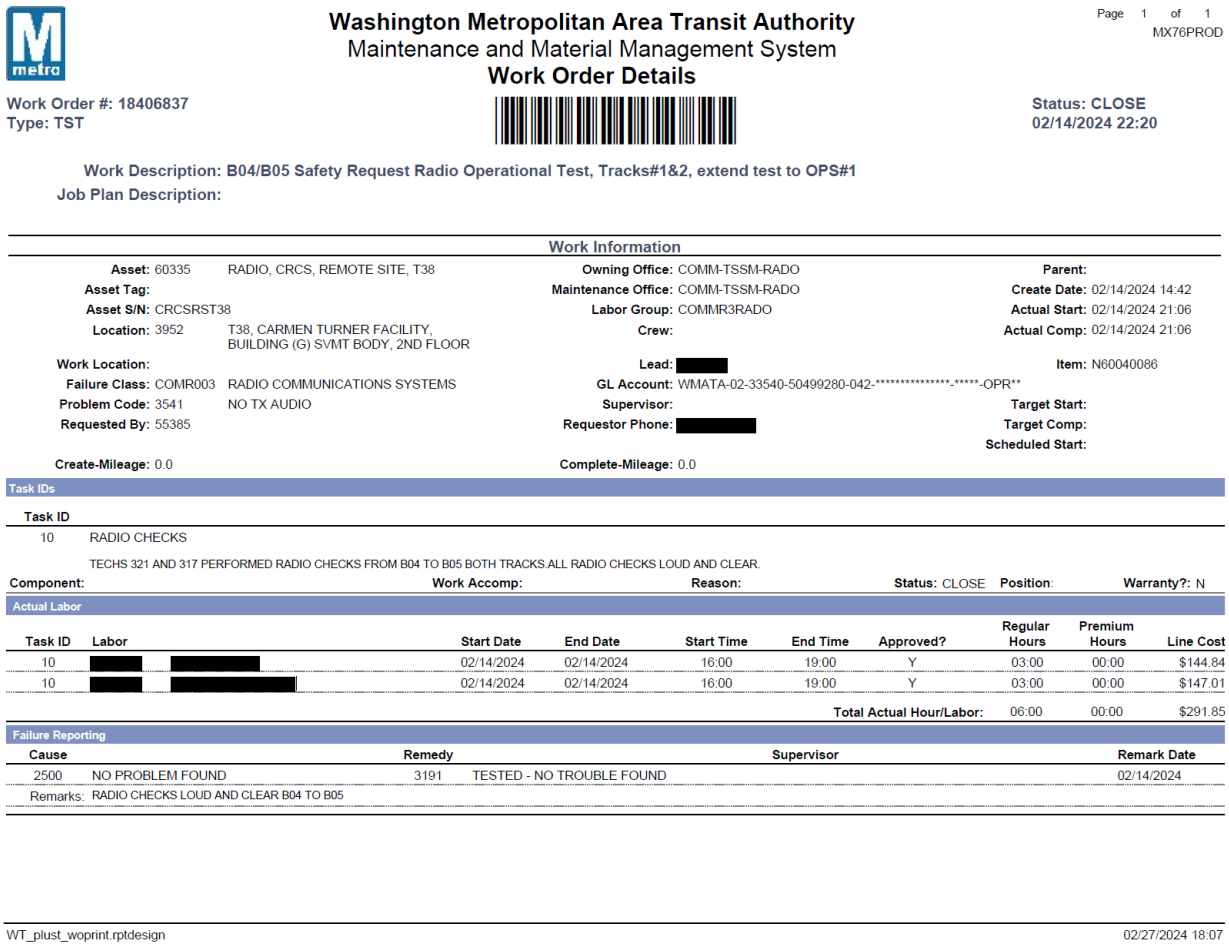
REPORT PREPARED BY	NAME	CLICK TO SIGN
RADIO CONTROLLER 1	[redacted]	✓
BUTTON CONTROLLER 1	[redacted]	✓
RADIO CONTROLLER 2		
BUTTON CONTROLLER 2		

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

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

Figure 3 - MICC report redacted page 3 of 3.

Appendix C – Work Order



Washington Metropolitan Area Transit Authority
Maintenance and Material Management System
Work Order Details

Page 1 of 1
MX76PROD

Work Order #: 18406837
Type: TST

Status: CLOSE
02/14/2024 22:20

Work Description: B04/B05 Safety Request Radio Operational Test, Tracks#1&2, extend test to OPS#1
Job Plan Description:

Work Information

Asset:	60335 RADIO, CRCS, REMOTE SITE, T38	**Owning Office:**	COMM-TSSM-RADO	**Parent:**	
Asset Tag:		**Maintenance Office:**	COMM-TSSM-RADO	**Create Date:**	02/14/2024 14:42
Asset S/N:	CRCSRST38	**Labor Group:**	COMMR3RADO	**Actual Start:**	02/14/2024 21:06
Location:	3952 T38, CARMEN TURNER FACILITY, BUILDING (G) SVMT BODY, 2ND FLOOR	**Crew:**		**Actual Comp:**	02/14/2024 21:06
Work Location:		**Lead:**	[redacted]	**Item:**	N60040086
Failure Class:	COMR003 RADIO COMMUNICATIONS SYSTEMS	**GL Account:**	WMATA-02-33540-50499280-042-**********-*****-OPR**		
Problem Code:	3541 NO TX AUDIO	**Supervisor:**		**Target Start:**	
Requested By:	55385	**Requestor Phone:**	[redacted]	**Target Comp:**	
				Scheduled Start:	
Create-Mileage:	0.0	**Complete-Mileage:**	0.0		

Task IDs

Task ID	
10	RADIO CHECKS

TECHS 321 AND 317 PERFORMED RADIO CHECKS FROM B04 TO B05 BOTH TRACKS.ALL RADIO CHECKS LOUD AND CLEAR.

Component: **Work Accomp:** **Reason:** **Status:** CLOSE **Position:** **Warranty?:** N

Actual Labor

Task ID	Labor	Start Date	End Date	Start Time	End Time	Approved?	Regular Hours	Premium Hours	Line Cost
10	[redacted]	02/14/2024	02/14/2024	16:00	19:00	Y	03:00	00:00	$144.84
10	[redacted]	02/14/2024	02/14/2024	16:00	19:00	Y	03:00	00:00	$147.01
						Total Actual Hour/Labor:	06:00	00:00	$291.85

Failure Reporting

Cause		Remedy		Supervisor	Remark Date
2500	NO PROBLEM FOUND	3191	TESTED - NO TROUBLE FOUND		02/14/2024
Remarks:	RADIO CHECKS LOUD AND CLEAR B04 TO B05				

WT_plust_woprint.rptdesign 02/27/2024 18:07

Figure 4 - Comprehensive Radio Check Work Order.

