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Improper Train Movement

At or Near Federal Center SW Station, McPherson Square Station, Federal Center SW Station, and Huntington Station

April 26, 2023 – June 14, 2023 – September 23, 2023 – November 20, 2023

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 August 6, 2024.

WMSC staff recommend adoption of these investigations.

Improper Train Movement

The investigations below relate to improper movement of in-service passenger trains along unintended routes. In three of the four events, these improper train movements led to near misses of collisions with other passenger trains. In the fourth event, a train carrying passengers improperly moved into a connector track between a Blue, Orange and Silver Line track and the Red Line.

One near-miss of a collision or derailment involved a train moving through a switch not aligned for the intended movement after it was clamped in the incorrect position by a terminal supervisor. This train came within 200 feet of colliding with another in-service passenger train and/or derailing at a switch between the two trains.

Two of the near misses of collisions involved train operators improperly moving against the normal flow of traffic by immediately changing ends of the train and moving west when they were assigned to first move forward to the east past an interlocking before changing ends to move the train through the interlocking to the other track. This led to the trains coming within 1,000 feet of a collision. As further described below, one of these train operators had previously demonstrated to Metrorail during training and certification that they did not understand and could not execute the requirements for safe vehicle movement. The WMSC initiated additional review of Metrorail's train operator certification practices, leading to the WMSC order issued on February 28, 2024 regarding Metrorail's noncompliance with its safety requirements that required Metrorail corrective action.

The WMSC is also investigating an improper movement event on July 21, 2024 near Dupont Circle Station that involved a train operator reversing ends and moving against the flow of traffic without first moving forward through the interlocking as instructed. This led to a near-miss of a collision with an oncoming passenger train. This location includes interlockings near either end of the station (between Dupont Circle and Woodley Park-Zoo stations and between Dupont

Circle and Farragut North stations). This investigation is ongoing. A final report will be considered by WMSC Commissioners once the investigation is complete.

Each of the safety events covered by the attached Metrorail investigation reports is described in more detail below.

The causes of and contributing factors to the events below include:

- Metrorail's noncompliance with its train operator certification requirements (WMSC order requiring Metrorail address these issues issued on February 28, 2024 following extensive communication during investigations and other oversight processes)
- Metrorail's ineffective communication practices, including noncompliance with radio repeat-back requirements designed to ensure that each communication is received and understood.
- Noncompliance with written operational rules and procedures, including radio communications practices, and a lack of supervisory oversight to correct such noncompliance behaviors.
- Fatigue: Rail Supervisor assigned to work 11 consecutive days with mix of day and overnight shifts.
- Metrorail's ineffective process to ensure that training instructors and certification personnel are empowered to identify personnel who have not demonstrated the necessary competence in safety tasks to progress in a given program.
- Metrorail's lack of process for Train Operator change-offs, including lack of required communication and identification of individual train operators to Rail Traffic Controllers and lack of information sharing with train operators.
- Train Operator moving vehicle without verifying intended signal indication and rail alignment for the intended/expected movement.
- Insufficient operational planning to identify and mitigate hazards related to planned track shutdowns such as operational hazards related to terminal operations and unusual train operator changeoffs.
- A rail supervisor clamping a switch in the unintended position (reverse rather than normal)
- Metrorail's insufficient jumper cable policy, specifically for ATC Maintenance, contributed to the service disruption that created the conditions leading up to one of these events.

As a result of these investigations, and other WMSC action, Metrorail implemented corrective actions including:

- Compliance with the WMSC's February 28, 2024 order regarding Metrorail's noncompliance with its train operator certification requirements, including initial actions and corrective action plan development and implementation to improve Metrorail's compliance with its certification practices to ensure Metrorail only assigns personnel to work who have demonstrated competency in safety tasks.
- Metrorail is reviewing and analyzing the need for a train operator changeout/relief procedure. This action was initially due at the end of June 2024. Metrorail has referred this item for operating practices committee review.
- Individual employee instruction and training.

In addition, Metrorail is planning to implement “point and call” practices for train operators, which provide for actions that increase attention to specific tasks and details. Under this practice, operators physically (point) and verbally (call) acknowledge safety and operational indications on the train and way. Metrorail safety leadership have stated they intend to offer this initially as a tool for operators, rather than a required procedure.

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

- C-0120 addressing the finding that Metrorail ignores the minimum daily release period (rest period) requirements in its Fatigue Risk Management Policy.
- C-0181 addressing the finding that elements of Metrorail have a culture that accepts noncompliance with written operational rules, instructions, and manuals.
- C-0183 addressing 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.
- C-0214 addressing the finding that Metrorail does not have adequate supervisory oversight and safety promotion to ensure that approved communications preventative maintenance instructions (PMI) are properly completed to ensure the safety of the rail system. Communications personnel are not using correct and current forms and processes necessary to ensure that safety-critical communications systems are appropriately and safely maintained.
- C-0217 addressing the finding that Metrorail personnel are not effectively communicating, responding to, and identifying issues related to trouble calls pertaining to communications systems.
- C-0218 addressing the finding that Metrorail is not maintaining hazard logs for communications systems and personnel.
- 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)
- C-0269 addresses the finding that Metrorail is not conducting retraining of personnel who do not pass certification exams as required by its Performance Standardization Program Manual, and is not consistently retesting these personnel as specified in its safety procedures. (Scheduled CAP completion December 2025, interim steps required by the WMSC’s February 2024 Train Operator Certification Order were implemented between March and July 2024)

Metrorail has completed implementation of other related CAPs including those addressing findings that Metrorail did not have training and qualification requirements for Terminal Supervisors

Ongoing WMSC evaluation:

- In addition to frequent inspections, the WMSC is scheduled to conduct in-depth audits over the next year of Fitness for Duty and Occupational Health, the Metro Integrated Command and Control Center, Rail Operations, and other areas.
- The WMSC is evaluating Metrorail's jumper cable policy and other safety issues that may require WMSC action related to a June 2024 red signal overrun and unsafe speed commands in the area where the Blue and Yellow Lines meet south of King St-Old Town Station.

Safety event summaries:

W-0309 – Federal Center SW Station (Blue, Orange, Silver Lines) – April 26, 2023 (WMATA ID: E23290)

A train operator, who Metrorail had placed into service and assigned to operate trains in passenger service despite not meeting Metrorail's train operator certification requirements, did not understand instructions from the Rail Traffic Controller, was not familiar with the location of Metrorail's switches, interlockings, and signal system indications, and improperly moved a train that had just gone out of service against the normal flow of traffic without permission or protection, creating a near-miss of a collision with a train carrying passengers.

At the time of this event, Metrorail was beginning to offload and turning back some Blue, Orange, and Silver Line trains in the middle of the line due to a switch problem near Eastern Market Station that was later determined to be a hasp linkage (a part used to indicate the position of the switch) out of adjustment in the wayside controller compartment for Switch 1A that resulted in improper locking/unlocking of the switch points. Adjustments were required to ensure the lever bracket and locking clamp fully closed, including removing a jumper cable between terminals incorrectly placed and left in the controller compartment, and adjusting a push rod to ensure proper operation.[1]

After a suggestion from a control center Assistant Operations Manager to turn a train back to reduce congestion, the Rail Traffic Controllers selected this Silver Line train to offload at Federal Center SW Station and turn back toward Virginia. The Radio Rail Traffic Controller therefore instructed the Train Operator to offload, move forward to the turnback sign, then reverse ends and move back toward Ashburn Station. Metrorail's radio communications protocols require additional detail in this communication including signal identification, interlocking identification, proceeding to the turnback, crossing over from Track 1 to Track 2, and the movement back to the Federal Center SW platform to go back into service, however review of radio communications demonstrates that Metrorail regularly accepts noncompliance with this level of detail of communication particularly during unplanned service disruptions. The Train Operator responded only "permissive block to the turnback, reverse ends."

However, the Train Operator, after offloading the train at the platform and making associated public address announcements, closed the doors and immediately moved to the other end of the train while the train was still berthed in the station, entered stop and proceed mode to move without speed commands without any additional communication about the direction of the movement with the Rail Traffic Controller, and moved toward L'Enfant Plaza Station. Because moving against the normal flow of traffic creates the risk of collision, Metrorail only permits such movement under an absolute block. The Train Operator had not received an absolute block, and such a block could not have been safely

[1] The WMSC is also investigating Metrorail's jumper practices as one element of the investigation into a June 20, 2024 unsafe speed command and red signal overrun event.

provided to the next station. Further, vehicle data show the Train Operator moved the train above the 15 mph speed permitted in stop and proceed mode in any circumstance.

The Rail Traffic Controller noticed this unsafe movement against the flow of traffic posing the risk of a collision with a passenger train and urgently and repeatedly radioed to the Train Operator to stop the train. The Train Operator stopped as directed. The Train moved 256 feet against the flow of traffic. The train came within 1,000 feet of a train on the platform at L'Enfant Plaza Station (not visible to this train operator due in part to the curved tunnel). The WMSC appreciates the action of the Rail Traffic Controllers to mitigate the risk of collision.

The Radio Rail Traffic Controller then directed the operator to change operating ends, move past the interlocking on the other side of Federal Center SW Station, and continue with the train out of service to Eastern Market Station to be relieved.

The Train Operator's training and certification records demonstrate that they had not demonstrated proficiency in safety tasks. In an investigative interview, the Train Operator could not accurately explain absolute and permissive blocks, incorrectly stated that a permissive block means movement against the flow of traffic, could not explain turnback operations, and acknowledged that one certification attempt was stopped after they did not successfully complete safety tasks including turnback movement, that a second attempt was also a failure, and that they passed on a third attempt. The Metrorail group responsible for certification through June 30, 2024 stated this third attempt was a second attempt.

The review of Metrorail's Office of Rail Transportation Managerial Incident Investigation Report demonstrates that it includes incorrect factual statements that a root cause was that "ROCC failed to provide the operator with an absolute block against the flow of traffic." In fact, such a block was not supposed to be provided and would not have been safe.

Train Operator Improperly Certified

As noted in the WMSC's February 28, 2024 order regarding Metrorail's noncompliance with its train operator certification procedures, the records of the operator involved in this event demonstrate that Metrorail had not adhered to its protocol for certification failure. This operator had not been required to successfully complete the required written testing and had failed two practical certification exams in May 2022 across multiple categories of the certification requirements.

According to Metrorail's rules, the operator should have been disqualified as a train operator for 12 months due to the two failed attempts as a student. Metrorail's manual specifies that trainee operators may receive a maximum of two attempts at certification, and operators who are recertifying may receive a maximum of three attempts. However, Metrorail recorded the first failed attempt as incomplete after inadequate performance in the rail yard that included failing to complete practical exercises in the required time to pass the certification exam. Recording this exam as incomplete is contrary to Metrorail procedures that reserved the use of incomplete for those circumstances in which the practical examination cannot be completed due to circumstances such as an emergency, and that further required that the incomplete areas be completed as soon as possible and "an overall practical score shall be assigned to the examination."

During a subsequent certification attempt beyond the time period permitted for such an attempt by Metrorail's Performance Standardization Program Manual, the operator did not properly handle radio communications, made changes to Automatic Train Protection safety systems without permission. The operator's records show the train operator did not understand turn back moves, which directly relates to this April 26, 2023 safety event. Records for the third attempt, which Metrorail recorded as a second attempt, show that the operator was certified without attempting even the items that the operator had previously

failed. This attempt had no time documented for the turn back move that the operator had failed on the second attempt, and the operator was not required to attempt yard communications (marked N/A), despite having failed that area on the second attempt. The records also showed that the operator did not retake the written exam that they had not met the required score on during the initial attempt. Instead, Metrorail designated the operator as certified based on an exam in 2020, from a prior certification attempt two years earlier. Among the areas that the train operator failed to demonstrate competency in during the two allowed practical certification exams were mainline communications (ability to set radio channels and repeat back instructions), turnback moves ("Operator was unaware of how to make a turnback move at Ballston Station), and yard communications.

Metrorail's Performance Standardization Manual does not allow marking practical exams incomplete due to poor performance. However, exams marked incomplete were then relied upon to provide personnel with additional attempts to certify or recertify contrary to Metrorail safety procedures. To ensure competency, Metrorail required initial certification to be successfully completed on either the first or second attempt. A second attempt must be completed immediately following no more than two days of refresher training. Recertifying operators are allowed up to three attempts, with the third attempt permitted after up to 14 days after a failure during a second attempt.

A failing score on the final attempt (second attempt for a new operator or third attempt for a recertifying operator) resulted in being disqualified from train operations for a specific time period. For recertifying operators, the disqualification was for 18 months. For trainees certifying for the first time, the disqualification was for 12 months. The use of "incomplete" designations on exams outside of the emergency circumstances specified in the Performance Standardization Manual is another example of Metrorail personnel not applying WMATA's documented safety requirements. As part of the above safety event investigation, Rail Transportation QA/QC reported 19 incomplete practical examinations within the past year, 10 due to conducting certification on a train that was not released for mainline use, 4 due to a lack of eight-car trains, 4 due to the inability of operators to show proficiency of tasks required for certifying, and 1 due to a request from rail training. Despite QA/QC responses referencing a lack of eight-car trains preventing certification, the Performance Standardization Program Manual specifies that certification be conducted on four-car trains.

Metrorail had placed the operator into service even though they had not demonstrated required competency with safety tasks, and had not demonstrated the required knowledge of Metrorail rules and procedures.

Metrorail training and certification personnel were aware that the operator had not demonstrated proficiency in training activities prior to conducting the failed certifications.

In accordance with the February 28, 2024 train operator certification order, Metrorail has provided documentation that it has now properly certified active operators under its certification processes, and has developed and begun to implement a new train operator certification program and internal oversight as part of the corrective action plans required to address the findings in that order. Among the changes, Metrorail has reviewed and updated its certification and recertification requirements, has trained personnel to implement the certification program, and has established initial internal oversight and controls on the process. Other steps in the corrective action plan process are scheduled to be implemented and verified incrementally through 2026.

W-0310 – McPherson Square Station/C&A Connector – June 14, 2023 (WMATA ID: E23398)

A Train Operator who had just completed a break at Ballston Station boarded Orange Line Train 904 toward New Carrollton as a passenger to reach their assigned train, in-service Silver Line Train 621 moving back toward Ballston Station. The Train Operator communicated this first to the Ops 4 Radio Rail Traffic Controller, then, after entering Ops 2 territory, to the Ops 2 Radio Rail Traffic Controller. The Ops 2 Controller instructed the Train Operator to get off Train 904 at Metro Center Station. The next train to arrive on Track 2 (the outbound track) was an out-of-service train, Train 813. The Train Operator was not aware of the assigned Train ID. The operator of Train 813 was expecting to be relieved at some point during their non-passenger movement from the New Carrollton Rail Yard to the Shady Grove Rail Yard, and therefore asked the Train Operator on the platform whether they were waiting to take over that train. The operators changed-off.

There was no communication with the Rail Traffic Controller of this change off, no communication or verification of the railcars in the consist, and no verification of the Train ID and destination code entered into the train's control systems.

The investigation identified that Metrorail has no standardized process to verify change-offs and reliefs on the mainline.

The Train Operator who took over operations believed the train was the train intended to be Train 621, but did not verify that the train had the matching identification and destination code or that the train was intended to be or was safe to be put into passenger service. Therefore, the Train Operator placed the train into service, changed the Train ID on board the train from Train 813 to Train 621, boarded riders, and moved in service to McPherson Square Station. Metrorail's systems indicated a discrepancy between the on-board Train ID and the system train ID, and the Train Operator again entered the Train ID 621 at McPherson Square Station, and now also identified that the destination code was not what the operator expected, and changed the on-board system destination code from Shady Grove Yard to Ballston Station. Metrorail's systems used by the control center continued to indicate that this was Train 813 with a destination of Shady Grove Yard. After servicing McPherson Square Station, the Train Operator moved forward 533 feet, reaching a red signal, which led to the Train Operator contacting the Rail Traffic Controller. The Train Operator reported that they were operating Train 621 at McPherson Square Station and had zero speed commands. The Radio Rail Traffic Controller said the Train Operator that was waiting to take over Train 621 should be at Metro Center Station, and told Train 621 to stand by as another train was entering the C&A Connector. The actual train operator of Train 621 stated that they were at Metro Center Station, however this communication was not acknowledged. Neither the Train Operator who had incorrectly taken over operation of Train 813 nor the Rail Traffic Controllers or any supervisory personnel (including the Rail Supervisor on board Train 813 or control center supervision) identified in real time these indications that there was confusion about the operational conditions.

Because the Advanced Information Management (AIM) System showed the train at McPherson Square as Train 813 with a destination of Shady Grove Yard, the Rail Traffic Controllers set a route for this train through the C&A Connector, a segment of track that connects the Blue, Orange, and Silver Line Track 2 at McPherson Square Station to the Red Line near Farragut North Station to allow for vehicle movement between rail lines. The Radio Rail Traffic Controller attempted to reach Train 813 to provide a permissive block to signal A-02-54 where they would contact the Ops 1 (Red Line) controllers, but got no response. The Rail Traffic Controller provided the block anyway despite receiving no response and no confirmation of understanding. The signal changed from red to a flashing lunar (proceed) signal, indicating that the route was set for a diverging move, in this case into the C&A connector. The Train Operator intended to continue straight. The Train Operator did not recognize in the moment the significance of the flashing lunar signal

and did not identify the alignment of the associated switch, which is the third switch that the operator passed when departing McPherson Square Station. The first two switches, associated with the interlocking connecting Track 1 and Track 2, were properly aligned for the Train Operator's expected movement and the movement to the C&A Connector as they were set for straight-through moves on that track.

The Train Operator moved forward, and the train began to enter the connector track.

The Train Operator stated in an investigative interview after the event that they stopped the train after feeling it move toward the connector. Overall, the train moved 1,231 feet from the station platform.

The Train Operator again identified the train as Train 621 when they reported this movement into the C&A Connector. The Train Operator stated they had a destination of Ballston Station and the wrong lead was set, and that a Rail Supervisor keyed themselves on at the trailing end of the train to assist.

The Radio Rail Traffic Controller responded that Train 621 was approaching McPherson Square Station, not beyond it. The Radio Rail Traffic Controller again attempted to provide a permissive block to Train 813 to signal A02-54, and the Train Operator then stated they were Train 621 that had taken the lead into the C&A Connector.

The Rail Supervisor reported to the controller that the train operator had taken the wrong train and picked up riders.

The Rail Supervisor assisted with moving the train back to McPherson Square Station as directed by the Rail Traffic Controllers.

W-0311 – Federal Center SW Station – September 23, 2023 (WMATA ID: E23666)

A train operator, not familiar with the location of Metrorail's switches, interlockings, and signal system indications, improperly moved a train against the normal flow of traffic without permission or protection, creating a near-miss of a collision with a train carrying passengers.

At the time of this event, Metrorail was beginning to turn back some Blue, Orange, and Silver Line trains in the middle of the line due to a a bicycle that was on the roadway at Minnesota Avenue Station. The Rail Traffic Controller instructed this Train Operator holding at Federal Center SW Station to offload riders, clear the interlocking, then reverse ends to move the train to the opposite track and return toward Vienna Station. The Train Operator repeated back the instructions.

However, the Train Operator, after offloading the train at the platform, closed the doors and immediately moved to the other end of the train while the train was still berthed in the station, entered stop and proceed mode to move without speed commands without any additional communication about the direction of the movement with the Rail Traffic Controller, and moved toward L'Enfant Plaza Station. Because moving against the normal flow of traffic creates the risk of collision, Metrorail only permits such movement under an absolute block. The Train Operator had not received an absolute block, and such a block could not have been safely provided to the next station. The Rail Traffic Controllers did not immediately realize the operator had keyed up at what had been the trailing end of the train, and provided instructions to verify a lunar (proceed signal) at signal D04-02 and that the operator had a permissive block to the turnback location. Signal D04-02 was in the original direction of travel. No signal was present in the direction of travel

that the operator actually moved in. In any case, an absolute block is required for movement against the flow of traffic, which the Train Operator did not identify.

The Train moved more than 442 feet against the flow of traffic at speeds up to 10.7 mph. The train came within approximately 800 feet – 1 1/3 train lengths – of a train holding on the platform at L'Enfant Plaza Station (a train not immediately visible to this train operator due in part to the curved tunnel).

The Rail Traffic Controller noticed this unsafe movement against the flow of traffic posing the risk of an imminent collision with a passenger train and urgently and repeatedly radioed to the Train Operator to stop the train. The Train Operator stopped as directed, utilizing normal braking. The WMSC appreciates the action of the Rail Traffic Controllers to mitigate the risk of collision.

The Controller directed the Operator to return to the other end of the train, and move the train out of passenger service toward the New Carrollton Rail Yard. The Train Operator stated over the radio that they believed they had been told to move to the Vienna-bound end of the train, despite the previous instructions several minutes earlier that were followed-up on by the instruction related to the specific lunar signal. The Train Operator's repeat back had not included the signal identification as required by Metrorail procedures, and this was not corrected. The Train Operator's repeat back of the final instruction included only "Verify lunar, permissive block to the turn back."

Train Operator Improperly Certified

The Train Operator in this event had been designated as certified despite not meeting Metrorail's safety requirements for their most recent certification. Written exam scores on operational rules and procedures were below Metrorail's requirement of 75% for a train operator. The Train Operator scored 72% on a rules and procedures exam and 73% on the TVOIM exam, but Metrorail designated the operator as certified in August 2023.

As noted above, due to the WMSC's oversight, including the WMSC's February 2024 order, Metrorail has provided documentation that it has now properly certified active operators, and has developed and begun to implement a new train operator certification program and internal oversight as part of the corrective action plans required to address the findings in that order. Among the changes, Metrorail has reviewed and updated its certification and recertification requirements, has trained personnel to implement the certification program, and has established initial internal oversight and controls on the process. Other steps in the corrective action plan process are scheduled to be implemented and verified incrementally through 2026.

W-0312 – Huntington Station – November 20, 2023 (WMATA ID: E23840)

A switch clamped in an unintended position by a Rail Supervisor, and a Train Operator not recognizing the misaligned switch, led to a near-miss of a derailment and head-on collision outside of Huntington Station in the early morning hours (approximately 5:40 a.m.) of November 20, 2023. The trains in passenger service came within 150 feet of each other.

The Terminal Supervisor at Huntington Station identified that switch 1A was out of correspondence at the interlocking on the inbound side of the station, reported this to the Rail Traffic Controller, and was then assigned to and received the necessary protection to clamp the interlocking for normal (straight-through) movement, which would be done with permission to train operators to pass red signals. The Terminal Supervisor reported that switches 1A and 3A were clamped in the normal position for a straight-through move.

However, when Train 309 was dispatched from the station on Track 1 by the Rail Traffic Controller with permission for the Train Operator to pass the red signal verifying that switches were clamped in the normal position, the train began to cross through the interlocking to Track 2 directly toward an in-service oncoming train, Train 301, on the opposite track that was stopped at the red signal on that track just outside this interlocking. The Terminal Supervisor had clamped the switch in the reverse position, not the normal position. In addition, the Train Operator had not identified the position of the switch prior to entering the interlocking. In an investigative interview, the Train Operator reported that due to it being dark (pre-sunrise), it is difficult to read the rail alignment.

The Train Operator had moved the train 150 feet from the station platform, stopped at the switch, then moved through the switch toward the other track and continued into the crossover at 6 mph. Vehicle data show the Train Operator stopped the train 25 seconds after the movement to cross over toward an oncoming train began. The train stopped approximately 150 feet from Train 301 on the opposite track.

As Train 309 entered the interlocking and moved toward Train 301, the Terminal Supervisor, another Rail Supervisor who had come to the platform to assist, and the Train Operator of Train 301 communicated over the radio to the operator of Train 309 to stop the train and that the train was moving toward Train 301. The supervisors communicated this urgently due to the imminent risk of collision. The Rail Traffic Controller acknowledged the report that Train 309 was moving towards Train 301.

The Train Operator stopped the train just prior to a potential derailment or collision.

In an investigative interview, the Train Operator stated that they observed Train 301's headlights flashing, which led to them stopping the train.

Approximately one minute later, the Radio Rail Traffic Controller contacted the Train Operator on Train 309 to confirm whether the train stopped. The Train Operator confirmed they were stopped and that they had passed the signal. The Controller asked whether the train had moved into the interlocking in the normal or reverse position, and the Train Operator then stated that the train was crossing over to Track 2.

Another Rail Supervisor responded to the station platform, boarded the trailing end of the train that was still at the station, and moved the train back into the station. This movement did not comply with Metrorail safety requirements as it did not include a protective block or direction from the Rail Traffic Controllers and occurred prior to an inspection of the switch to verify that such movement was safe and prior to other steps to document the event to ensure the most effective mitigations are developed to reduce the risk of recurrence.

Radio communication system quality issues that required multiple attempts to provide a single instruction and the interruption of radio communications loops by other personnel prevented the Train Operator from effectively communicating at times with the Rail Traffic Controllers. The Train Operator reported being able to hear the Rail Traffic Controller transmissions, but difficulty transmitting. The movement instructions were repeated back properly by the operator over the radio prior to the train's movement.

Radio checks conducted as part of the investigation demonstrated that most communication at Huntington Station was broken and digitized (difficult or impossible to understand). Metrorail's Radio Communications group identified the need

to check alignment and placement of antennas to address poor signal coverage. This had not been identified in preventive maintenance checks or other hazard identification and mitigation processes.

The Terminal Supervisor who clamped the switch in the unintended direction had been assigned to work 11 consecutive days, with mix of day and overnight shifts, including 40 hours of overtime in the last week.

In an investigative interview, the Terminal Supervisor acknowledged their mistake in clamping the switch in the wrong position. The Terminal Supervisor further reported that the Huntington Station interlocking regularly goes out of correspondence. This was confirmed by further data review This repeated failure of the control systems increases the probability that consequences such as roadway worker injuries, improperly aligned switches leading to derailment, or improperly aligned switches leading to collision may occur.

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

FINAL REPORT OF INVESTIGATION A&I E23290

Date of Event:	April 26, 2023
Type of Event:	O-7 Improper Rail Vehicle Movement
Incident Time:	16:02 hours
Location:	Federal Center SW Station
Time and How received by SAFE:	16:10 hours, Mission Assurance Coordinator (MAC)
WMSC Notification Time:	17:16 hours
Responding Safety Officers:	None
Rail Vehicle:	L7650x7651-7741x7740-7634x7635-7331x7330T At the time of the incident.
Injuries:	None
Damage:	None
Emergency Responders:	None
SMS I/A Number	20230427#108023

Federal Center SW – Improper Rail Vehicle Movement

April 26, 2023
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Abbreviations and Acronyms

AIMS	Advanced Information Management System
ATCM	Office of Automatic Train Control Maintenance
AOM	Assistant Operations Manager
CAP	Corrective Action Plan
CCTV	Closed-Circuit Television
CMOR	Office of Chief Mechanical Officer
COMR	Office of Radio Communications
IIT	Incident Investigation Team
ISE	In Service Evaluation
MOC	Maintenance Operations Control
MSRPH	Metrorail Safety Rules and Procedures Handbook
NOAA	National Oceanic and Atmospheric Administration
OCC	Operations Control Center
QA/QC	Quality Assurance / Quality Control
RTRA	Office of Rail Transportation
ROCC	Rail Operations Control Center
RTC	Radio Traffic Controller
SAFE	Department of Safety
SMS	Safety Measurement System
VMDSVMDS	Vehicle Monitoring and Diagnostic System
WMATA	Washington Metropolitan Area Transit Authority
WMSC	Washington Metrorail Safety Commission
YPT	Yard Practical Test

Executive Summary

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

On April 26, 2023, the D-line experienced a switch problem near Eastern Market Station. In response, the Rail Operations Control Center (ROCC) selected trains for offloading at strategic locations to help minimize congestion. Blue Line Plus Trains began operating between Huntington and Federal Center SW Stations. The ROCC Radio Rail Traffic Controller (RTC) instructed the Train Operator of Train ID 605 to offload their train at Federal Center SW. The Radio RTC then provided Train ID 605 with instructions, including a permissive block to the turnback sign, key down, and reverse ends in Ashburn Station's direction. The intended movement was to proceed in the normal direction of traffic to the Turnback sign at Chain Marker (CM) D1 100+50, then reverse operating ends and return to Federal Center SW Station's platform by crossing over to Track 2 in the direction of L'Enfant Plaza Station (and ultimately Ashburn Station). The Train Operator repeated back, "Permissive block to the Turnback, reverse ends."