Appendix D – Scene Photographs

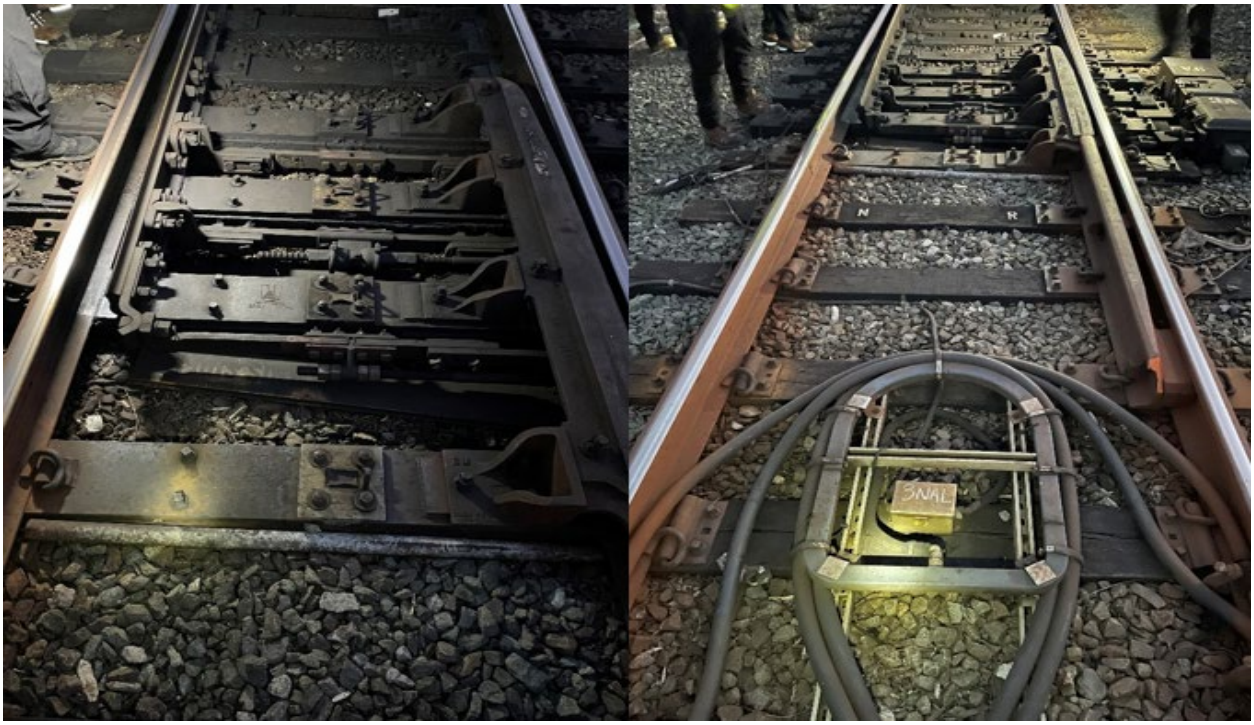
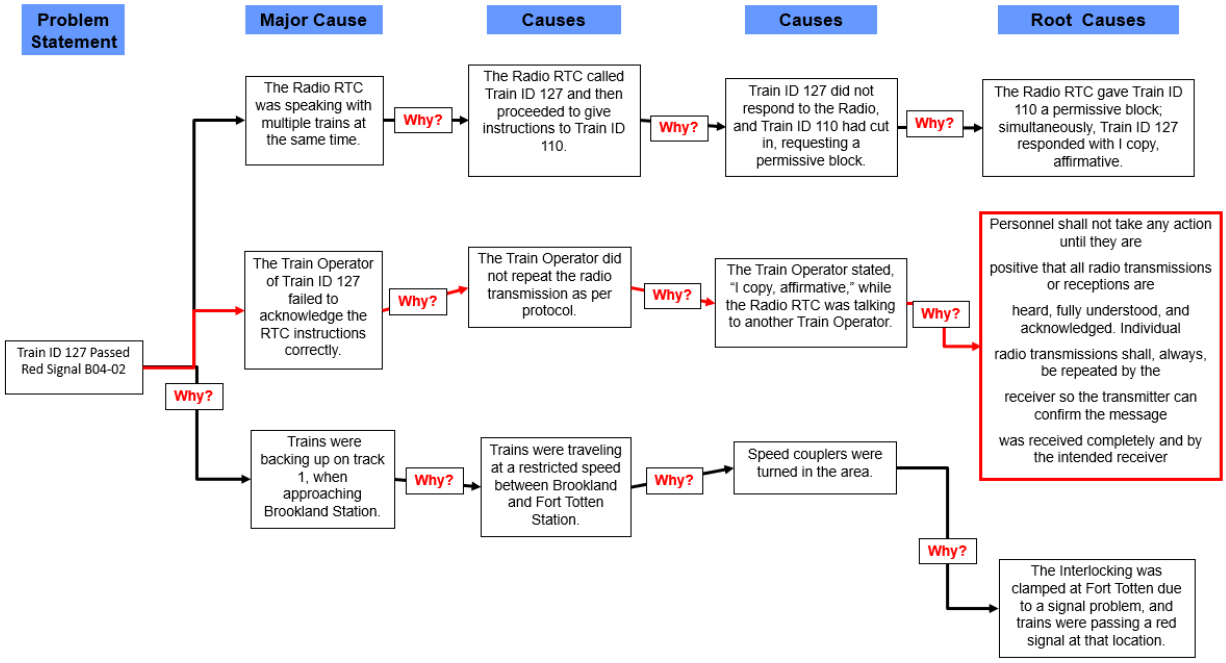


Figure 5 - depicts switch 3A with no damage to the switch or switch point.

Figure 6 - depicts switch 1A with no damage to the switch or switch point.

Appendix E – Why-Tree Analysis



Root Cause Analysis

Figure 7 - Root Cause Analysis

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

FINAL REPORT OF INVESTIGATION A&I E24130

Date of Event:	February 15, 2024
Type of Event:	O-8, Red Signal Overrun
Incident Time:	14:49 Hours
Location:	West Falls Church Station Signal K06-34, Chain Marker (CM) 524+50
Time and How received by SAFE:	14:54 Hours, SAFE/MAC
WMSC Notification Time:	16:34 Hours
Responding Safety Officers:	Office of Safety Investigation (OSI)
Rail Vehicle:	Train ID 918 (L7684-85x7477-76x7394-95x7271-70T)
Injuries:	None
Damage:	None
Emergency Responders:	None
SMS I/A Number	20240215#114804MX

West Falls Church Station – Red Signal Overrun

February 15, 2024

Table of Contents

Abbreviations and Acronyms

AIMS	Advanced Information Management System
AOM	Assistant Operations Manager
ARS	Audio Recording System
ATCM	Automatic Train Control Maintenance
CCTV	Closed-Circuit Television
CM	Chain Marker
ERT	Emergency Response Team
FCFRD	Fairfax County Fire and Rescue Department
MICC	Metro Integrated Command and Communications Center
MOR	Metrorail Operating Rulebook
MTPD	Metro Transit Police Department
NOAA	National Oceanic and Atmospheric Administration
OM	Operations Manager
RTC	Rail Traffic Controller
RTRA	Office of Rail Transportation
SAFE	Department of Safety
SMS	Safety Measurement System
TRST	Office of Track and Structures
WMATA	Washington Metropolitan Area Transit Authority
WMSC	Washington Metrorail Safety Commission

Executive Summary

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

On Thursday, February 15, 2024, at 14:49 hours, Train ID 918 (L7684-85x7477-76x7394-95x7271-70T), located at West Falls Church Station on track 3, passed signal K06-34, which was displaying a red aspect.

Prior to the event, at 14:43 hours, the Train Operator was contacted by the Metro Integrated Command and Communications Center (MICC) Radio Traffic Controller (RTC) and informed that the train on track number three would be their train in service to Vienna. The Train Operator and customers were previously on the train on track number two but were being moved due to a fire/smoke incident. The Radio RTC instructed the Train Operator to board the train on track number three, inform the customers to alight over to the same train and key up at signal K06-34 displaying a red aspect. The Train Operator acknowledged these instructions and repeated them back to the Radio RTC.

The Closed-Circuit Television (CCTV) footage shows the Train ID 918 Train Operator closing the train doors at 14:49 hours and proceeding past signal K06-34, displaying a red aspect. This is consistent with playback from the AIMS.

Immediately following the incident, the Radio RTC instructed the Train Operator to stop the train, not to move the train, reverse ends, and to begin customer evacuation through the railcars that were still on the platform. Based on CCTV footage, approximately 34 customers were evacuated from the incident train. ATCM personnel who were already on-scene, performed inspections of switches 5B and 7B and reported there was no damage and that the train could safely be moved to the yard. At 15:39 hours, the incident train began moving into West Falls Church Yard.

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 Train Operator from duty for post-incident testing.

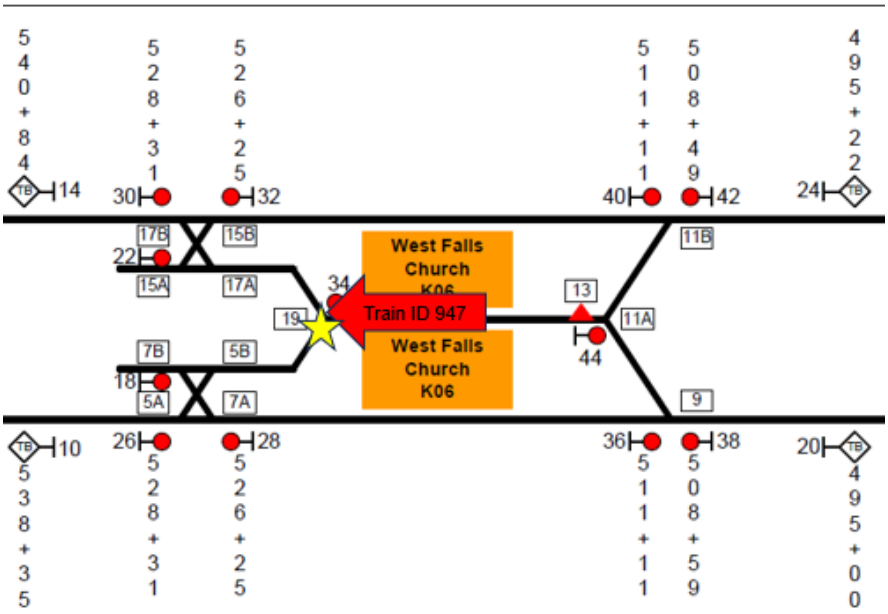
In accordance with the Office of the Chief Mechanical Officer (CMOR) Incident Investigation Team (IIT) Operations Administrative Policy (OAP) 102.06, the Metro Integrated Command and Communications Center (MICC) promptly initiated the removal of Train ID 918 from service for post-incident investigative measures. This action adhered to the Rail Vehicle Event Investigation Policy, ensuring a comprehensive examination of the incident.