Instead of performing the intended move, the Train Operator of Train ID 605 keyed down on lead car 7330 and changed operating ends to car 7650, facing in the direction of L'Enfant Plaza Station, which is against the normal flow of traffic. The Train Operator entered Stop and Proceed mode and moved their train against the normal traffic flow, which was not instructed by the Radio RTC. The Radio RTC then instructed Train ID 605 to stop. In total, Train ID 605 moved approximately 256 feet off the platform limits before stopping. The closest train to their location at the time was at L'Enfant Plaza Station on Track 1, which is over 1,100 feet away from the end of the platform at Federal Center SW. The Radio RTC instructed the operator to reverse operating ends and clear Federal Center SW interlocking track 1. The Radio RTC then instructed Train ID 605 to remain out of service, proceed to Eastern Market Station, and hold.

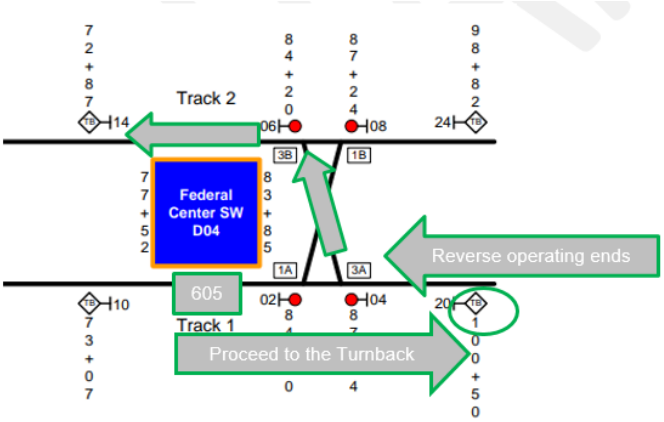
RTRA removed the Train Operator from service per Standard Operating Procedure (SOP) 102-01, Removing an Employee from Service. The ROCC removed the Radio RTC from service for post-incident testing for providing incorrect instructions to Train ID 605. No injuries or damage were reported during this event.

The probable cause of the improper rail vehicle movement was a human factors error of understanding instructions. A Contributing Factor to the event was ineffective communication and failure to utilize 100 percent repeat-back between the Radio RTC and the Train Operator.

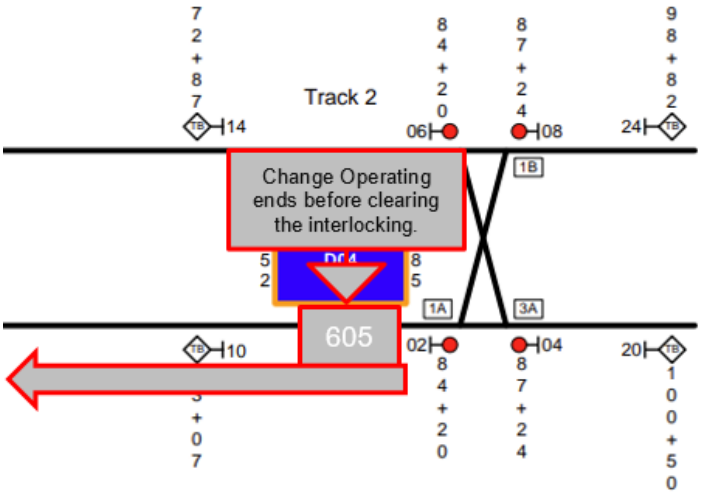
Incident Site

Federal Center SW Station, Track 1.

Field Sketch/Schematics



Intended move with proper turnback operations. Not to Scale



Actual Move (Improper Movement). Not to Scale.

Purpose and Scope

The purpose of this incident investigation and candid self-evaluation is to collect and analyze available facts, determine the probable cause(s) of the incident, identify contributing factors, and make recommendations to prevent a recurrence.

Investigation Methods

Upon receiving notification of the Improper Rail Vehicle Movement at the Federal Center SW on April 26, 2023. SAFE utilized a cross-functional team to assess the scene through document and video review to conduct the subsequent investigation. SAFE team members worked with relevant WMATA subject matter experts to review the incident's facts and data.

The investigative methodologies included the following:

- Site assessment through documents review

- Formal Interviews – SAFE interviewed two individual(s) 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 and reviewed written statements of the following individuals:
    - Train Operator
    - Radio 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.

    - RTRA QA/QC Manager

- Documentation Review – A collection of relevant work history information and process documentation contained in Metro systems of record. These records include:
    - Metrorail Safety Rules and Procedures Handbook (MSRPH)
    - National Oceanic and Atmospheric Administration (NOAA)
    - The 30–Day Work History
    - RTRA QA/QC Certification Record
    - Training Records
    - ROC Report
    - RTRA Managerial Report
    - Office of Radio Communications (COMR) data

- System Data Recording Review – A collection of information contained in Metro Data Recording Systems. This data includes:
    - Audio Recording System (ARS) playback, including OPS 2 Radio
    - Closed-Circuit Television (CCTV)

- Office of Chief Mechanical Officer (CMOR) Incident Investigation Team (IIT)
- Advanced Information Management System (AIMS)

Investigation

On April 26, 2023, the D-line experienced a switch problem at Eastern Market, resulting in rail traffic delays. ROCC selected trains for offloading at strategic locations to help minimize congestion. Blue Plus Line Trains operated between Huntington & Federal Center SW Stations. Audio Recording System (ARS) playback revealed that the Radio RTC instructed Train ID 605's Train Operator to offload their train at Federal Center SW. In order to reverse Train ID 605, the Radio RTC provided instructions that included: a permissive block to the turnback sign, key down, and reverse ends in Ashburn station's direction.[1] After repeating back instructions "permissive block to the turnback, reverse ends," the Train Operator keyed down lead car 7330and changed operating ends, while berthed at the 8-car marker within the platform limits, to car 7650, which was facing towards L'Enfant Plaza Station.

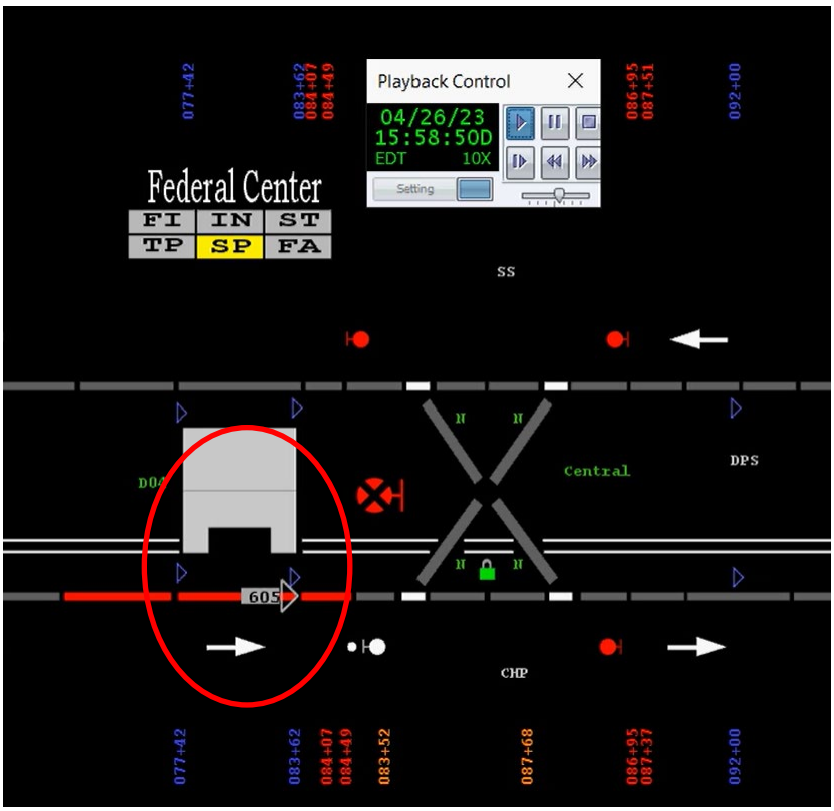


Figure 1 - AIMS view of intended movement of Train ID 605. Note straight-through move aligned and lunar aspect in the normal direction of traffic.

[1] Complete instructions consist of signal identification, interlocking identification, proceeding to the turnback, and crossing over from track 1 and track 2 back to the Federal Center SW platform.

The Train Operator arrived at Car 7650, their trailing car, and entered the Operating Cab. Console footage on Car 7650 did not show any evidence that the Train Operator was distracted or using any unauthorized electronic devices. The Train Operator appeared to have some difficulty adjusting their handheld radio while simultaneously trying to move the train and respond to the Radio RTC.

Figure 2 - Train ID 605 lead car, now 7650, headed in Ashburn Stations' direction on Track 1.

Console footage from Car 7650 and the CMOR IIT data showed the Operator entered Stop and Proceed mode after cycling the Master Controller several times in an effort to move the train. By procedure, this action required permission from the ROCC, but was not requested or received. At16:02 hours, Train ID 605 moved their train against the normal traffic flow. Operating against the normal traffic flow requires an Absolute Block from ROCC, which was not requested or received.

Figure 3 - Train ID 605 Train Operator entering Stop and Proceed mode.

At 16:03 hours, the Radio RTC instructed Train ID 605 to stop their train multiple times. CMOR IIT data determined that Train ID 605 moved approximately 256 feet off the platform before stopping.

Figure 4 – Forward-facing footage showed no train in the immediate location during this incident after moving 256 feet.

Advanced Information Management System (AIMS) playback showed Train ID 410 positioned at L'Enfant Plaza approximately 1,136 feet away from the Federal Center SW platform when Train ID 604 came to a stop.[2]

[2] ROCC has emergency procedures in place to de-energize third rail power if a train does not respond.

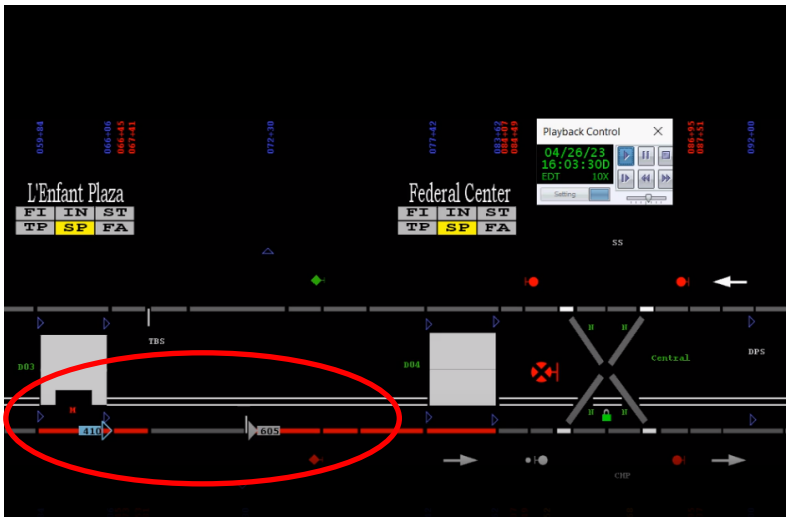


Figure 5 - AIMS Playback shows Train ID 605 moving against the normal flow of traffic. The displayed location is not exact and cannot be used to calculate distance.

The Radio RTC instructed the operator to reverse operating ends and to clear Federal Center SW's interlocking on track 1. The Radio RTC then instructed Train ID 605 to remain out of service, proceed to Eastern Market Station, and hold.

RTRA removed the Train Operator from service per SOP 102-01, Removing an Employee from Service. ROCC removed the Radio RTC from service for post-incident testing for providing incorrect instructions to Train ID 605. No injuries or damage were reported as a result of this event.

During their inspection following the event, ATCM personnel discovered that the hasp linkage on Switch 1A at Eastern Market Station was out of adjustment. The misalignment of the hasp linkage resulted in improper locking or unlocking of the switch points.

Chronological ARS Timeline

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

Time	Description
15:51:19 hours	*Train ID 605 entered Federal Center SW Station on Track # 1. [CMOR IIT]*
15:52:04 hours	*The Train Operator placed Car 7330 in the Stop and Proceed Mode [CMOR IIT]*
15:52:25 hours	*Train ID 605 entered Federal Center SW Station and stopped 40 feet after they lost Speed Commands. [CMOR IIT]*
15:52:47 hours	*Train ID 605 moved the Train to the end of Federal Center SW and stopped at the 8 Car Marker. [CMOR IIT]*
15:52:56 hours	*Doors Opened on the Left Side of Car 7330, and Passengers were offloaded. Train Operator made four PA announcements during the offload. [CMOR IIT]*
15:58:46 hours - 15:59:00 hours	*Doors were Closed. Car 7330 was Keyed Down. The Operator left the Cab and walked down to Car 7650. [CMOR IIT]*

Time	Description
15:57:30 hours	AOM: Suggested to the controllers that they should turn a train back to reduce congestion in the area. Buttons Controller: Stated they could turn Train ID 605 Radio RTC: Agreed to turn back Train ID 605. [Ambient Mic]
15:57:38 hours	Radio RTC: Contacted Train ID 605 and instructed them to offload their train at Federal Center SW track 1 and make good announcements to their customers. Train ID 605 Train Operator: Made announcements to their customers. [Ops 2] AOM asked the Radio RTC where 605 was located. [Ambient Mic]
15:59:05 hours	AOM: "I am not trying to rush you; we want Train ID 605 to clear the interlocking cross-over to Track 2." [Ambient Mic]
16:00:10 hours	Radio RTC: Instructed Train ID 605; "after offloading, you have a permissive block back to the turnback. Key down and reverse ends 605 and send you back towards Ashburn." Train ID 605 Train Operator: Repeated, "permissive block to the turnback, reverse ends. "[Ops 2]
16:01:49 hours	Radio RTC: Contacted Train ID 605 and asked if they copied a permissive block to the turnback. Train ID 605 Train Operator: "I copy." Radio RTC: "You do not need to verify clear of customers. Are you moving yet?" Train ID 605 Train Operator: "I am keying up right now, waiting on everything to come on, and I will be moving." [Ops 2]
16:02:40 hours	*Train ID 605 Train Operator keyed up Car 7650 with train doors in the closed position against the normal flow of traffic. [CMOR IIT and* Rail Car CCTV]
16:02:48 hours	*The Train Operator initiated a rail vehicle movement yet encountered a lack of Speed Commands within the Train's control system. In response, the Train Operator executed a series of actions in an attempt to move the train without communicating with ROCC. [CMOR IIT and Rail Car CCTV]*
16:03:00 hours	*Train ID 603 moved against the normal flow of traffic towards L'Enfant Plaza Station [AIMS Playback]*
16:03:09 hours	Radio RTC: Requested an update from Train ID 605 [Ops 2]
16:03:22 hours	Radio RTC: Instructed Train ID 605 to stop their train three times [Ops 2]
16:03:28 hours	Radio RTC: "605. Have you stopped your train?" Train ID 605 Train Operator: "I stopped my train." Radio RTC: "Wrong direction. Which direction were you moving in? " Train ID 605 Train Operator: "I was headed back to Ashburn like you told me to." Train ID 605 Train Operator: "Affirm 605 reverse ends clear interlocking at Federal Center Track number 1." [Ops 2]
16:07:10 hours	*Train ID 605, under the direction of the Train Operator, initiated its movement towards Capitol South in accordance with the established flow of traffic. [AIMS Playback].*

Time	Description
16:07:32 hours	Radio RTC: Instructed Train ID 605 to remain out of service, proceed to the Eastern Market and wait for an RTRA Supervisor. Train ID 605 Train Operator: Confirmed the transmission. [Ops 2]

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

Office of Chief Mechanical Officer (CMOR) Incident Investigation Team (IIT)
Adopted from CMOR IIT report with minor edits and grammatical edits

Summary of Improper Rail Vehicle Movement Georgia Avenue Station

"CMOR IIT downloaded and analyzed Vehicle Monitoring and Diagnostic System (VMDS) data, which determined that no Train Faults or problems were detected. Train operation was within design specifications.

CMOR IIT has completed the analysis of the Improper Rail Vehicle Movement Incident with Train ID 605 arriving at Federal Center SW (D04-1) on Track # 1 at 15:52:47 hours and then Reversed Ends and moved against the Normal Flow of traffic.

IIT found no faults in the equipment logs, and CMNT detected no failures during the Daily Inspection (DI) Check of all cars. Train Operated as designed."

Summary Of Incident:

"Train ID 605 entered Federal Center SW Station on Track # 1 at15:51:19 hours. After traveling approximately 40 feet, the Train lost Speed Commands and stopped at 15:52:25 hours. The Train Operator placed Car 7330 in the "Stop and Proceed Mode" and moved then moved the Train to the 8 Car Marker. At 15:52:56 hours, Doors Opened on the Left Side of Car 7330, and Passengers were offloaded. Train Operator made four PA announcements during the Offload. At 15:58:46 hours, Doors were Closed. Car 7330 was Keyed Down at 15:59:00 hours. The Operator left the Cab and walked down to Car 7650.

Car 7650 was Keyed Up at 16:02:40 hours; Doors were closed. The Train Operator attempted to move the Train, but the Train had no Speed Commands. Train Operator Keyed Down and Up and attempted to move the Train again. The Train Operator placed Car 7650 in "Stop and Proceed Mode" and moved the Train against the normal traffic flow. The Train moved at a maximum speed of 15-17 MPH and traveled 256 feet before stopping and Keying Down the Train.

Car 7330 was Keyed Up at 16:06:23 hours [3]and began moving toward Capital South Station at 16:06:43 hours. Train detected one F4 Marker at 16:06:55 hours. Train moved at a maximum speed of 17 MPH and passed the 8-Car Gate at 16:07:03 hours at 11 MPH. The Train continued toward Capital South."

[3] The information provided by the CMOR IIT timestamp is based on rail car reporting data. However, the timestamps do not align with the station CCTV footage, AIMs, and ARS playback. This is due to differences in clock settings between the systems.

Car 7330 EMM Time	Description of Event	Distance in Feet	Distance to 8 Car Marker	Master Controller Position	Speed (MPH)	Limiting Speed	Regulated Speed
15:51.08.720	Train Losses Limiting Speed	2212792306.084	953.311	B1~B3 (23.000)	33	0	34
15:51:09.900	Train Losses Regulated Speed	2212792363.098	896.297	B1~B3 (23.780)	33	0	0
15:51:19 AM	Train 605 Enters Platform Limits	2212792658.567	600.828	B4 (14.890)	13	0	0
15:51:25.070	Train 605 Stops 40 Ft after Entering Platform Limits	2212792698.485	560.910	B5 (9.910)	0	0	0
15:52:04.110	To Enters "Stop and Proceed" Mode	2212792698.485	560.910	B5 (9.910)	0	1	0
15:52:47.520	Train 605 Stops at the 8 Car Marker	2212793259.395	0.000	B5 (9.910)	0	1	0
15:52:56.120	Train 605 Door Open and Offloads Customers	2212793259.395	0.000	B5 (9.910)	0	1	0
15:53:11.000	Train Operator Made a PA Announcement	***	***	***	***	***	***
15:57:06.000	Train Operator Made a PA Announcement	***	***	***	***	***	***
15:57:48.420	Train Gets Limiting Speed	2212793259.395	0.000	B5 (9.910)	0	35	0
15:57.49.300	Train Gets Regulated Speed	2212793259.395	0.000	B5 (9.910)	0	35	35
15:58:02.000	Train Operator Made a PA Announcement	***	***	***	***	***	***
15:58:38 AM	Train Operator Made a PA Announcement	***	***	***	***	***	***
15:58:46.880	Train 605 Door Closes	2212793259.395	0.000	B5 (9.910)	0	35	35
15:59:00.490	Car 7330 Keys Down	2212793259.395	0.000	B5 (9.910)	0	35	35
15:59:43.071	Operator Leaving Cab						

Figure 6 — CMOR IIT Timeline for Lead car 7330 entering Federal Center SW Station.

Car 7650 EMM Time	Description of Event	Distance in Feet	Distance to 8 Car Marker	Master Controller Position	Speed (MPH)	Limiting Speed	Regulated Speed
16:02:40.700	Car 7650 Keyed Up, Doors Closed, Train Moving Rev Dir. Trk #1	1378107847.638	***	***	0	***	***
16:02:24.970	Car 7650 Key Down	1378107847.638	***	***	0	0	0
16:02:29.020	Car Keyed Up	1378107847.638	***	***	0	***	***
16:02:48.200	Car 7650 Exited Stop and Proceed Mode	1378107992.254	144.616	P1~P4 (58.640)	16	0	0
16:03:05.310	Lost Speed Commands	1378107997.594	149.956	COAST (55.420)	16	0	0
16:03:05.160	No Speed Commands	1378108017.775	170.137	B1~B3 (45.650)	16	0	0
16:03:07.360	No Speed Commands	1378108044.562	196.924	B4 (16.940)	15	0	0
16:03:07.440	No Speed Commands	1378108046.191	198.553	B5 (10.690)	15	0	0
16:03:16.740	No Speed Commands	1378108103.567	255.929	B5 (9.10)	0	0	0
16:03:55.600	Car 7650 Keyed Down	1378108103.567	255.929	B5 (9.10)	0	0	0

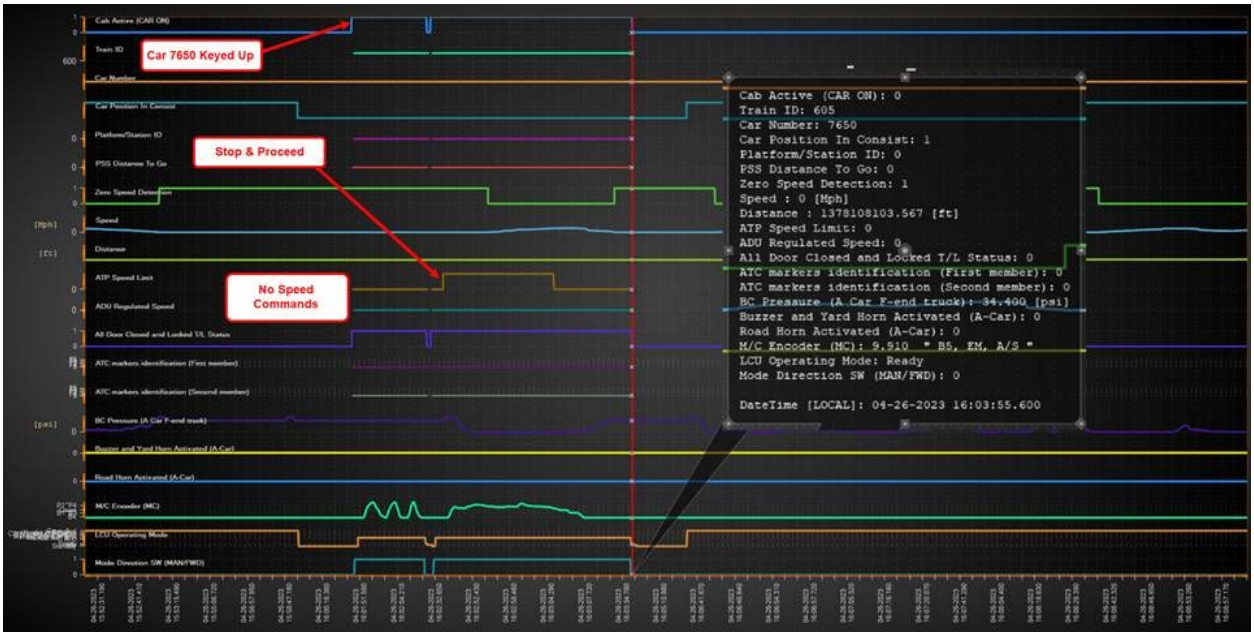
Figure 7 — Timeline shows Train Operator actions operating against the normal flow of traffic.

Car 7330 EMM Time	Description of Event	Distance in Feet	Distance to 8 Car Marker	Master Controller Position	Speed (MPH)	Limiting Speed	Regulated Speed
16:06:23.920	Car 7330 Keys Up	2212793519.126					
16:06:43.640	The Train begins to move toward Capital South Station	2212793519.126	356.024	P5 (89.940)	0	35	35
16:06:55:370	"F4" Marker Detected	2212793715.150	160.000	B1~B3 (32.080)	17	35	35
16:07:03.500	End Of Platform 8 Car	2212793875.150	0.000	COAST	11	22	22
16:10:13.640	Train Passing Capital South (Did Not Stop at Station)	2212796909.562	3034.412	P1~P3 (61.720)	24	50	49

Figure 8 — Timeline shows Train Operator changing operating ends to head back toward Federal Center SW.

VMS Graphic # 1 Car 7330 Arriving at Federal Center SW and Offloading

VMS Graphic # 2 Car 7650 Moving Against Normal Flow of Traffic Federal Center



VMS Graphic # 3 Car 7330 Leaving Federal Center SW Toward Capitol South

Office of Rail Transportation (RTRA)

RTRA investigated the Improper Rail Vehicle Movement and determined that the Train Operator failed to follow the instructions of the Radio RTC. The Train Operator moved against the normal flow of traffic without permission violating Operating Rule 3.79.

Office of Radio Communications (COMR)

COMR conducted comprehensive radio checks and reported that no issues were found at this location.

Office of Automatic Control Maintenance (ATCM)
Adopted from ATCM summary of post-event inspection and repairs completed:

"Based on the system of record data entered on April 27, 2023. ATCM first observed a loss of Lever Bracket (LB) [4]and Locking Clamp (LC) [5]at positions 51 and 52 in the hasp located within

[4] Provides stability and a mounting point for the lever, allowing it to pivot and actuate the switch points effectively.
[5] The locking clamp engages with the switch points, holding them securely in place until released.

the controller compartment of S 1A. It was determined that the hasp linkage [6]needed adjustment to allow the plunger at the fingers of LB/LC to fully close.

ATCM proceeded with the following repair steps:

- ATCM opened the controller compartment of SW 1A and located the hasp.
- After examining positions 51 and 52 of the hasp, we confirmed the loss of LB/LC.
- The hasp linkage was carefully adjusted to enable the plunger at the fingers of LB/LC to fully close, ensuring proper functionality.
- Once the adjustment was completed, we verified that LB/LC no longer experienced any loss at positions 51 and 52.
- To resolve the correspondence problems in SW 1, we removed the jumper between terminals 52 and 51 in the hasp within the controller compartment. This eliminated any unintended connections and restored proper communication.

After completing these repair actions, ATCM adjusted the push rod for crank cut out in Switch 1A, which was necessary to ensure its proper operation. Following the adjustment, ATCM conducted an obstruction test to validate the switch's functionality. Switch 1A passed the obstruction test and was further exercised multiple times to confirm its reliable operation.

With the repair successfully executed, Switch 1A was restored to service. We promptly informed both the Maintenance Operations Center (MOC) and the Operations Control Center (OCC) about the completion of the repair and the switch's return to normal operation.

By performing the necessary adjustments, conducting thorough tests, and notifying the relevant parties, we have effectively resolved the issues with LB/LC and the switch's crank cut out, achieving a state of good repair."

Office of Rail Transportation Quality Assurance and Quality Control Group (RTRA QA/QC)

During their Student Operator certification, the Train Operator's Certification paperwork showed they failed their first certification attempt at the QL-3 rating on May 2, 2022, in three sections. The first certification attempt was marked as incomplete because the employee could not complete the test. The QA/QC team manager indicated that the first section of certification testing occurs within a rail yard. If a student cannot continue their certification attempt by request or the Certification proctor determines that continuing to the mainline portion of the certification test would be unsafe, they may halt the process. The student would then return to the Rail Operations Quality Training (ROQT) group for additional training before completing their first certification attempt.

[6] A hasp linkage is a mechanical device used in railroad switches to secure and lock the points (rails) in place. It plays a crucial role in maintaining track integrity and preventing accidents. This information is included to illustrate the importance of mechanical systems in ensuring safety and stability in various industries.

The Train Operator returned to complete their first certification attempt on May 16, 2022, which resulted in their overall failure assessment. Five topic areas were rated as QL-3.; however, the Train Operator was assessed as passing the three previously failed sections from their Incomplete attempt (Yard Operations and Troubleshooting). The remaining sections were noted as their first attempt after finalizing the certification, as indicated in the grading and proficiency test.

Student Operators are allowed two attempts to pass their certifications. If they fail both, they receive a disqualification.

In total, the Train Operator ranked QL-3 in eight (three during their incomplete attempt and five in the completion of their first attempt) of twenty categories at the conclusion of their first attempt. The categories where the train operator failed included:

- Coupling
- Isolation (Self-Recovery)
- Troubleshooting – ATC Power Supply circuit breaker tripped; Friction Brake circuit breaker tripped
- Mainline Communications (Did not know how to set radio channels and failed to repeat back instructions).
- Turnback Moves – “Operator was unaware of how to make a turnback move at Ballston Station.”
- Manual Switch Operation – “Operator had difficulty identifying the switch position.”
- Yard Communications
- Recovery Train Operations

A review of the RTRA QA/QC operations manual notes: “Incomplete Practical Examinations - If a practical examination cannot be completed due to circumstances outside of the examiner’s control (i.e., equipment malfunctions, operating restrictions, equipment availability, emergencies, etc.), the practical examination will be placed in an incomplete status, and an overall grade will not be assigned. Every effort shall be made to complete any incomplete task area as soon as possible. Once all outstanding task areas have been evaluated and graded, an overall practical score shall be assigned to the examination.”