The probable cause of the Red Signal Overrun on February 15, 2024, at West Falls Church Station, track three, was the Train Operator's failure to adhere to the operating rules and procedures and the failure of Stop and Proceed Mode which is utilized as a safety mitigation to work in conjunction with operating procedures. Contributing human factors are inattention and distraction.

Incident Site

West Falls Church Station Track 3, signal K06-34 at CM 524+50.

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

Upon receiving notification of the Red Signal Overrun at West Falls Church Station on February 15, 2024, SAFE dispatched a cross-functional team to assess the scene and conduct the subsequent investigation. SAFE team members worked with relevant WMATA subject matter experts to review the incident's facts and data.

The investigative methodologies included the following:

- Physical Site Assessment through document and video review
- Formal Interviews – SAFE interviewed three individuals as part of this investigation. The interviews 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:
  - Train Operator
  - Radio RTC
  - Button RTC
- 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:
    - Train Operator Incident Report
    - Train Operator Certification Records
    - Train Operator 30-Day Work History
    - Metrorail Operating Rulebook (MOR)
    - National Oceanic and Atmospheric Administration (NOAA)
    - Maximo

- System Data Recording Review – Collection of information contained in Metro Data Recording Systems. This data includes:
    - Audio Recording System (ARS) playback, including OPS 4 Radio and phone.
    - Closed-Circuit Television (CCTV)
    - The Office of Chief Mechanical Officer (CMOR) Incident Investigation Team (IIT) Vehicle Monitoring and Diagnostic System (VMDS)
    - Advanced Information Management System (AIMS)

Investigation

On Thursday, February 15, 2024, at 14:49 hours, CCTV, Advanced Information Management System (AIMS), and ATCM determined that the Train Operator of Train ID 918 (re-blocked from Train ID 775) operated their train past signal K06-34 displaying a red aspect.

Prior to the event, at 14:43 hours, the Radio RTC contacted the Train ID 918 Train Operator, and informed that the train on track number three would be their train in service to Vienna. The Train Operator and customers were previously on the train on track number two but were being moved due to a fire/smoke incident that was on track number two.

At 14:48 hours, the Audio Recording System (ARS) revealed that the Radio RTC inquired if the train on track three at West Falls Church Station was keyed up at signal K06-34 displaying a red aspect. The Train Operator responded they were standing by at K06-34 and ready for mainline. The Radio RTC then explained to the Train Operator the single tracking operation from West Falls Church Station to Vienna Station in service via track one. The Train Operator acknowledged these instructions and repeated them back to the Radio RTC.

At 14:49 hours, CCTV showed the Train Operator closing the train doors and proceeded to operate the train past signal K06-34 displaying a red aspect. This is consistent with playback from the AIMS.

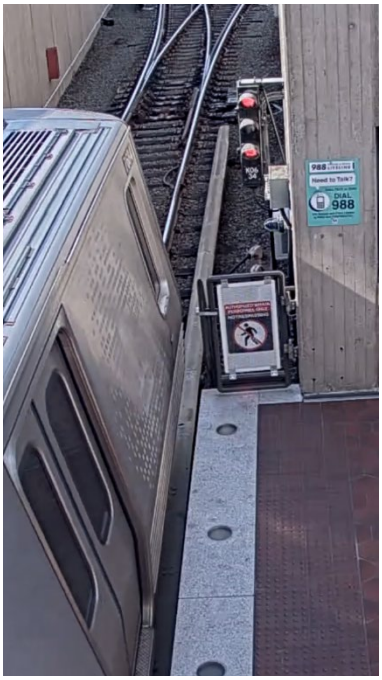


Figure 1 Train ID 918 moving past signal K06-34 displaying a red aspect at 14:49 hours

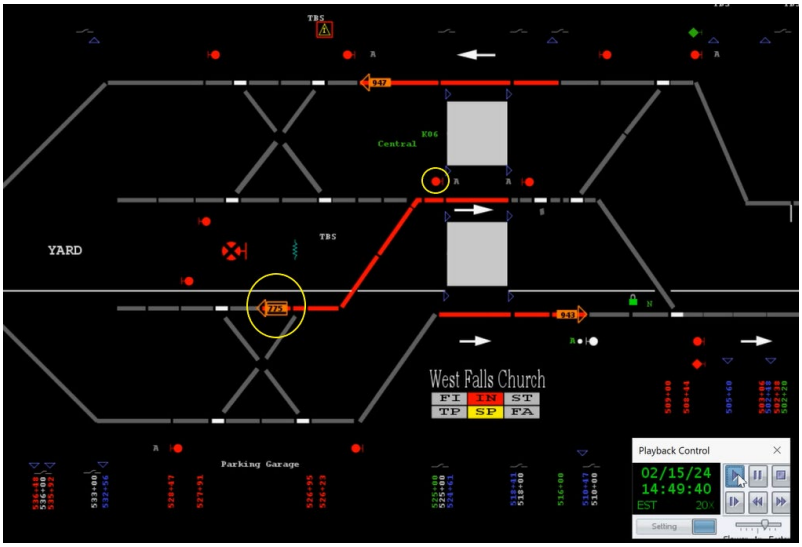


Figure 2 AIMS confirmed the red signal overrun at 14:49 hours

Following this, the Train Operator, and the Radio RTC both begin to transmit messages to one another. The Train Operator is heard reporting they have the wrong alignment, and the Radio RTC is heard telling the Train Operator to stop their train. The Radio RTC then instructed the Train Operator to key their train down and reverse ends. The Train Operator acknowledged these instructions and repeated them back to the Radio RTC.

At 14:52 hours, the Radio RTC instructed the Train Operator to hold their position and to not move the train. The Train Operator never acknowledged these instructions.

At 14:52 hours, the ARS revealed that, the Assistant Operation Manager (AOM) reported the red signal overrun to the Operations Manager (OM). The OM inquired if a lead had been set or if permission was given to move. The AOM replied they were unsure and that they would have to pull the tapes. The OM instructed the AOM to not move the train and verify the back of the train

was still on the platform. Verification was made that cars were still on the platform and instructions was given by the AOM to start evacuating the train through the cars that were still on the platform.

At 14:53 hours, the Train Operator informed the Radio RTC that they had reversed ends, keyed up, and were awaiting instructions. The Radio RTC then instructed the Train Operator to key down their train, provide a radio check from their handheld radio, and to prepare to evacuate customers to the platform. The Train Operator acknowledged these instructions and repeated them back to the Radio RTC.

At 14:55 hours, the Radio RTC instructed the Gap Operator and the Train Operator of ID 918 to evacuate the customers to the platform through the cars that are still on the platform. CCTV showed the Gap Operator opening a set of train doors on car number 7395 using a crew key to start evacuating customers. Three MTPD officers also boarded the train to assist with the evacuation.

At 15:01 hours, CCTV shows MTPD and the Train Operator of train ID 918 exiting the train after all customers were evacuated. Based off the CCTV footage reviewed, a total of 34 customers were evacuated from the incident train.

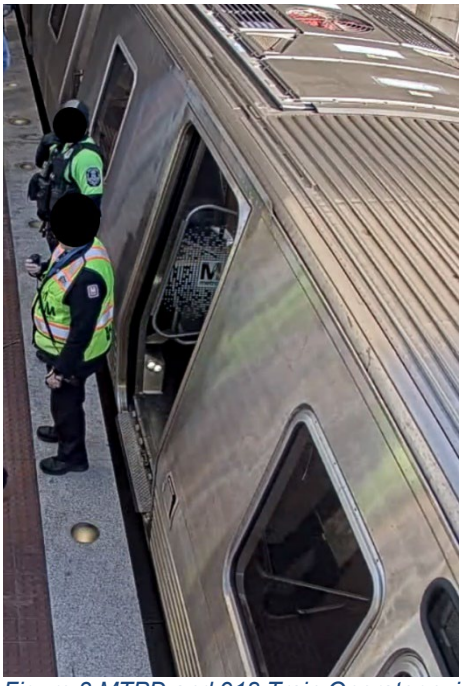


Figure 3 MTPD and 918 Train Operator exiting the incident train after all customers were evacuated.

At 15:21 hours, the Radio RTC instructed ATCM to clamp switches 5A and 7A in the normal position. ATCM acknowledged these instructions and repeated them back to the Radio RTC.

At 15:23 hours, the AOM contacted the West Falls Church Interlocking Operator and requested a Yard Operator to move the incident train.

At 15:25 hours, the Radio RTC instructed ATCM to perform inspections of switched 5B and 7B for damage.

At 15:27 hours, West Falls Church Interlocking Operator instructed the Yard Operator to report to West Falls Church Station, contact the Incident Commander, and perform a radio check on Ops 4 with the Radio RTC.

At 15:30 hours, an RTRA Supervisor arrived on the scene removed the operator from service, and transported them for Post Incident Testing.

At 15:34 hours, ATCM reported a good inspection of switches 5B and 7B and states its safe for train movement.