RTRA QA/QC provided the following responses regarding the certification processes.

“RTRA QA/QC experienced 19 incomplete practical examinations within the last year. Ten (10) due to 7K consist unable to go mainline per CMNT, four (4) due to no eight car 7K consist unavailable to complete the practical examination, four (4) due to testing unable to continue due to the operator’s inability and one (1) due to ROQT.”

The Train Operator was certified on June 3, 2022, which is over a month after beginning their first attempt. Per the “Performance Standardization Program Manual: Train Operations,” refresher training is prescribed to be “no more than two days.”

The following Examination Completion Criteria matrix shall be applied to any student in Train Operations training who receives a Quality Level score of QL-3 or "Fail" on the practical qualification examination:

Practical Score/ Attempts	Status after First Attempt	Status after Second Attempt
Quality Level 3 (QL-3) or Fail (only given on 2nd attempts)	Permitted to operate only when accompanied by an LPI, Training Instructor, QA, or Rail Supervisor. Assigned to Rail Training or a Senior Rail Supervisor for no more than two days of refresher training. Must retake the exam at the start of the first day	Disqualified from Train Operations Training 1st TO Class: DQ 12 mos. 2nd TO Class: DQ 24 mos. 3rd TO Class: DQ 36 mos.

The examples listed for acceptable Incomplete designations revolve around equipment issues and emergencies, not when a trainee exhibits unsafe operations while operating a train (as in this case). An "et cetera" is used as a catch-all.. As indicated from RTRA QA/QC, management must approve an Incomplete designation.

- RTRA QA/QC reported that the conditions surrounding this Operator's certification are well known to Leadership and the WMSC (i.e., train availability for stick time, certification backlog), and those conditions are no longer present.
- The RTRA QA/QC team indicated that the Incomplete designation is rarely used; the stats should show the ratio of pass/fail and Incompletes.
- Procedures were not closely followed during the Operator's initial certification due to rail car availability and a certification backlog due to COVIDCOVID.
- This problem is well known for that period, and the Office of Car Maintenance (CMNT) made adjustments to ensure certification railcar availability.
- Currently, RTRA QA/QC has enough railcars to prevent lapses and has heightened awareness when Incompletes designations are used.
- RTRA QA/QC identified three similar cases. Two seasoned Train Operators, one of whom transitioned to a different role and one transferred with a focus on yard operations, while the Student Operator recently completed an successful In-Service Evaluation (ISE) following their training as a Student Operator.
- Since January 2022, RTRA QA/QC has a 3% failure rate for new Train Operator certification and Train Operator recertification (3 of 114 candidates).

Rail Operations Quality Training (ROQT)

The Office of Safety Investigations (OSI) reviewed the Train Operator's training documents and held a stakeholder meeting to address findings discovered during our initial investigation. In summary, Train Operator Class 20-04 was canceled in November 2020 due to the reduced service level related to the pandemic. The Class returned to complete Train Operator training on October 18, 2022. The Training resumed with the repeat of 8 hours of stick time in the yard with all 7K series railcars. The Train Operator began Yard Practical Training (YPT) with Group A,

consisting of six students utilizing 7K railcars. The class had completed eight weeks of YPT prior to class cancellation in November 2022. Based on the elapsed time, ROQT ensured students repeated eight hours of stick time in the yard.

Specifically, the involved Train Operator's schedule was as follows:

- December 22, 2021-January 7, 2022, the Train Operator was on sick leave.
- The week of January 17, 2022, the Train Operator achieved eight hours and 15 minutes of stick time during the Train Operator YPT on a 7000-series train.
- On January 25, 2022, the Train Operator finished the standard 30 hours of On-the-Job operations with a certified Line Platform Instructor (LPI) at the Largo rail division.
- The Train Operator attended refresher training on February 21, 2022
- On March 16, 2022, the Train Operator underwent Pre-certification, which is designed to prepare them for the Certification exam.
- On March 17, 2022, RTRA QA/QC Train Operator certification was canceled because of the lack of trains. RTRA QA/QC and ROQT agreed that this Train Operator would certify last due to poor pre-certification results.

ROQT Leadership was aware of the incomplete and received an email correspondence highlighting the incomplete and conditions for their second attempt certification for class 20-04.

On May 2, 2022, the Train Operator's first certification attempt with RTRA QA/QCQC ended in an incomplete. The Train Operator immediately followed that with an email. The Train Operator was placed in refresher class and placed in a yard with 7Ks for a week of train movement before attempting to pass certification for a second attempt. Management noted, "We want to make sure that we give the Train Operator every opportunity to be successful."

Job Task Proficiency Evaluation

On May 1, 2022, the instructor noted the Train Operator had difficulties with exterior and interior inspections and coupling. The Train Operator did not have time to clamp switches and perform mainline operations. The allotted time was exceeded and not captured due to refresher training.

Interview Findings

As part of the investigation launched into the event, SAFE interviewed one individual. The interview 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.

Train Operator

- The Train Operator stated they keyed down their train, offloaded customers, and verified clear and reversed ends on the platform operated under the permissive block to the turnback towards Ashburn.
- The Train Operator was unclear on the textbook definitions of Absolute blocks and Permissive blocks when questioned.

    - stated they need a block to move without speed commands to the turnback. The Train Operator said a permissive block is when you head in the opposite direction.
- The Train Operator reported they were in the “two-year” training class during COVID and received a QL-1 rating the third time they attempted[7]. The Train Operator stated that during one certification test, they went too far on the turnback and received aa QL-3 rating. The test was terminated after they failed several items and RTRA QA/QC could not continue.

Radio RTC (Written Statement)

“At 15:59:46 hours, Train ID 605 was instructed that after you offload that train, you have a permissive block to the turnback, key down, and reverse ends. I also notified Train ID 605 that they were going back to Ashburn. At 16:00:29 hours, Train ID 605 repeated back, “I have a permissive block to the turnback, key down, and reverse ends.” At 16:03 hours, Train ID 605 began to move without ROCC's permission against the normal traffic flow. Train ID 605 was instructed to stop their train, key down, and reverse back toward Federal Center.

Train ID 605 repeated back all instructions from ROCC, and all activities were overseen by ROCC management. At the time of the entire incident, AOMs were present. I followed all instructions per ROCC management. Train ID 605 was never instructed to key down on the platform and reverse ends. Train ID 605 was given a permissive block to a turnback and was instructed to key down and reverse ends in that order.

Train ID 605 was never instructed to key down, reverse, and move without speed commands.”

Weather

On April 26, 2023, at the time of the incident, NOAA recorded the temperature as 60° F, with light rain and 65% humidity. Federal Center SW is an underground station. Weather did not contribute to this incident (Weather source: NOAA – Location: Washington, D.C.).

Human Factors

Evidence of Fatigue

Train Operator

SAFE evaluated signs and symptoms of fatigue that may have been present during the incident. No signs or symptoms of fatigue were detected from the available data. Video of the incident was reviewed for signs of the Train Operator's fatigue. No signs or symptoms of fatigue were evident from the video. 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.

[7] This statement references the second attempt, which resulted in a QL-2 rating (Pass) according to their Certification paperwork.

Fatigue Risk

Train 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 Train Operator reported keeping a regular sleep schedule in the days leading up to the incident. The Train Operator worked evenings in the days leading up to the incident. The Train Operator was awake for 9.71 hours at the time of the incident The Train Operator reported 6.5 of sleep in the 24 hours preceding the incident. The off-duty period was 15.76 hours, providing an opportunity for 7-9 hours of sleep. This was 1.5 hours less than the employee's usual workday sleep durations. The employee reported no issues with sleep.

The biomathematical fatigue modeling application (SAFTE-FAST Web SFC) was not applied for this event.

Rail Traffic Controller

Due to the RTC's unreported absence period, we were unable to develop reliable data on the Evidence of Fatigue and Fatigue Risk for this report section. The employee's work schedule did not indicate any risk factors.

The biomathematical fatigue modeling application (SAFTE-FAST Web SFC) was not applied for this event.

Post-Incident Toxicology Testing

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

Certifications

Train Operator

- The Train Operator is RWP Level 2 certified with an expiration of October 2023.
- The Train Operator completed their initial Train Operator certification on their second attempt on June 6, 2022, and received a QL- 2 rating. The Train Operator successfully completed the sections that they rated QL-3 on during the May 16, 2022, attempt.

Rail Traffic Controller

- The RTC accomplished a successful initial certification on their first attempt, receiving a QL-2 rating on November 24, 2021. However, there was one communication section that was rated QL-2, indicating a need for improvement in that area. Furthermore, during a practical test, it was observed that the RTC was transmitting inadequate information.

Work History

Train Operator

- The Train Operator was hired on March 31, 2014, and has nine years of seniority with WMATAA. The Train Operator has one year of experience in train operations seniority June 5, 2022. This is the only safety event that the Train has been involved in since they certified.

Rail Traffic Controller

- The RTC was hired on April 5, 2010, and has 11 years of seniority with WMATA. The RTC has two years of experience as an RTC. As of June 25, 2023, the RTC has been involved in three safety events since their certification. These events include a Red Signal Overrun and Improper Rail Vehicle Movement.

Related Rules and Procedures

MSRPH 1.46: General Rules - Employees shall not permit unnecessary conversation, reading, lounging, or any other action or condition of mind to divert their attention from the safe and efficient performance of duty.

MSRPH 1.79: General Rules - 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, at all times, be repeated by the receiver so the transmitter can confirm the message was received completely and by the intended receiver. 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.”

MSRPH 3.79: Operating Rules - Train Operators shall not move trains with zero speed commands except after notifying ROCC or Terminal Supervisor and being given permission to move with zero speed commands and either a permissive block going with traffic or an absolute block going against traffic.

Findings

- The Train Operator of Train ID 605 initiated Stop and Proceed mode without proper authorization from the ROCC.
- The Train Operator operated the train against the normal flow of traffic for a distance of approximately 256 feet, without an absolute block being in place.
- The Train Operator entered Stop and Proceed without requesting or receiving permission from the Radio RTC.
- The Radio RTC responsible for Train ID 605 was removed from service by the ROCC due to providing incomplete instructions that contributed to the incident.
- The Train Operator's certification history showed deficiencies specifically related to turnback operations.
- Switch 1A out of correspondence at the Eastern Market caused extensive delays resulting in train turnbacks.

Immediate Mitigation to Prevent Recurrence

- Train ID 605 was immediately removed from service for post-incident investigation processes. A comprehensive examination of the train's systems, components, and potential contributing factors to the incident was conducted.. The train remained out of service until the investigation was completed.
- The Operator involved in the incident was placed in a non-operational status pending the completion of the investigation.
- ATCM performed necessary repairs to the interlocking to prevent service interruptions requiring turnbacks.

.

Probable Cause Statement

The probable cause of the improper rail vehicle movement was a human factors error of understanding instructions. A Contributing Factor to the event was ineffective communication and failure to utilize 100 percent repeat-back between the Radio RTC and the Train Operator.

The cause of the interlocking malfunction that resulted in the unexpected turnback, was that a hasp linkage on Switch 1A at Eastern Market Station was out of adjustment. The misalignment of the hasp linkage resulted in improper locking or unlocking of the switch points, potentially compromising track safety and train operations.

Recommended Corrective Actions

Corrective Action Code	Description	Responsible Party	Estimated Completion Date
108023_SAFECAPS_RTRA_001	(RC- 1, CF-1) Train Operator shall undergo Orange, Blue, and Silver Line familiarization, Virtual Refresher Training, incident interlocking simulation, moving without speed commands	RTRA SRC	Completed
93434_SAFECAPS_ROQT_001RTRA_002	(CF-1) ROQT shall evaluate Line Familiarization CBT to identify opportunities to improve interactive activities including assessment testing enhancement.	SAFE OOP (reassigned)	Completed
108023_SAFECAPS_RTRA_002	(CF-1) Update “Certification Manual” to include how to assess non-mechanical related certification attempts (e.g., poor performance in the yard)	RTRA SRC	Completed
108023_SAFECAPS_ROCC_001	(RC-1, CF-1) ROCC shall reinstruct RTC on the importance of General Rule 1.79 communication.	ROCC SRC	Completed
108023_SAFECAPS_ATCM_001	(CF-2) ATCM shall ensure Switch 1A is returned to a good state of repair.	ATCM SRC	Completed

Appendices

Appendix A – Interview Summaries

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

Train Operator

The WMATA employee has one year of service as a Train Operator and eight years in various positions, such as Bus Operator. The Train Operator is RWP Level 2 certified with an expiration date of October 2023. The Train Operator was certified on June 3, 2022, as QL-2.

"I arrived at Federal Center SW on Track 1 on Train ID 605; while listening to the radio, I overheard a clamp went out at Eastern Market. The Radio RTC instructed me to offload my train and provided a permissive block to the Turnback, reverse ends back towards Ashburn. The Radio RTC confirmed the transmission. I made the proper announcements and cleared the train of customers. When I arrived on the trailing end, the Radio RTC asked if I was keying up, I responded to the Radio RTC not yet, I am keying up right now. When I keyed up, I began moving the train. The Radio RTC contacted me and said to stop my train because I was heading in the wrong direction."

The Train Operator noted they worked out of the West Falls Church Yard division for approximately four months. The Train Operator did not provide a clear understanding of Turnback operations. The Train Operator stated they need a block to move without speed commands to the turnback. The Train Operator was similarly unable to communicate the difference between Absolute blocks and Permissive blocks. The Train Operator said that a permissive block is when you head in the opposite direction.

The Train Operator reported they were in the two-year training class during COVID and received a QL-1 the third time (second attempt). The Train Operator went too far on the turnback during training and failed QL-3. The Train Operator returned the second time and failed QL-3 the second time. The test was terminated after failing several items, and RTRA QA/QC could not continue.[8]

Radio RTC (Written Statement)

"On April 26, 2023, there was a rail emergency at Eastern Market, causing the Delta and Golf line tracks 1 and 2 to be congested. The emergency was being overseen by Rail 2 and Rail 3. I was the Radio RTC; [name redacted] was the Button Controller. Per the AOMs, Train ID 605 Federal Center Track 1 was instructed to make service announcements over the public announcement system. Train ID 605 began to make announcements over Ops 2 instead of the train public announcement system.

[8] Note that these statements are not reflected in the Train Operator's certification paperwork. They completed certification on their second attempt.

At 15:58 hours, Train ID 908 Track 1 Smithsonian was instructed to offload the train at 15:58:32 hours. At 15:59:46 hours, Train ID 908 was again instructed to offload the train, key down the train, and reverse ends. Let ROCC know when they are keyed up on the downtown Washington, DC, end of the train. At 15:59:46 hours, Train ID 605 was instructed that after you offload that train, you have a permissive block to the turnback, key down, and reverse ends. I also notified Train ID 605 that they were going back to Ashburn. At 16:00:29 hours, Train ID 605 repeated back, “I have a permissive block to the turnback, key down, and reverse ends.”

At 16:01:35 hours, ROCC questioned Train ID 908,” Have you keyed down and reversed”? Train ID 908 responded, “Affirm I am headed to the lead car on the Vienna end.” At 16:03 hours, Train ID 605 began to move without ROCC's permission against the normal traffic flow. Train ID 605 was instructed to stop their train, key down, and reverse back toward Federal Center.

When Train ID 605 was first instructed to offload, they were told they did not have to verify that the train was clear of customers per ROCC management. Train ID 605 repeated back all instructions from ROCC, and all activities were overseen by ROCC management. At the time of the entire incident, AOMs were present. I followed all instructions per ROCC management. Train ID 605 was never instructed to key down on the platform and reverse ends. Train ID 605 was given a permissive block to a turnback and was instructed to key down and reverse ends in that order.

Train ID 605 was never instructed to key down, reverse, and move without speed commands. As a dedicated employee, I feel I am being used as a scapegoat by ROCC management for Train ID 605 incompetence and failure to follow instructions. Train ID 605 is a certified train operator and disregarded the safety of self, customers, and WMATA’s equipment.

I have not violated any rules or SOPs set forth by WMATA.”

Appendix B – RTRA QA/QC Certifications

TRAIN OPERATOR AND ROAD SUPERVISOR JOB TASK PROFICIENCY EVALUATION

Name:	[redacted]	Emp.No:	[redacted]	Division:	RDQT	Date:	5/2/2022

Reason for Certification: *Please place a check in an area below.*

☑ Certification: Student ☐ Pre-certification: Student ☐ Division Request
☐ Re-Certification ☐ Return to Duty ☐ Other_____

Training Time Received: *Please record training time in an area below.*

Rail Training: Weeks: ____ Days: ____ Hours: ____ OJT: ____
Division Training: Weeks: ____ Days: ____ Hours: ____ OJT: ____
NOTE: OJT time is not separate from Weeks/Days/Hours.

Exam Administered	Score	Date Taken
MSRPH version #:	72 %	11/12/2020
TVOIM/TOIM	82 %	11/12/2020
Supervisor Combination	%	
Practical attempt #: 1	QL-	5/2/2022

Incomplete

Equipment *(current/working condition)*	Yes	No
MSRPH	✓	
Perm/Temp/Special Orders	✓	
Troubleshooting Guide	✓	
Flashlight	✓	
Safety Vest	✓	
Footwear	✓	
Identification (One Badge, RWP)	✓	

Corrective Actions Required	Date Due	Complete	Initials
* must do uncoupling, Ext/Int, clamping, main line & train recovery			
* Coupling - when coupling was complete, doors were left open on both sides of the train			
* Friction Brake problem - exceeded time			
* ATC Power Supply - Didn't verify ZSB was cut out, didn't offload train			
* Self-recovery - opened doors on both sides of the disabled quad AND the good quad.			

Forwarded to: QA/QC Group & RDQT — Date: 5/2/2022

Certification Information: *To be completed by QA/QC Staff*

Emp. No: [redacted] Date of Birth:
Date Last Qualified: Certification Class:
Due Date Next Qualification: Corrective Lenses:
Date Qualification Expires: Restrictions:

Signatures:	Date:
Employee [redacted]	5/2/22
Examiner	5/2/22
Reviewed by:	

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Attachment 1 – Incomplete First Attempt Page 1 of 2.

TRAIN OPERATOR AND ROAD SUPERVISOR JOB TASK PROFICIENCY EVALUATION (continuation sheet) Emp N[redacted] Date: 5/2/22

CATEGORIES / SUBCATEGORIES	QUALITY LEVEL	REMARKS (*Remarks are required for a quality level score of 2 or 3*) – ALL TIMES (*are in minutes*)
I. Preparation for Service		Cars Used:
1. Exterior Inspection		
2. Interior Inspection - Trailing Cab		
3. Interior Inspection - Each Car		
4. Interior Inspection – Oper. Cab		
5. Rolling Test / Rolling Brake Test		
		Time Allotted: 35:00 / Actual Time: :
II. Mainline Operation		
6. Communications		
7. Door Oper. & Station Stopping		
8. Use of Horn		
9. Speed Adherence/Manual Oper.		
10. Turn Back Moves		Location: Time Allotted: 02:00 / Actual Time: :
11. Manual Route Selection		Location:
12. EV Shutoff		Time Allotted: 00:30 (01:00) / Actual Time: :
III. Yard Operation		
13. Communications		
14. Yard Movements		
15. Coupling	3	Time Allotted: 08:00 (12:00) / Actual Time: 9m : 415 Cars Used: 7259 + 7309 - See noted
16. Uncoupling		Time Allotted: 05:00 (07:30) / Actual Time: : Cars Used: < >
17. Isolation (Self-Recovery)	3	Time Allotted: 15:00 (22:30) / Actual Time: 28m 50s Cars Used: End Quad 7328 & 7479
18. Manual Switch Operation		
IV. Miscellaneous		
19. Recovery Train Operation		Time Allotted: 12:00 (18:00) / Actual Time: : Cars Used: +
20. Troubleshooting	3	

#1 ATC Power Supply tripped in belly on 7308 12m:02 QL-3 -See noted

#2 Friction Brake c/o tripped on 7309 16m:28 QL-3

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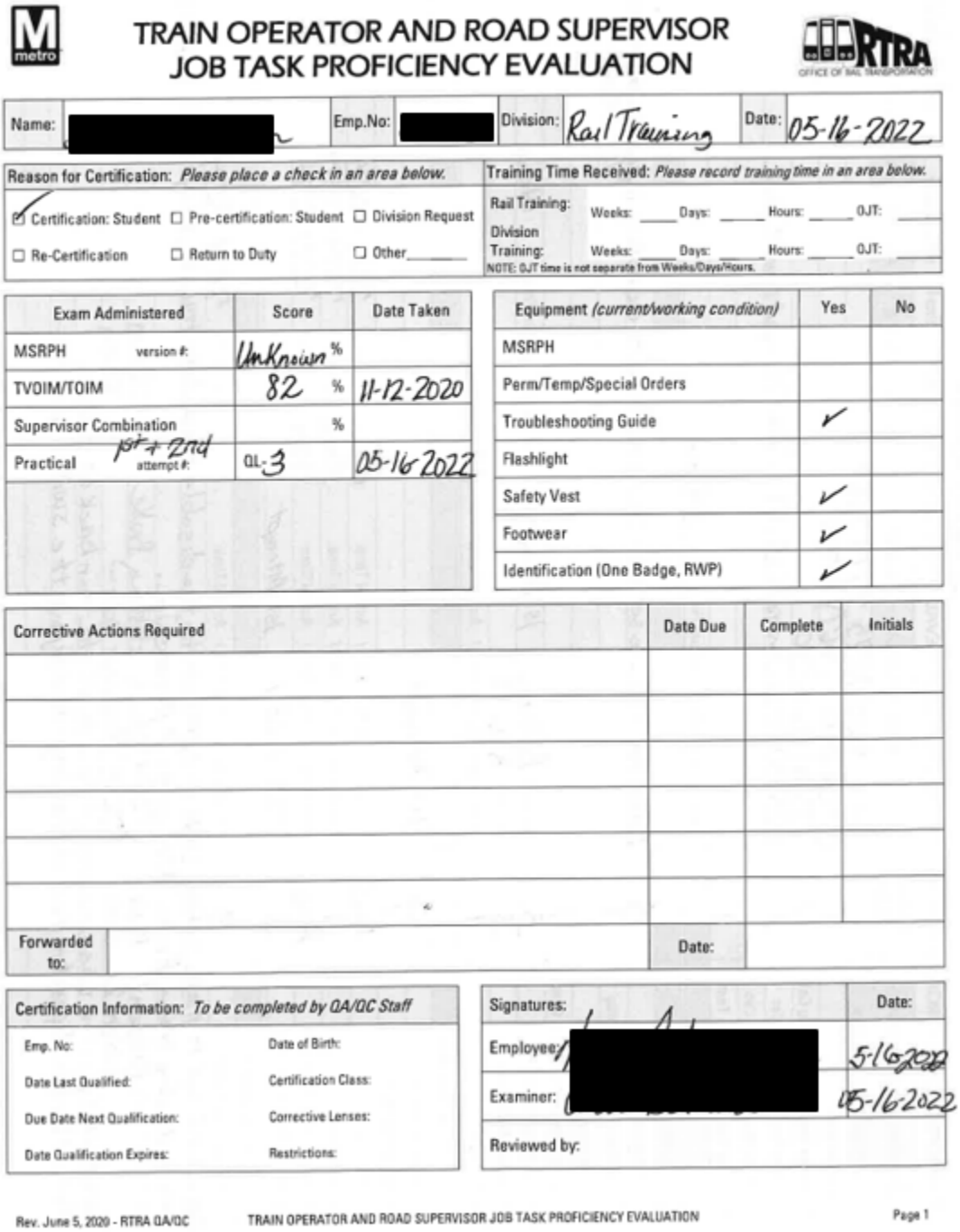
Attachment 1 – Incomplete First Attempt Page 2 of 2.



TRAIN OPERATOR AND ROAD SUPERVISOR JOB TASK PROFICIENCY EVALUATION

Name: [redacted]	Emp.No: [redacted]	Division: Rail Training	Date: 05-16-2022

Reason for Certification: *Please place a check in an area below.*

☑ Certification: Student ☐ Pre-certification: Student ☐ Division Request
☐ Re-Certification ☐ Return to Duty ☐ Other_____

Training Time Received: *Please record training time in an area below.*

Rail Training: Weeks: ____ Days: ____ Hours: ____ OJT: ____
Division Training: Weeks: ____ Days: ____ Hours: ____ OJT: ____
NOTE: OJT time is not separate from Weeks/Days/Hours.

Exam Administered	Score	Date Taken
MSRPH version #:	UnKnown %	
TVOIM/TOIM	82 %	11-12-2020
Supervisor Combination	%	
Practical 1st + 2nd attempt #:	QL-3	05-16-2022

Equipment *(current/working condition)*	Yes	No
MSRPH		
Perm/Temp/Special Orders		
Troubleshooting Guide	✓	
Flashlight		
Safety Vest	✓	
Footwear	✓	
Identification (One Badge, RWP)	✓	

Corrective Actions Required	Date Due	Complete	Initials
Forwarded to:		Date:	

Certification Information: *To be completed by QA/QC Staff*

Emp. No:	Date of Birth:
Date Last Qualified:	Certification Class:
Due Date Next Qualification:	Corrective Lenses:
Date Qualification Expires:	Restrictions:

Signatures:	Date:
Employee: [redacted]	5-16-2022
Examiner: [redacted]	05-16-2022
Reviewed by:	

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Attachment 2 – QL-3 Completed First Certification Attempt Page 1 of 2.

[redacted]

TRAIN OPERATOR AND ROAD SUPERVISOR JOB TASK PROFICIENCY EVALUATION (continuation sheet) Emp No.: [redacted] Date: 05-16-2022

CATEGORIES / SUBCATEGORIES	QUALITY LEVEL	REMARKS (*Remarks are required for a quality level score of 2 or 3*) – ALL TIMES (*are in minutes*)
I. Preparation for Service		Cars Used: 7330 7275 7374 7667
1. Exterior Inspection	1	(7375) BCO (7667) BPTCO
2. Interior Inspection - Trailing Cab	1	(7374) Horn C/O
3. Interior Inspection - Each Car	1	(7375) Door Control C1B (R) (7667) Compartment Open
4. Interior Inspection – Oper. Cab	1	
5. Rolling Test / Rolling Brake Test	1	
		Time Allotted: 35:00 / Actual Time: :34 min
II. Mainline Operation		
6. Communications	3	Did not know how to set radio channels. Failed to accurately repeat back instructions 1st Attempt
7. Door Oper. & Station Stopping	1	
8. Use of Horn	1	
9. Speed Adherence/Manual Oper.	1	
10. Turn Back Moves	3	Location: Ballston 1st Attempt Time Allotted: 02:00 / Actual Time: :04min
11. Manual Route Selection	1	Location: K06 18
12. EV Shutoff	1	Time Allotted: 00:30 (01:00) / Actual Time: :03 seconds
III. Yard Operation		
13. Communications	3	1st Attempt
14. Yard Movements	1	
15. Coupling	Pass	Time Allotted: 08:00 (12:00) / Actual Time: :07min Cars Used: 7331 + 7275
16. Uncoupling	1	Time Allotted: 05:00 (07:30) / Actual Time: :05min Cars Used: < 7274 > 7374
17. Isolation (Self-Recovery)	Pass	Time Allotted: 15:00 (22:30) / Actual Time: :14min Cars Used: 7274/7374
18. Manual Switch Operation	3	133 + 137 1st Attempt
IV. Miscellaneous		
19. Recovery Train Operation	3	Time Allotted: 12:00 (18:00) / Actual Time: : Cars Used: 7374+7274
Operator failed to make safety stops in approach to the disable train. left train keyed up while stepping over to disable train. Brake ATP without permission.		
20. Troubleshooting Problem 1	Pass	(7274) Stuck Holding Brake :10min
Problem 2	Pass	(7275) Passenger Door :04min
Turn Back: Operator was unaware of how to do the turn back at Ballston		
Manual Switch: Operator had difficulty identifying the switch position.		