At 15:38 hours, the Radio RTC gave the West Falls Church Train Operator a permissive block to signal K99-54 and instructed them to proceed at a speed no greater than 5mph.

At 15:39 hours, CCTV shows the incident train began moving into West Falls Church yard.

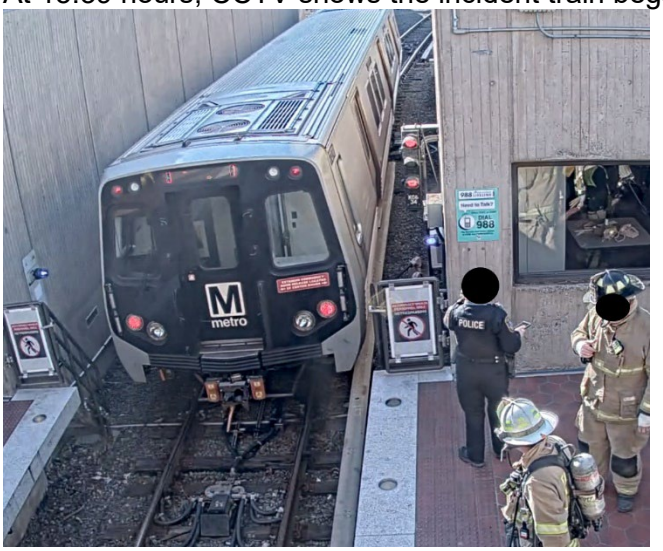


Figure 4 Train ID 918 moving into West Falls Church rail yard.

At 15:40 hours, the West Falls Church Yard Operator contacted the West Falls Church Interlocking Operator and requested permission to enter the West Falls Church rail yard. The Interlocking Operator gave the Yard Operator permission, and the train was stored on track 6B.

Chronological Event Timeline

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

Time	Description
14:23:32 hours	Train ID 918: Reported departing West Falls Church Station on track two and observing smoke. [Radio Ops 4]
14:27:08 hours	Train ID 918: Reported past signal K99-32 and stopped before the interlocking switch points. [Radio Ops 4]
14:27:45 hours	Radio RTC: An RTRA supervisor was dispatched to the incident location.
14:27:55 hours	Button RTC: Advised the Operations Manager. [Phone, Ops 4]
14:28:00 hours	Radio RTC: Advised the Gap Operator to verify what the operator was reporting on track 2. Gap Operator: Acknowledged. [Radio, Ops 4]
14:28:15 hours	OM: Advised AOM of the incident. [Phone, Rail 2]
14:28:25 hours	AOM requested ERT. [Phone, Ops 4]
14:28:31 hours	Radio RTC: Instructed the Train Operator to key down, reverse ends, and prepare to move the train back onto the platform at West Falls Church Station on track two. [Radio Ops 4]
14:31:13 hours	Gap Train Operator: Reported located at West Falls Church Station and would assist with moving the train on the platform. [Radio Ops 4]

Time	Description
14:31:47 hours	Radio RTC: Granted an absolute block to Train ID 918 to properly berth on the platform at West Falls Church Station on track two. [Radio Ops 4]
14:43:49 hours	Radio RTC: Instructed the Train Operator to board the train on track number three and instructed them to key up and standby at signal K06-34 red. [Radio Ops 4]
14:44:15 hours	Train Operator: Acknowledged the Radio RTC's instructions and repeated them back. [Radio Ops 4]
14:48:16 hours	Radio RTC: Inquired if the Train Operator was keyed up at signal K06-34 displaying a red aspect. [Radio Ops 4]
14:48:27 hours	Train Operator: Informed the Radio RTC they were standing by signal K06-34 and ready for mainline. [Radio Ops 4]
14:48:32 hours	Radio RTC: Advised single tracking operation utilizing track one. Train Operator: Acknowledged the Radio RTC's instructions and repeated. [Radio Ops 4]
14:49:25 hours	Train ID 918 passed signal K06-34, displaying a red aspect. [CCTV]
14:49:40 hours	Train ID 918 overran K06-34 Signal. [AIMS]
14:49:50 hours	Train Operator: Reported the track was aligned to West Falls Church Yard. Radio RTC: Instructed to stop the train. [Radio Ops 4]
14:50:07 hours	Radio RTC: Instructed the Train Operator to key down and reverse ends. Train Operator: Acknowledged the Radio RTC's instructions and repeated. [Radio Ops 4]
14:51:05 hours	Radio RTC: Instructed the Train Operator to key down, reverse ends, and move the train back to the platform. [Radio Ops 4]
14:51:22 hours	Radio RTC: Instructed the Train Operator to advise when they had reversed ends Train Operator: Acknowledged the Radio RTC's instructions and repeated. [Radio Ops 4]
14:52:15 hours	Radio RTC: Instructed the Train Operator to hold their position once they reversed ends and not to move the train. [Radio Ops 4]
14:53:20 hours	Train Operator: Reported they had keyed up on the opposite end and were waiting for further instructions. [Radio Ops 4]
14:53:27 hours	Radio RTC: Instructed the Train Operator to key down the train, provide a radio check on their handheld radio, and prepare to evacuate customers to the platform. [Radio Ops 4]
14:52:29 hours	AOM: Reported to OM, there was a red signal overrun at West Falls Church Station. OM: Inquired if a lead had been set or if permission was given to move the train. AOM: Reported they were unsure and would have to pull the tapes. OM: Instructed AOM not to move the train and verify the train was still on the platform. AOM: Verified railcars were still on the platform and instructed the Radio RTC to begin evacuating customers. OM: Instructed AOM to have ATCM inspect the interlocking. AOM: Instructed RTC to notify ATCM and have them inspect the interlocking. OM: Instructed AOM to have ATCM inspect, verify its safe, and clamp the switches. [Phone Metro 1]
14:54:24 hours	Radio RTC: Instructed the Train Operator to standby and advise if there are any cars still on the platform. Train Operator: Reported there were cars still on the platform. [Radio Ops 4]

Drafted By: SAFE 705 – 04/15/2024
Reviewed By: SAFE 707 – 04/15/2024
Approved By: SAFE 707 – 04/15/2024

Time	Description
14:54:43 hours	Radio RTC: Instructed the Gap Train Operator at West Falls Church Station to assist with evacuation of the customers. Gap Train Operator: Acknowledged the Radio RTC's instructions and repeated. [Radio Ops 4]
14:54:56 hours	Train Operator: Reported two cars remaining on the platform. [Radio Ops 4]
14:55:04 hours	Radio RTC: Instructed the Train Operator to guide customers through train and evacuate them through the cars that were still on the platform. Train Operator: Acknowledged the Radio RTC's instructions and repeated. [Radio Ops 4]
15:01:29 hours	Gap Train Operator: Reported the train on track three at West Falls Church Station was clear of customers. Radio RTC: Acknowledged. [Radio Ops 4]
15:07:19 hours	Radio RTC: Announced that trains were single-tracking from East Falls Church Station to Vienna Station on track number one. [Radio Ops 4]
15:11:39 hours	Radio RTC: Inquired if ATCM was at West Falls Church Station. [Radio Ops 4]
15:15:00 hours	Radio RTC: Inquired if ATCM personnel were on-scene at K06 and to give a radio check. [Radio Ops 4]
15:19:25 hours	Radio RTC: Attempted a radio check with ATCM personnel at West Falls Church Station. [Radio Ops 4]
15:19:39 hours	Radio RTC: Inquired with ERT personnel if ATCM personnel were present at West Falls Church Station. ERT: Reported they (ATCM) were there. Radio RTC: Requested ERT have them (ATCM) give them (Radio RTC) a radio check.
15:20:12 hours	ATCM: Gave the Radio RTC a radio check. [Radio Ops 4]
15:21:03 hours	Radio RTC: Informed ATCM personnel they had instructions for them, but they would have to go through the IC at West Falls Church Station.
15:21:14 hours	ATCM: Acknowledged the Radio RTC's instructions and stated they would go talk to the IC. Radio RTC: Instructed ATCM to standby and then instructed them to enter the roadway to clamp switches 5A and 7A in the normal position and to clamp the adjacent switches as well.
15:21:38 hours	ATCM: Acknowledged the Radio RTC's instructions and repeated them back. [Radio Ops 4]
15:21:49 hours	Radio RTC: Informed ATCM they needed switches 5A and 7A clamped first. ATCM: Acknowledged track one first. [Radio Ops 4]
15:23:23 hours	AOM: Contacted West Falls Church Interlocking Operator and requested a Yard Operator to move the incident train. [Phone Rail 2]
15:23:35 hours	ATCM: Requested permission to enter the roadway at West Falls Church Station to clamp switch 5 and 7 in the normal position.
15:24:05 hours	ATCM: Repeated the request for permission to enter the roadway at West Falls Church Station to clamp switch 5 and 7 in the normal position. [Radio Ops 4]
15:24:15 hours	Radio RTC: Acknowledged ATCM request and advised them to standby. [Radio Ops 4]
15:25:44 hours	Radio RTC: Instructed ATCM to perform an inspection of switches 5B and 7B for damage.
15:26:09 hours	Radio RTC: Gave permission to ATCM under Foul Time to enter the roadway to inspect switches 5B and 7B.

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Approved By: SAFE 707 – 04/15/2024

Time	Description
	ATCM: Acknowledged the Radio RTC's instructions and repeated them back. [Radio Ops 4]
15:27:07 hours	West Falls Church Interlocking Operator: Instructed the Yard Operator to report to West Falls Church Station, to contact the IC, and to give the Radio RTC a radio check on Ops 4. Yard Train Operator: Acknowledged the instructions. [K99 Yard Mic]
15:27:59 hours	Radio RTC: Informed ATCM there was going to be train movement on track 1 and informed Train ID 908 to lookout for personnel on track three and the yard lead. ATCM: Acknowledged the train movement on track one. Train Operator: Acknowledged the Radio RTC's instructions and repeated them back. [Radio Ops4]
15:32:26 hours	West Falls Church Yard Operator: Contacted the Radio RTC and informed they were instructed to contact them to assist with movement of the incident train. [Radio Ops 4]
15:32:53 hours	Radio RTC: Acknowledged the Yard Train Operator and instructed them to standby until they were ready to move the train. [Radio Ops 4]
15:33:08 hours	Rail Supervisor: Reported they were on-scene at West Falls Church Station. [Radio Ops 4]
15:33:26 hours	Radio RTC: Instructed the Yard Train Operator to make their way through the consist to the lead cab in the direction of West Falls Church yard. Yard Train Operator: Acknowledged the Radio RTC's instructions and repeated the back.
15:34:35 hours	ATCM: Reported good inspection of switches 5B and 7B and its safe for train movement. Radio RTC: Acknowledged ATCM's report and inquired if they (ATCM) were clear of the roadway and in a place of safety. ATCM: Reported they were still on the roadway but in a place of safety. Radio RTC: Acknowledged. [Radio Ops 4]
15:36:52 hours	Radio RTC: Informed ATCM that once the Yard Train Operator was ready to move the incident train into West Falls Church yard, they (ATCM) would need to walk the train through the switches. [Radio Ops 4]
15:37:30 hours	Yard Train Operator: Informed the Radio RTC they were in the lead car of the incident train. Radio RTC: Acknowledged. [Radio Ops 4]
15:37:41 hours	Radio RTC: Inquired if ATCM understood their transmission. ATCM: Acknowledged they would walk the incident train into West Falls Church Yard. [Radio Ops 4]
15:38:11 hours	Radio RTC: Instructed the Yard Train Operator to proceed at a speed of no greater than 5mph with a permissive block to signal K99-54 signal, be on the lookout for ATCM personnel and contact the Interlocking Operator. Yard Train Operator: Acknowledged the Radio RTC's instructions and repeated them back. [Radio Ops 4]
15:40:54 hours	Yard Train Operator: Contacted the West Falls Church Interlocking Operator and informed them they were in approach to the signal K99-52 displaying a red aspect. West Falls Church Interlocking Operator: Acknowledged the Yard Train Operator and corrected them that they were in approach to signal K99-54 displaying a red aspect. The Interlocking Operator gave the Yard Train Operator an absolute block to signal K99-68 displaying a red aspect and to hold at that location.

Drafted By: SAFE 705 – 04/15/2024
Reviewed By: SAFE 707 – 04/15/2024
Approved By: SAFE 707 – 04/15/2024

Time	Description
	Yard Train Operator: Acknowledged the Interlocking Operator instructions and repeated them back. [K99 Yard Mic]
15:41:55 hours	West Falls Church Interlocking Operator: Gave the Yard Train Operator an absolute block from signal K99-68 displaying a lunar aspect to track 6B and advised to follow all yard procedures. Yard Train Operator: Acknowledged the Interlocking Operator instructions and repeated them back. [K99 Yard Mic]

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

The Office of Rail Transportation (RTRA) Supervisor's Report

The RTRA Supervisor on the scene stated at 15:30 hours, they heard Train ID 918 was heading in the direction of West Falls Church Yard instead of the direction of Vienna Station.

At 15:15 hours, West Falls Church Division Management arrived at East Falls Church Station and transported the Supervisor to West Falls Church Station due to the initial report of smoke on the roadway near signal K06 – 32.

At 15:30 hours, the Supervisor arrived at West Falls Church Station and transported the operator for Post Incident Testing at 16:00 hours.

The Office of the Chief Mechanical Officer's Incident Investigation Team (CMOR-IIT)

Executive Summary:

- IIT found that the Train performed as it was designed and operated as commanded.
- IIT confirmed that the Train ID was 775.
- Before the event the incident train departed from Vienna Station on Track # 2 and was inbound toward West Falls Church Station, track #3.
- IIT confirmed that the Incident occurred at West Falls Church Station on Track # 3.
- IIT confirmed that the Train Operator proceeded through Signal K06-34 on a RED Signal.

ROCS SPOTS REPORT

Current date/time: Wed Feb 21 21:04:11 2024

and/or Select 4-digit car number: 7684

Select Date: Feb 15 2024 Select Times (0-24HRS): From 14:00 To 21:00

ID	Platform	length	dcode	Right door open	Right door close	dwell	Left door open	Left door close	dwell	Head Arrived	Tail cleared	cars	Headway door open to door open
775	K07-1	8	95							14:07:51	14:08:16	7684-7685.7477-7476.7394-7395.7271-7270	-
775	K06-3	8	94							14:11:15	15:40:26	7684-7685.7477-7476.7394-7395.7271-7270	-

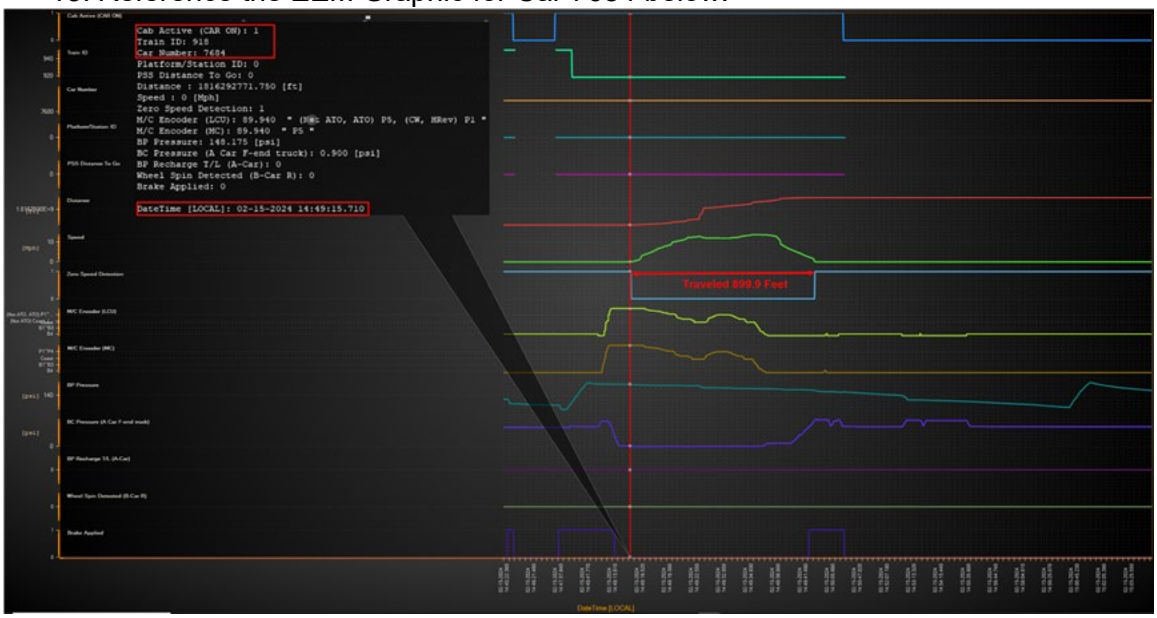
See timeline below:

Train Operation:

1. At 14:03:37, Train ID 775 (Lead Car 7270) was keyed up at Vienna Station.
2. At 14:03:46.420, the Train detected Platform ID 244.
3. At 14:08:00.580, the Train passed Dunn Loring Station, detecting the without stopping.
4. At 14:11:46.110, the Train approached the 8-car Marker at West Falls Church and came to a Stop.
5. At 14:11:47.190, the Train Keyed Down.

6. Reference the EEM Graphic for Car 7270 below.

7. At 14:47:32.970, Car 7684 Keyed Up.
8. At 14:48:04.590, the Train ID was changed to 918.
9. At 14:49:13.630, the Master Controller was moved to "P5" power.
10. At 14:49:15.810, Train Zero Speed went to Zero; the train began to move.
11. Reference the MP4 Video Combined Forward and Console Cameras from Car 7684.
12. Signal K06-34 was RED when the train began to move.
13. At 14:49:43.550, the train stopped after moving 899.9 Feet.
14. At 14:50:16.20, the train keyed down.
15. Reference the EEM Graphic for Car 7684 below.