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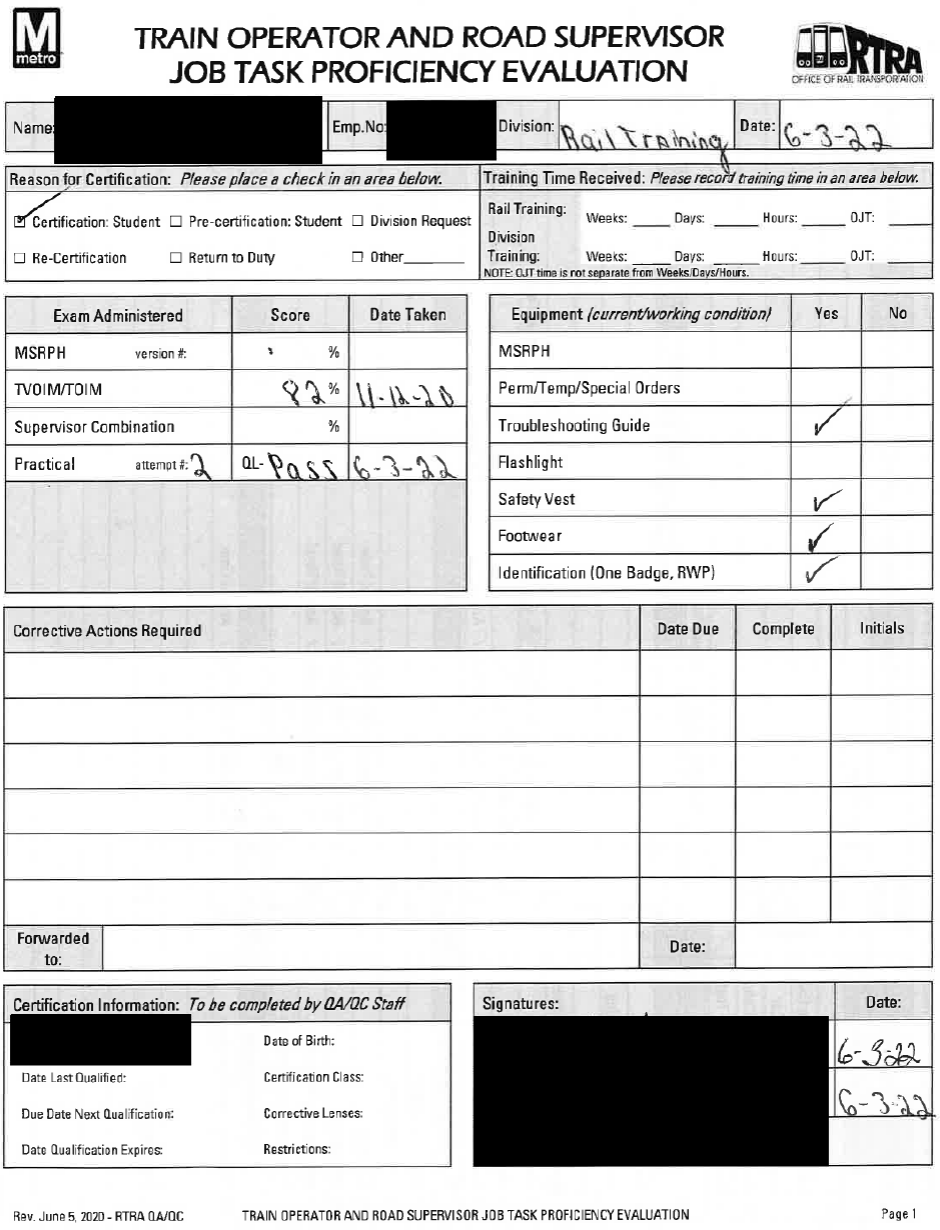
Attachment 2 –QL-3 Completed First Certification Attempt Page 2 of 2.



TRAIN OPERATOR AND ROAD SUPERVISOR JOB TASK PROFICIENCY EVALUATION

OFFICE OF RAIL TRANSPORTATION

Name: [redacted]	Emp.No: [redacted]	Division: Rail Training	Date: 6-3-22

Reason for Certification: *Please place a check in an area below.*

☑ Certification: Student ☐ Pre-certification: Student ☐ Division Request
☐ Re-Certification ☐ Return to Duty ☐ Other_____

Training Time Received: *Please record training time in an area below.*

Rail Training: Weeks: ____ Days: ____ Hours: ____ OJT: ____
Division Training: Weeks: ____ Days: ____ Hours: ____ OJT: ____
NOTE: OJT time is not separate from Weeks/Days/Hours.

Exam Administered	Score	Date Taken
MSRPH version #:	%	
TVOIM/TOIM	92 %	11-18-20
Supervisor Combination	%	
Practical attempt #: 2	QL- Pass	6-3-22

Equipment *(current/working condition)*	Yes	No
MSRPH		
Perm/Temp/Special Orders		
Troubleshooting Guide	✓	
Flashlight		
Safety Vest	✓	
Footwear	✓	
Identification (One Badge, RWP)	✓	

Corrective Actions Required	Date Due	Complete	Initials
Forwarded to:	Date:		

Certification Information: *To be completed by QA/QC Staff*

[redacted]
Date of Birth:
Date Last Qualified: Certification Class:
Due Date Next Qualification: Corrective Lenses:
Date Qualification Expires: Restrictions:

Signatures:	Date:
[redacted]	6-3-22
	6-3-22

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Attachment 3 - Completed Second Certification Attempt - Passed. Page 1 of 2

TRAIN OPERATOR AND ROAD SUPERVISOR JOB TASK PROFICIENCY EVALUATION (continuation sheet) Emp N [redacted] Date: 6-3-22

CATEGORIES / SUBCATEGORIES	QUALITY LEVEL	REMARKS (*Remarks are required for a quality level score of 2 or 3*) – ALL TIMES (*are in minutes*)
I. Preparation for Service		Cars Used:
1. Exterior Inspection	N/A	
2. Interior Inspection - Trailing Cab		
3. Interior Inspection - Each Car		
4. Interior Inspection – Oper. Cab		
5. Rolling Test / Rolling Brake Test		
		Time Allotted: 35:00 / Actual Time: :
II. Mainline Operation	QL-1	7298-7209x7315-7314
6. Communications	1	
7. Door Oper. & Station Stopping	1	
8. Use of Horn	1	
9. Speed Adherence/Manual Oper.	1	
10. Turn Back Moves	1	Location: K04-Dalston Time Allotted: 02:00 / Actual Time: :
11. Manual Route Selection	1	Location: K06-14
12. EV Shutoff	1	Time Allotted: 00:30 (01:00) / Actual Time: :02sec
III. Yard Operation	QL-1	
13. Communications	N/A	
14. Yard Movements	N/A	
15. Coupling	N/A	Time Allotted: 08:00 (12:00) / Actual Time: : Cars Used: +
16. Uncoupling	N/A	Time Allotted: 05:00 (07:30) / Actual Time: : Cars Used: < >
17. Isolation (Self-Recovery)	N/A	Time Allotted: 15:00 (22:30) / Actual Time: : Cars Used:
18. Manual Switch Operation	1	W# #147
IV. Miscellaneous	QL-1	
19. Recovery Train Operation	1	Time Allotted: 12:00 (18:00) / Actual Time: :11min Cars Used: 7298 +7368
20. Troubleshooting	N/A	

Rev. June 5, 2020 - RTRA QA/QC TRAIN OPERATOR AND ROAD SUPERVISOR JOB TASK PROFICIENCY EVALUATION Page 2

Attachment 3 - Completed Second Certification Attempt - Passed. Page 2 of 2

Appendix C – RTRA QA/QC Procedures

Section Three: Practical Exam Grading & Task Proficiency Standards

Operator Quality Level Work Status

Quality Level 1

Employee is permitted to operate a Class I vehicle unescorted, at any time and any place on the Metrorail system.

Quality Level 2

Employee is permitted to operate a Class I vehicle unescorted, at any time and any place on the Metrorail system, but employee must complete prescribed retraining within the specified time limit. Retesting may be specified in those categories where QL-2 was assigned.

Quality Level 3

Employee is permitted to operate a Class I vehicle only when accompanied by Line Platform Instructor, Training Instructor, QC Officer or Rail Supervisor. Prescribed retraining must be completed within the specified time limit, and the Operator must be retested only in those subcategories where other than a QL-1 was assigned. However, in cases where the Operator receives less than QL-1 in six or more subcategories (any combination of QL-2 and QL-3 grades), the individual must retake the entire practical exam.

Practical Examination Review

The Examiner will provide the Operator with a complete critique of the Operator's performance immediately following the completion of the exam. Whenever an Operator is graded QL-3, the Examiner will also immediately notify the pertinent Division Assistant Superintendent, who will take appropriate action pending higher level review.

The Operations Support Manager will review all grades and corrective actions for appropriateness. Any grade of QL-3 will also automatically be reviewed and approved or rejected by the Operations Support Manager within three (3) working day after the exam was administered. To facilitate these reviews, a copy of the Evaluation Form will be sent to the Operations Support Manager immediately following the Operator's critique.

Incomplete Practical Examinations

In the event a practical examination cannot be completed due to circumstances outside of the control of the Examiner, (i.e., equipment malfunction, operating restrictions, equipment availability, emergencies etc…) the practical examination will be placed in an incomplete status and an overall grade will not be assigned. Every effort shall be made to complete any incomplete task areas as soon as possible. Once all outstanding task areas have been evaluated and graded, an overall practical score shall be assigned to the examination.

Attachment 4 - RTRA Performance Standardization Program Manual section on Incomplete Practical Examination. Page 1 of 1

Appendix D - RTRA Investigative Report

Washington Metropolitan Area Transit Authority
Office of Rail Transportation: Managerial Incident Investigation Report

Incident Status: PRELIMINARY

GENERAL INCIDENT INFORMATION

Incident Type:	Violating Absolute Block	Delay (Minutes):	N/A
Incident Date:	Wednesday, April 26, 2023	Vehicles Involved:	L7330-7635-7740-7651
Incident Time:	3:46 pm	First Reported By:	ROCC
Location:	Federal Center SW, track #1		

BRIEF DESCRIPTION:

Operator [redacted] was operating train ID #605 in the direction of Downtown Largo. ROCC instructed [redacted] to offload his train at Federal Center SW track #1 and to walk through his train to verify it was clear of customers. ROCC issued a permissive block to [redacted], and he repeated the permissive block to ROCC. Upon reaching his opposite end, [redacted] keyed the train up and moved against the established flow of traffic without an absolute block.

Key Employees Involved & Employee Statements:

Operator [redacted]
Hire Date – March 31, 2014
Train Seniority Date – June 5, 2022
Certification Date – June 3, 2022

Post Incident Testing & Employee History:

Post incident testing returned with passing results
Operator has no prior infractions on file

SIGNIFICANT INCIDENT TIMELINE:

3:57pm – ROCC instructed Train 605 track one Federal Center SW to offload

4:00pm – ROCC states to train 605 after they offload their train, they have a permissive block to the turnback, key down and reverse ends. ROCC also told the operator they would be going back to Ashburn. Train 605 repeated the transmission

4:01pm – ROCC inquires if the operator is moving the train on their block. The operator stated that he was keying up.

4:03pm – Train ID 605 was observed on the AIMS screen moving against the flow of traffic without an absolute block with a train on the platform at L'Enfant Plaza.

Attachment 1 – RTRA Investigation Page 1 of 2.

Washington Metropolitan Area Transit Authority
Office of Rail Transportation: Managerial Incident Investigation Report

SIGNIFICANT FINDINGS & PENDING ISSUES:

The operator did not receive an absolute block from ROCC prior to moving his train. The operator utilized the stop and proceed method without permission from ROCC. ROCC gave the train operator permission to move with a permissive block against the flow of traffic.

CORRECTIVE ACTIONS:

- Level III Safety/Operational Violation – 12 points, a written reprimand and refresher training

Root cause:
ROCC failed to provide the operator with an absolute block against the flow of traffic. ROCC also failed to instruct the operator that they needed to clear the interlocking prior to reversing ends.

The operator did not receive an absolute block from ROCC. The operator also utilized the stop-and-proceed method without authorization from ROCC. The operator failed to report that he had no speed commands before moving his train.

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

Report Prepared by: [redacted]

Report Reviewed by:

Office of Rail Transportation: Managerial Incident Investigation Report Page 2 of 2

Attachment 1 – RTRA Investigation Page 2 of 2.

Appendix E – ATCM Maximo Work Order

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

Work Order #: 17832444
Type: CM

Status: CLOSE
04/27/2023 09:44

Work Description: D06, Switches 1 A/B out of correspondence in reverse.
Job Plan Description:

Work Information

Asset:	ATCD061A SWITCH 1A, M3, US&S, LH, D06	**Owning Office:**	ATCS-TSSM-DRFO	**Parent:**	
Asset Tag:		**Maintenance Office:**	ATCS-TSSM-SWSH	**Create Date:**	04/26/2023 15:49
Asset S/N:		**Labor Group:**	ATCSD3D99	**Actual Start:**	04/26/2023 19:37
Location:	8164 D06, EASTERN MARKET, STATION, PLATFORM, ROOM 204, TRAIN CONTROL ROOM (D06 OB FT UP)	**Crew:**		**Actual Comp:**	04/27/2023 09:44
Work Location:		**Lead:**		**Item:**	M57530001
Failure Class:	ATCS001 SWITCH MACHINES	**GL Account:**	WMATA-02-33530-50499270-042-**********-*****-OPR**		
Problem Code:	2581 OUT OF CORRESPONDENCE	**Supervisor:**		**Target Start:**	
Requested By:	[redacted]	**Requestor Phone:**	[redacted]	**Target Comp:**	
Chain Mark Start:		**Chain Mark End:**		**Scheduled Start:**	
Create-Mileage:	0.0	**Complete-Mileage:**	0.0		

Task IDs

Task ID

10 4-26-23 Eve

We observed the loss of LB/LC at 51 and 52 of the hasp in the controller compartment of SW 1A. The hasp linkage needs to be adjusted to allow the plunger at the fingers of LB/LC to fully close.

SW 1 currently in correspondence due to hasp terminals 52 and 51 being jumpered in controller compartment.

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

20 4-27-23 Mid

We adjusted Switch 1A push rod for crank cut out. Switch 1A passed obstruction test and exercised several times. switch back in service informed MOC and OCC.

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]	04/26/2023	04/26/2023	16:00	20:00	Y	04:00	00:00	$144.98
10	[redacted]	04/26/2023	04/26/2023	16:00	20:00	Y	04:00	00:00	$144.98
10	[redacted]	04/26/2023	04/26/2023	16:00	20:00	Y	04:00	00:00	$165.12
10	[redacted]	04/26/2023	04/26/2023	16:00	20:00	Y	04:00	00:00	$165.12
10	[redacted]	04/26/2023	04/26/2023	16:00	20:00	Y	04:00	00:00	$165.12
10	[redacted]	04/26/2023	04/26/2023	16:00	20:00	Y	04:00	00:00	$165.12
10	[redacted]	04/26/2023	04/26/2023	16:00	20:00	Y	04:00	00:00	$144.98

WT_plust_woprint.rptdesign 06/25/2023 10:19

Attachment 1 – ATCM switch adjustment page 1 of 2.