16. At 15:38:07.740, the train keyed up.
17. At 15:339:40.420, the train's zero speed went to zero, and it began moving into West Falls Church Yard.
18. Reference the TPS ROCS Graphic Executive Traffic Display showing Train movement.

Interview and Written Statement Findings

As part of the investigation launched into the event, SAFE interviewed three 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.

Train Operator (Train ID 918) Formal Interview

- The Train Operator stated that they departed Vienna Station on their third and last trip on time. While traveling in the downtown area, Eastern Market Station was closed, and there was no train service between Federal Center SW Station and Stadium-Armory Station.
- The Train Operator stated that upon arriving at Federal Center SW Station, they reversed the ends of the train.
- When they arrived at West Falls Church Station, they serviced the station and began to continue; they noticed what appeared to be smoke ahead of the train. They were instructed to reverse ends, and take the train back to the platform and offload.
- The Train Operator stated that the Radio RTC told them to board the gap train that was in the pocket track, load the customers, and continue to track one.
- The Train Operator stated that they boarded the train, entered the train ID 918 and destination code, and then noticed the train had speed commands. The Train Operator stated that they thought the signal was lunar, and they advised the MICC that they had a lunar and that they were leaving the station.
- The Train Operator stated that they apparently thought they did not have a lunar and had never had a red signal overrun in their career.
- The Train Operator stated that they noticed that the train was going toward the yard, they stopped the train and notified the MICC.

Radio RTC's Formal Interview

- The Radio RTC stated they were the assigned Radio RTC at the time of the incident. The Radio RTC stated they were one of two RTC's operating at the time of the incident on OPS 4.
- The Radio RTC stated at the time of the incident, they initially believed a route had been set for the Train Operator as the Train appeared to be moving without speed commands.
- The Radio RTC stated that they then noticed an AIM Display alarm sound indicating a Red Signal Overrun. The Radio RTC stated that the Train Operator did not engage stop and proceed mode.
- The Radio RTC stated they then had the Train Operator clear Train ID 918 of all customers and confirm clear. The Radio RTC stated they did not believe that the Train Operator was instructed to key up and reverse ends after the red signal overrun.
- The Radio RTC stated this was their first red signal overrun.

Button RTC's Formal Interview

- The Button RTC stated they were in the restroom at the commencement of the incident. The Button RTC stated that the first action conducted by the MICC upon their return to their station was single-tracking operations were in effect.
- The Button RTC stated they did not set any routes for Train ID 918 prior to the incident.
- The Button RTC stated that the Radio RTC performed both roles at the onset of the incident.

Office of Systems Maintenance, Office of Radio Communications (COMR)

No communication issues were identified as being contributory to the incident.

Automatic Train Control Maintenance (ATCM)

ATCM responded to the site of the incident and inspected the track gear and switches 5B and 7B. ATCM concluded no damage befell any of the equipment. ATCM further determined that Train ID 918 did overrun K06-34 Signal.

Weather

On February 15, 2024, at the time of the incident, NOAA recorded the temperature as 47°F, conditions were mostly cloudy, winds 15 mph, and 48% humidity. The weather was not a contributing factor in this incident (Weather source: NOAA) – Location: Sterling, VA

Related Rules and Procedures

Metrorail Operating Rulebook (MOR)

- 3.3 Signals Requiring a Stop
- 9.8 Speed Commands

Incident Management Standard

Human Factors

Fatigue

Signs and Symptoms of Fatigue

OSI evaluated conditions at the time of the incident to distinguish whether evidence of fatigue was present. Video of the incident was reviewed for behaviors suggesting fatigue. No indications of fatigue were evident from the video. The Train Operator reported feeling fully alert at the time of the incident. The Train Operator reported experiencing no symptoms of fatigue in the time leading up to the incident.

Fatigue Risk

OSI evaluated incident data for fatigue risk factors. Risk factors for fatigue were not present. The incident time of day did not suggest an increased risk of fatigue-related impairment. The Train Operator reported keeping a regular sleep schedule in the days leading up to the incident.

The Train Operator performed afternoon work in the days leading up to the incident. The Train Operator was awake for 11 hours at the time of the incident. The Train Operator reported 7.5 hours of sleep in the 24 hours preceding the incident. The off-duty period was 14.6 hours which provides 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 Train Operator involved complied with the Drug and Alcohol Policy and Testing Program 7.7.3/6.

Findings

- Signal K06-34 was displaying a red aspect at the time of the incident.
- ATCM reported no damage to switches 5B and 7B.
- No injuries were reported, and all customers were safely evacuated to the platform via railcars that were still on the platform.

Immediate Mitigation to Prevent Recurrence

- Train Operator was removed from service for Post Incident Testing.
- Train ID 918 was removed from service for CMOR investigation.

Probable Cause Statement

The probable cause of the Red Signal Overrun on February 15, 2024, at West Falls Church Station, track three, was the Train Operator's failure to adhere to the operating rules and procedures and the failure of Stop and Proceed Mode which is utilized as a safety mitigation to work in conjunction with operating procedures. Contributing human factors are inattention and distraction.

Recommended Corrective Actions

Corrective Action Code	Description	Responsible Party	Estimated Completion Date
114804MX_SAFE CAPS_RTRA_001	Retraining of the Train Operator	RTRA	Completed

Appendices

Appendix A – Interview Summary

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.

Train Operator of Train ID 918

The Train Operator is a WMATA employee with 8 years of service and 5 total years of experience as a Train Operator. The Train Operator holds a Roadway Worker Protection (RWP) Level 2 certification that expires in September 2024.

The Train Operator stated that they take their lunch break at 08:15 am, during a 1-hour and 50-minute swing shift time at Vienna Station, and that's where they had lunch at 9 am. Afterward, they left Vienna Station on time. The Train Operator stated that the second trip is the track walker trip, and they are usually late getting to New Carrollton Station. There is a 10-minute turnaround time upon their arrival at New Carrollton Station, and there isn't any time to go to the restroom, but there is time to walk the platform to the opposite end of the train to leave on time, and that went well.

The Train Operator stated that they departed Vienna Station on their third and last trip on time. While traveling in the downtown area, they heard transmissions on radio ops four of something going on, and when they arrived at Clarendon Station and switched the radio ops to ops two, then they were able to get the information on what was happening. The Train Operator stated that Eastern Market Station was closed, and there was no train service between Federal Center SW Station and Stadium-Armory Station; they began to make announcements, and it became slow going from there.

The Train Operator stated that upon arriving at Federal Center SW Station, they reversed the ends of the train, and the time points became irrelevant. When they arrived at West Falls Church Station, they serviced the station and began to continue; they slowed the train down because they noticed what appeared to be smoke ahead of the train. They stopped the train and contacted the MICC to report smoke on the track. They were instructed to reverse ends and take the train back to the platform and offload.

The Train Operator stated that the Gap Train Operator keyed aboard the train as they were walking through to reverse ends and pulled the train back onto the platform, and then the train was offloaded. They notified the MICC that they were located at West Falls Church Station on the New Carrollton end. The Radio RTC told them to board the gap train that was in the pocket track, load the customers, and continue to track one from that location to travel around the interlocking where the smoke was.

The Train Operator stated that they were notifying the customers and talking to the opposite end of the train. They boarded the train, placed their backpack in the window, sat down, and keyed up the train. Entered the train ID 918 and destination code, then noticed the train had speed commands. The Train Operator stated that they thought the signal was lunar, and they advised the MICC that they had a lunar and that they were leaving the station. Apparently, they did not have a lunar, but they really thought that they had the lunar signal. The Train Operator stated that they had never had a red signal overrun in their career, and they are big on communication. They

departed the station and had speed commands. When they noticed that the train was going toward the yard, they stopped the train, and the train did not stop itself.

The Train Operator stated that they contacted the MICC and reported the train did not have the correct alignment. The Radio RTC responded to key down, reverse ends, and pull the train back into the pocket track. The Train Operator stated that when they arrived at the opposite end of the train, the Radio RTC asked how many cars were on the platform. They told the Radio RTC that there were two cars on the platform. The Radio RTC instructed them and the Gap Train Operator to proceed with evacuation procedures, and they had never heard that phrase before; usually, it was to offload, which confused them. The Train Operator stated that the Gap Train Operator had keyed aboard the train to get the customers off the train; once the customers were off the train, the door was closed.

The Train Operator stated that Safety and ATC arrived; ATC said that the train couldn't be moved because it passed the red signal. The Train Operator stated that they replied that the signal was lunar when the train passed. The Train Operator stated that they really thought they had a lunar because you do not get speed commands at a red signal, and the train had speed commands. The Train Operator stated that the Safety Officer asked to have a discussion, and they informed Safety that they had a lunar and provided other information. Afterward, they went to the Gap Train Operator and thanked them for their help. The Train Operator stated that the Gap Train Operator then said that they thought the signal was lunar too, and that there was a mishap. The Train Operator stated that they spoke with the Superintendent and Assistant Superintendent, and then the Rail Supervisor took them downtown. They completed the incident report and were advised that Safety would be contacting them.

The Train Operator expressed that they were most upset that they passed a red signal, and they have never done that, and the train does not have speed commands when at a red signal. They were located behind the signal and could see it. They advised that they are generally a detail-oriented person and accept responsibility for the incident.

The Train Operator reviewed the procedures before closing the train doors, then the stop and proceed process, and reported that they did not enter the stop and proceed. The Train Operator stated that Firefighters were on the platform and customers were asking questions before the incident. The Train Operator reviewed their Train Operator certification procedures and that they received a quality level two (QL-2) on the door operation procedures. The Train Operator stated that they received sufficient training and was familiar with the orange line.

Radio RTC

The Radio RTC is a WMATA employee with 5 years of service and 1 year of experience as a Radio RTC.

The Radio RTC stated they were the assigned Radio RTC at the time of the incident. The Radio RTC stated they were one of two RTC’s operating at the time of the incident on OPS 4.

The Radio RTC stated at the time of the incident, they initially believed a route had been set for the Train Operator as the Train appeared to be moving without speed commands.

The Radio RTC stated that they then noticed a visual AIM Display Alarm indicating a Red Signal Overrun. The Radio RTC stated that the Train Operator did not engage in stop and proceed mode.

The Radio RTC stated they then had the Train Operator clear Train ID 918 of all customers and confirm clear. The Radio RTC stated they did not believe that the Train Operator was instructed to key up and reverse ends after the red signal overrun.

The Radio RTC stated this was their first red signal overrun.

Button RTC

The Button RTC has been a WMATA employee for approximately 22 years having spent 1 year in their current position.

The Button RTC stated they were in the restroom at the commencement of the incident. The Button RTC stated that the first action conducted by the MICC upon their return to their station was single-tracking operations were in effect.

The Button RTC stated they did not set any routes for Train ID 918 prior to the incident.

The Button RTC stated that the Radio RTC performed both roles at the onset of the incident.

Appendix B – Oracle Report

	Washington Metropolitan Area Transit Authority	Request: [redacted]
		Date 02/23/2024
	ENGA-ATCE	From [redacted]
		To: [redacted]

Location: K06	Time of incident: 14: 49	Date of incident: 02/15/24	Train ID775 Lead car:7684
Discription: Train ID 775 (lead car 7684) passed K06-34 signal red		Control of interlocking: Central	
Initial state as of: 14: 00: 00			

Name	State	Auto	Name	State	Auto	Name	State	Auto
SW19	Reverse	-----	SW5	Normal	-----	K3-512	Vacant	-----
Signal 34	Stop	-----	Signal26	Clear	-----	19T	Vacant	-----
SW7	Normal	-----	K3-518	Vacant	-----	19BT	Vacant	-----

Recorded Event Data:

Time	Location	Status/Control	AIMS DESCRIPTION	Comments
14:07:11	K06	Control	Signal 34 Request Route Request Route	OCC set the route 26 to 34 and the Signal 26 received the entrance
14:07:13	K06	Status	Signal 26 Entrance 26 Received	
14:07:13	K06	Control	Signal 34 Request Route Request Route	
14:07:16	K06	Status	Switch Call 5 Call Reverse	Switch SW 5 has Reverse call
14:07:16	K06	Status	Switch Call 7 Call Normal	Switch SW7 has Normal call
14:07:16	K06	Status	Switch Call 19 Call Reverse	Switch Sw19 has Reverse call
14:07:18	K06	Control	Signal 34 Request Route off	
14:07:21	K06	Status	Switch Position 5 Reverse	Switch SW5 is Reverse now
14:07:22	K06	Status	Signal State 26 Clear	Signal 26 is Lunar now
14:07:22	K06	Status	Approach 26 Lock	**Train ID 775** is on the approach
14:10:24	K06	Status	Track circuit K1- 534 occupied	**Train ID 775** is located signal 26.
14:10:37	K06	Status	Track circuit K1-528 occupied	
14:10:58	K06	Status	Track Circuit 5AT Occupied	**Train ID 775** passed signal 26
14:10:58	K06	Status	Signal State 26 Stop	
14:11:00	K06	Status	Track circuit K1- 534 Vacant	**Train ID 775** is in motion
14:11:03	K06	Status	Track circuit 5BT occupied	**Train ID 775** is crossing over from Track 1 to the Track 3
14:11:03	K06	Status	Track circuit 5-7T occupied	
14:11:06	K06	Status	Track circuit 19 BT Occupied	
14:11:08	K06	Status	Track circuit 19T Occupied	
14:11:14	K06	Status	Track circuit K3-518 occupied	

Original
02/23/2024

Incident Report 0.0
Page 1 of 3
02_15_2024_Train lead_car_7684_passed K06-34 signal red 022324-22324

Recorded Event Data:				
14:11:23	K06	Status	Track circuit K1-528 Vacant	**Train ID 775** is on track 3 K06 Platform
14:11:29	K06	Status	Track circuit 5-7T Vacant	
14:11:33	K06	Status	Track circuit 5BT Vacant	
14:11:37	K06	Status	Track circuit 19BT Vacant	
14:11:41	K06	Status	Track circuit K3-512 occupied	
14:11:45	K06	Status	Track circuit 19T Vacant	
14:12:52	K06	Control	Signal 26 Request route request route	**OCC** is setting up the route for signal 26 to signal 28
14:12:53	K06	Status	Signal 26 Entrance 26 Received	
14:12:55	K06	Control	Signal 28 Request route request route	
14:12:58	K06	Status	Switch Call 5 Call Normal	**Switches 5 and 7** are in Normal position
14:12:58	K06	Status	Switch Call 7 Call Normal	
14:13:03	K06	Status	Switch Position 5 Normal	
14:49:00	K06	Control	Signal 26 Request route Cancel route	
14:49:01	K06	Status	Signal Fleeting 26 Not Fleeted	
14:49:27	K06	Status	Track circuit 19T Occupied	**Train ID 775** (Lead car 7684) passes red signal 34
14:49:30	K06	Status	Track circuit K3-512 Vacant	
14:49:33	K06	Status	Track circuit 19BT Occupied	
14:49:37	K06	Status	Track circuit 5BT Occupied	
14:49:42	K06	Status	Track circuit 7BT Occupied	
14:49:50	K06	Status	Track circuit 528Y1 Occupied	
14:55:10	K06	Control	Signal 28 Request route request route	OCC attempts signal 26 to signal 28
14:55:13	K06	Control	Signal 26 Request route request route	
14:55:14	K06	Control	Signal 28 Request route OFF	
14:55:18	K06	Control	Signal 26 Request route OFF	
14:59:44	K06	Control	Signal 26 Request route request route	
14:59:44	K06	Status	Signal 26 Entrance 26 Received	
14:59:49	K06	Status	Approach 26 Locked	
15:00:18	K06	Status	Approach 26 unlocked	
15:40:25	K06	Status	Track circuit K3-518 Vacant	**Train ID 775 with lead car 7684** continues into the yard.
15:40:47	K06	Status	Track circuit 19T Vacant	
15:40:53	K06	Status	Track circuit 19BT Vacant	
15:41:13	K06	Status	Track circuit 5BT Vacant	

Alarm Status				
15:41:25	K06	Status	Track circuit 7BT Vacant	
15:42:03	K06	Status	Track circuit 528Y1 Vacant	

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

CONCLUSION:

- Train ID 775 occupied the K06 station track 3 at 14:11:45 (track circuit K3-518, and K3-512 occupied). K06 signal 34 was red from 14:00:00 to 16:00:00. At 14:49:27 Train ID 775 passed red signal 34 and continue to the yard.

Distribution:

[redacted]

Appendix C – ATCM Documentation

COSI Signals Response Checklist

Work Order : 18409142 K06 signal 34 Over runs
Date: 2/15/2024
Location: K06
Switch Machine No: 19, 5B, 7B

1. Post Incident Inspection (Pictures)		Comments / Notes
✓	Record / document all pertinent information in the logbook	Recorded in K06 TCR log book.
✓	Record / document weather conditions	
✓	Conduct thorough inspection / assessment of incident area	
✓	Record document position of the switch(es)	
✓	Document damages, switch rod conditions, obstructions, Point openings	
✓	Report layout and track component conditions	
✓	Record conditions of associated signals including aspects (lunar, reds)	
✓	Record positions of relays (vital / non-vital)	
✓	associated with incident area (HGR, NWPR, RWPR, NWCR,	
✓	RWCR, etc...)	
✓	Record / document local control panel indications.	
✓	Perform interlocking inspection (ATC-3003)	

2. Required Testing Post Inspection		Comments / Notes
✓	Switch Obstruction (ATC-2006.12, PMI ATC-1007, 1008)	Signal lighting test could not test 34 & 26 B/C traffic locked. Need to be done after reverse
✓	Track Circuit Testing (ATC-2006.11, PMI ATC-1012, 1012C	
✓	Signal Lighting Test (ATC-2006.10)	
	Switch Detector and Route Locking Test (ATC-1003), if required	
	Switch Indication Locking Test (ATC-1009), if required	
✓	Confirm LCP / Tower board are operational per design specifications	

3. Required Documentation		Comments / Notes
	ATCM Incident Timeline Report	
	Post Inspection Testing Data Sheets	
✓	Switch obstruction data sheet	
✓	Track Circuit data sheets	
	Signal lighting Tests results 34-30 ✓ 34-22 ✓ 34-18 ✓ 34-26	
	Switch Detector and Route Locking data sheets, (if required)	
	Switch Indication Locking Test data sheets (if required)	
	AIMS ROCC Report (if Applicable)	
	Event Recorder Report (if applicable)	

SAFE Additional Requirements		Comments / Notes
	Switch Obstruction data sheets for previous calendar year	
	Interlocking data sheets for previous 6 months	

Performed during K99 EVE shift: [redacted] 2/15/2024
2403, 2418, 2463, 2484

Document 1: ATCM Switch Field Report Page 1 of 3

ATC-1000 1019				Date: 2/15/2024
Interlocking Inspection		Location Name: KOB 5A/B 7A/B 19		Work Order#: Post over sig 34
Step	Inspections	(✓)	Observations	Remedial Actions
1.1	Interlocking HW not loose/missing pin bonds/railhead bonds, and wiring intact/secured.	✓		
1.2	IJ's; cadweld bonds not defective, broken or frayed	✓		
1.3	Gauge plate/switch rods insulators not defective	✓		
1.4	Loops in good condition and properly mounted	✓		
1.5	Impendence bonds and fastenings intact/secure	✓		
1.6	MCM rail clamps, cembre connectors secure	✓		
1.7	Switch riser plates for adequate lubrication	✓		
1.8	Block Box equipment complete and in Functional Condition (Contains working equipment)	✓		
1.9	Junction box checked	✓		
1.10	ATO Markers in good condition and secure	✓		
1.11	Drainage check	N/A		
1.12	Safety wire properly installed on cannon connectors	✓		
2.1	Switch (and derail) layout hardware checked	✓		
2.2	Point rail closure, excessive wear or damage - derailing device marked with high visibility paint.	✓		
2.3	Derail Paint	N/A		
2.4	Jamb nuts on rods not loose	✓		
2.5	Switch layout for excessive pumping or movement	✓		
2.6	Cable conduit and fittings in good condition	✓		
3.1	Jamb nuts and couplings under snow covers checked (not lose or missing).	✓		
3.2	Switch machine mounting bolts secure	✓		
3.3	Switch numbering, switch covers, snow covers.	✓		
3.4	Crank cover closed and secured. Padlocks in place on all covers.	✓		
3.5	All required snow cover installed and secured in place.	✓		
4.1	Signal assembly hardware not missing - signal mast, foundation, mounting secure.	✓		
4.2	Signal lenses clean and clear	✓		
4.3	Signal name plate checked	✓		
4.4	Signal aspects checked, not dark or dim	✓		
4.5	Signal padlocks in place	✓		
4.6	Signal paint and condition checked	✓		
4.7	Wiring and Cables in good condition	✓		

Additional Remarks: Post over run inspection on signal 34 (5A/B, 7A/B & 19)

Signatures: 2403, 2418, 2463, 779

Technician, Emp No & Date: [redacted] 2/15/2024

Supervisor Approval, Emp No & Date: [redacted] 02/15/24

Compliance Supervisor Review, Emp No & Date: _____

Document 2: ATCM Switch Field Report Page 2 of 3

ATC-1000 1012A-1

AF Track Circuit Test Data - Field Office

Location Name: K06

Date: 2/15/2024

Work Order#: Train Over run 34

Track Circuit	2. Transmitter			3. CAB Signal Level F9 4550Hz			3. CAB Signal Level F10 5525Hz			4. Receiver			5.Track Circuit Shunt		6. Unintended Signal	7.Open Bond Test		8		Notes/Work Order#
	Transmit Output (YE/YE) (2.3)	PWR LVL (2.4)	Train Detection F1-F8 (2.5)	Peak to Peak Voltage (YE/YE) (3.3)	PWR LVL (3.4)	Carrier Frequency (YE/YE) (3.5)	Peak to Peak Voltage (YE/YE) (3.10)	PWR LVL (3.11)	Carrier Frequency (YE/YE) (3.12)	Input Signal (GR/GR) (4.2.1)	Input Signal (WH/BK) (4.2.2)	Output Signal (YE/BK) (4.2.3)	Mid PT Voltage (YE/BK) (5.3 ; 5.5)	Adjacent Ckt drop (5.4)	Receiver output for unintended signal (YE/BK) (6.2)	Open Bond Test (YE/BK) (7.1.6 ; 7.2)		Reviewed	Shunt Validated	
	V p-p	sw3	Freq.	V p-p	SW2	Freq.	V p-p	SW4	Freq.	V p-p	V p-p	V p-p	V p-p	(✓)	(✓)	V p-p	V p-p	(✓)	(✓)	(✓)	
19T	61.1	7	3370							4.2	3.5	15.8	4.1	✓	✓					✓	
19TX	61.1	7	3370							4.0	3.4	15.3	4.4	✓	✓					✓	
19BT	33.9	3	3903							5.2	4.8	16.4	4.0	✓	✓					✓	
5BT	27.4	4	2582							4.5	3.6	14.1	3.5	✓	✓					✓	
7BT	41.9	5	3106							6.0	4.8	18.1	4.1	✓	✓					✓	
K3-F8	56.5	4	2822							6.0	4.8	19.8	0.2	✓	✓					✓	

Test Equipment(s) (Model/Serial Number/Calibration Due): Fluke 1251 T23838

Amprobe MO-100 Digital Ohm Meter Serial No T23515 CALIBR Date 5/18/24

Additional Remarks:

Type of Shunt	Serial No	Calibration Date	Calibration Performed by
Orange Shunt	3436888	2/15/2024	[redacted]
Silver Shunt			

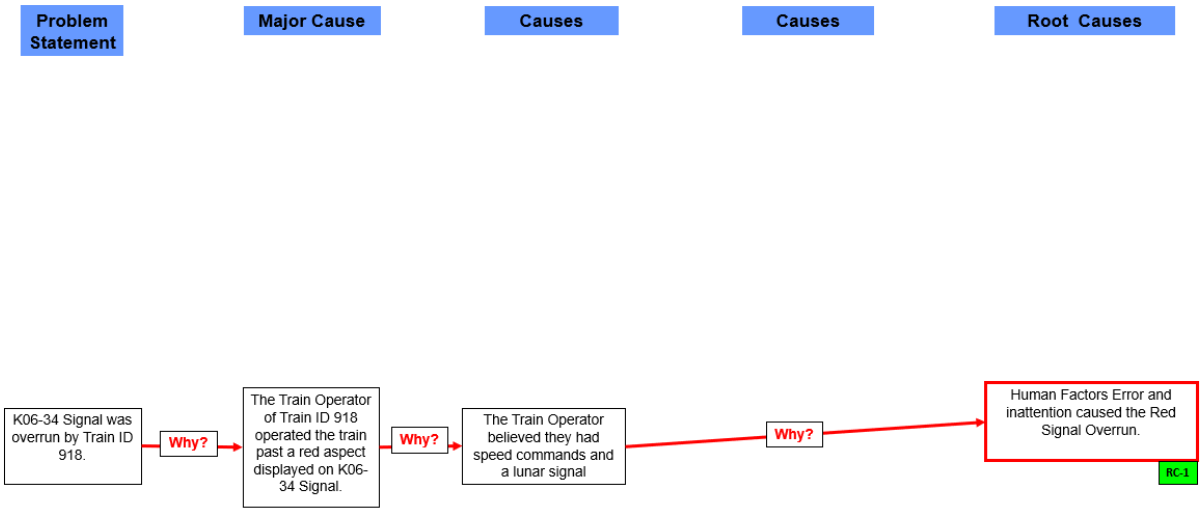
Signatures (TC Readings):
Technician, Emp No & Date: [redacted] 2/15/2024
Supervisor Approval, Emp No & Date: [redacted] 02/15/24

Signatures (TC Verifications):
Technician, Emp No & Date: [redacted] 2/15/2024
Supervisor Approval, Emp No & [redacted] 02/15/24

Compliance Supervisor Review, Emp No & Date:

Document 3: ATCM Switch Field Report Page 3 of 3

Appendix D – Why-Tree



Root Cause Analysis