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

Work Order #: 17832444
Type: CM

Status: CLOSE
04/27/2023 09:44

Work Description: D06, Switches 1 A/B out of correspondence in reverse.
Job Plan Description:

Actual Labor

Task ID	Labor	Start Date	End Date	Start Time	End Time	Approved?	Regular Hours	Premium Hours	Line Cost
	[redacted]	04/27/2023	04/27/2023	00:30	02:30	Y	02:00	00:00	$82.56
	[redacted]	04/27/2023	04/27/2023	00:30	02:30	Y	02:00	00:00	$82.56
	[redacted]	04/27/2023	04/27/2023	00:30	02:30	Y	02:00	00:00	$72.49
	[redacted]	04/27/2023	04/27/2023	00:30	02:30	Y	02:00	00:00	$72.49
	[redacted]	04/27/2023	04/27/2023	00:30	02:30	Y	02:00	00:00	$80.55
	[redacted]	04/27/2023	04/27/2023	00:30	02:30	Y	02:00	00:00	$82.56
	[redacted]	04/27/2023	04/27/2023	00:30	02:30	Y	02:00	00:00	$82.56
						Total Actual Hour/Labor:	42:00	00:00	$1,651.18

Related Incidents

Ticket	Description	Class	Status	Relationship
8666969	Switches 1 A/B out of correspondence	SR	PENDING	RELATED

Related Work Orders

WO	Description	Class	Status	Relationship
17832543	D06 SWITCH 1A - 1B CLAMPED IN NORMAL DUE TO HAND CRANK INDICATION OUT OF ADJUSTMENT	WORKORDER	CLOSE	RELATED

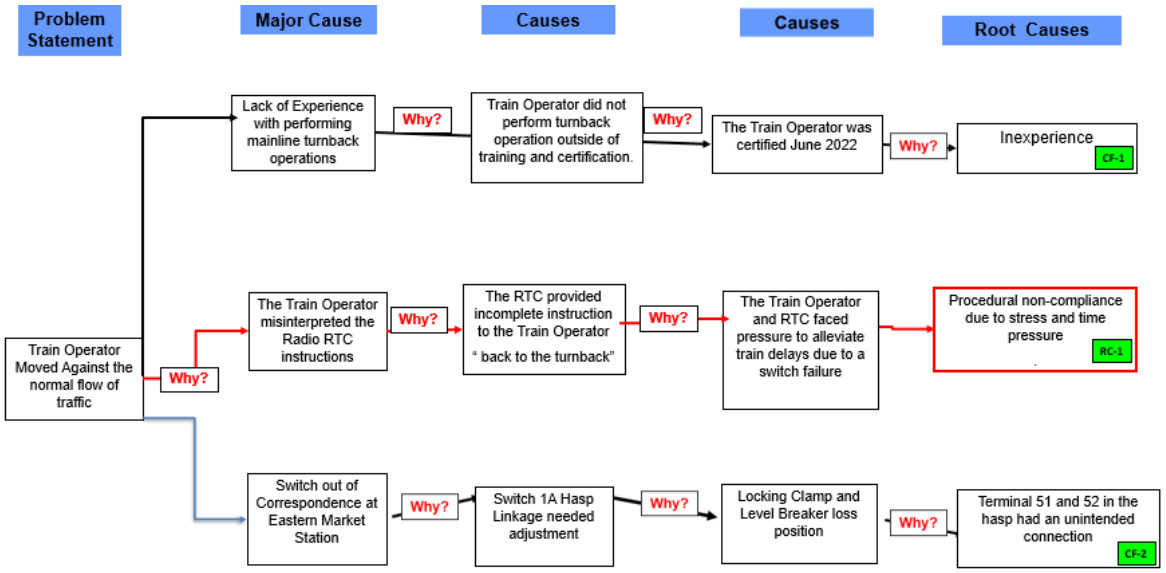
Failure Reporting

Cause		Remedy		Supervisor	Remark Date
1032	ADJUSTMENT IMPROPER	1031	ADJUSTED		04/27/2023
Remarks:	Adjusted Switch 1A push rod for crank cut out.				

WT_plust_woprint.rptdesign 06/25/2023 10:19

Attachment 1 – ATCM switch adjustment page 2 of 2.

Appendix F – Root Cause Analysis



Root Cause Analysis

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

FINAL REPORT OF INVESTIGATION A&I E23398

Date of Event:	June 14, 2023
Type of Event:	Improper Rail Vehicle Movement
Incident Time:	10:12 hours
Location:	McPherson Square, Track 1
Time and How received by SAFE:	10:12 hours MAC Desk
WMSC Notification Time:	12:03 hours
Responding Safety Officers:	None
Rail Vehicle:	Train 813 (7278-79**x**7671-70**x**7532-33**x**7653-52)
Injuries:	None
Damage:	None
Emergency Responders:	None
SMS I/A Number	20230623#109416

June 14, 2023
Table of Contents

Abbreviations and Acronyms

AIMS	Advanced Information Management System
AOM	Assistant Operations Manager
ARS	Audio Recording System
CAP	Corrective Action Plan
CCTV	Closed-Circuit Television
CM	Chain Marker
CMOR	Office of the Chief Mechanical Officer
MSRPH	Metrorail Safety Rules and Procedures Handbook
OM	Operations Manager
NOAA	National Oceanic and Atmospheric Administration
RTC	Rail Traffic Controller
RTRA	Office of Rail Transportation
ROCC	Rail Operations Control Center
SAFE	Department of Safety
SMS	Safety Measurement System
SPOTS	System Performance On Time System
TRST	Office of Track and Structures
VMS	Vehicle Monitoring 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 June 14, 2023, at 09:38 hours, a New Carrollton Division Train Operator (Train Operator #1) was returning from a break at Ballston Station and contacted the Ops 4 Radio Rail Traffic Controller (RTC) for instructions for their next assignment. The RTC instructed them to cushion (ride) Train ID 904 towards Train ID 621. The Train Operator was supposed to take over the operation of Train ID 621 and take it back in service to Ballston Station, which was a temporary terminal station. The Ops 2 Radio RTC advised Train Operator #1 that they would be informed on when to alight Train ID 904 to meet Train ID 621.

At 09:30 hours, another New Carrollton Division Train Operator (Train Operator #2) departed New Carrollton Yard, transporting a non-revenue train, Train ID 813, to Shady Grove Yard. The train did not have any mechanical defects and was intended to be used for training. The Train Operator of Train ID 813 was instructed that they would be relieved on the line, but they did not know where or who was supposed to relieve them.

At 09:58 hours, the Ops 2 Radio RTC instructed Train Operator #1 to disembark from Train ID 904 at Metro Center Station. While they stood on the platform, Train ID 813 arrived. Train Operator #2 inquired if Train Operator #1 was waiting for that train. The two Operators talked to one another but did not confirm the train information with the ROCC.

Train Operator #1 placed Train ID 813 in service at Metro Center Station, boarded customers, then proceeded to McPherson Square Station and serviced that station as well. Train Operator #1 stated they had a red signal when they were about to depart McPherson Square Station, so they contacted the Rail Operations Control Center (ROCC).

The ROCC's Advanced Information Management System (AIMS) board displayed the train as Train ID 813, and the Button RTC set a lunar signal with rail alignment set to the C & A Connector since Train ID 813 was being transported to Shady Grove Yard. Train Operator #1departed McPherson Square Station without verifying that the rail was aligned for a diverging move and that the lunar signal was solid (indicating a normal (straight-through) move). The lunar signal was flashing, which indicated a diverging move was aligned.

Train Operator #1 reported that they proceeded, then they felt the train diverge towards the C & A Connector. Train Operator #1 stopped and contacted the Radio RTC and informed them they were in the C & A Connector.

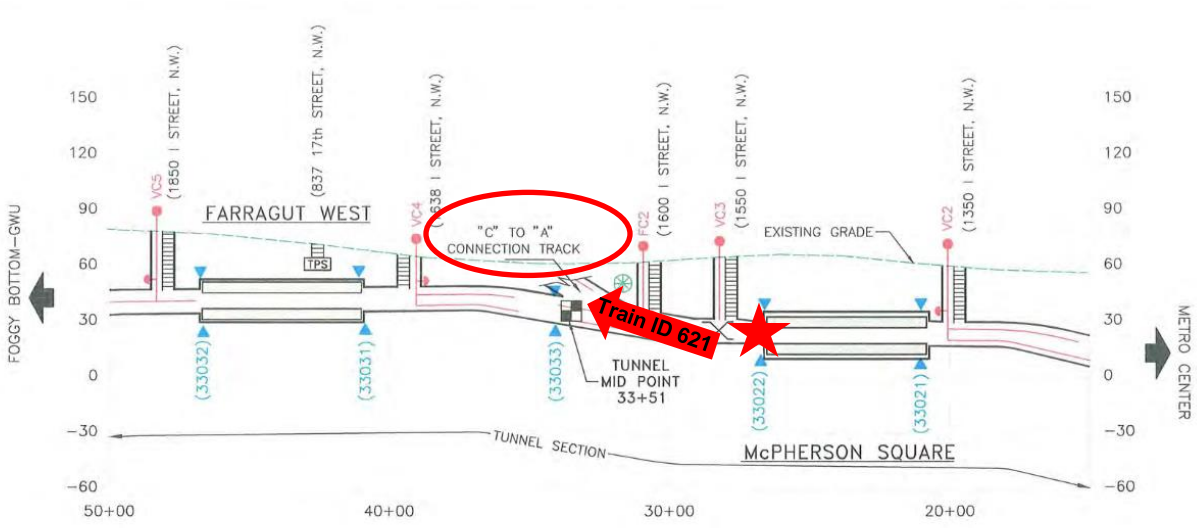
An Office of Rail Transportation (RTRA) Supervisor was riding on board the train and took over operations on the trailing end of the train. They reversed back to McPherson Square Station following procedure and offloaded customers at McPherson Square Station. There were no injuries or damage associated with this event.

The probable cause for this Improper Rail Vehicle Movement was a failure to identify a turnout move. The Train Operator should have verified the proper rail alignment and solid lunar signal before departing the station. A contributing factor was the lack of clear communications between all parties involved, which resulted in the Train Operator taking over operation of the incorrect train. Another contributing factor was the lack of a clear and concise process to verify change-offs or reliefs.

Incident Site

C&A Connector outside of McPherson Square Station on Track two. Track two is outbound, and McPherson Square is an indoor, center-platform station with an interlocking outside the station in the outbound direction.

Field Sketch/Schematics



The above depiction is not to scale.

Purpose and Scope

The purpose of this accident investigation and candid self-evaluation is to collect and analyze available facts, determine the probable cause(s) of the incident, identify contributing factors, and make recommendations to prevent a recurrence.

Investigative Methods

The investigative methodologies included the following:

- Physical Site Assessment through document review

- Formal Interviews – SAFE interviewed two 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:
  - Train Operator #1
  - Non-Revenue Train Operator (Train Operator #2)

- Documentation Review – A collection of relevant work history information and process documentation contained in Metro systems of record. These records include the following:
  - Metrorail Safety Rules and Procedures Handbook (MSRPH)

- National Oceanic and Atmospheric Administration (NOAA)
- Train Operator 30-Day Work History
- Train Operator Training Records
- Train Operator Manifest
- RTRA Managerial Incident Investigation Report

- System Data Recording Review – A collection of information contained in Metro Data Recording Systems. This data includes:
  - Audio Recording System (ARS) playback, including OPS 2,4 Radio, Telephone
  - Closed-Circuit Television (CCTV)
  - AIMS Playback
  - SPOTS Report

Investigation

On June 14, 2023, at 09:30 hours, a New Carrollton Division Train Operator contacted the Terminal Supervisor at New Carrollton Station to inform them that they were transporting a non-revenue train, Train ID 813, to Shady Grove Yard. They told the Terminal Supervisor they had a lunar signal; they were approaching the 8-car marker and would be looking for their relief as they transported Train ID 813 to Shady Grove Yard.

At 09:38 hours, another New Carrollton Division Train Operator was returning from a break at Ballston Station when they contacted an Ops 4 Radio RTC, informing them they were cushioning on Train ID 904 towards Train ID 621. The Radio RTC gave them a 100% repeat back and instructed them to contact Ops 2 when they arrived at Clarendon Station.

At 09:46 hours, Train Operator #1 contacted the Ops 2 Radio RTC and informed them they were on Train ID 904 and looking for Train ID 621. The Radio RTC told them they would advise when to get off Train ID 904 to intercept Train ID 621. Train Operator #1 was supposed to take over the operation of Train ID 621 and take it back in service to Ballston Station. Train Operator #1 relied on the Radio RTC to inform them when to alight Train ID 904.

At 09:58 hours, the Ops 2 Radio RTC instructed Train Operator #1 to disembark from Train ID 904 at Metro Center Station. The Radio RTC did not inform the Train Operator if their train would be a non-revenue train or not and did not tell the Train Operator there would be a train ahead of the train they were supposed to operate. While Train Operator #1 stood on the platform, Train ID 813 arrived on track two.

Train Operator #2 (Train ID 813) asked if Train Operator #1 was waiting for their train. The two Operators performed a verbal and visual verification that they were performing a change-off; however, they did not verify the lead car number with ROCC or verify the Train ID and destination code that was entered. A review of the existing procedures found that there is no standardized process to verify change-offs and reliefs on the mainline. Train Operator #1 believed that Train ID 813 was Train ID 621 since the Radio RTC instructed them to get off at Metro Center Station. Train Operator #1 and Train Operator #2 followed the required steps for conducting a change-off as they understood them.

Train Operator #1 placed Train ID 813 in service at Metro Center Station, boarded customers, then proceeded to McPherson Square Station and serviced that station. The Train Operator stated they had a red signal when they were about to depart McPherson Square Station, so they contacted the ROCC.

The ROCC's AIMS board displayed the train as Train ID 813, so the Button RTC set a lunar signal (flashing) with rail alignment to the C & A Connector since Train ID 813 was being transported to Shady Grove Yard.

Train Operator #1 departed McPherson Square Station without verifying that the rail was aligned for a straight-through move. In addition, their lunar signal was flashing, indicating the diverging move. Train Operator #1 reported, after the event, that as they proceeded, they felt the train diverging to the C & A Connector and stopped. During the interview, the Train Operator said they saw the flashing lunar but it did not register with them until they were going towards the C & A Connector. The Train Operator contacted the Radio RTC and informed them they were in the C & A Connector.

An Office of Rail Transportation (RTRA) Supervisor was on board the train and double-ended the train. The Radio RTC instructed them to clear the switches, reverse ends, and offload the train at McPherson Square Station. The train was offloaded, and the Train Operator was removed from service.

Chronological Event Timeline

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

Time	Description
09:30:28 hours	Train ID 813 (Train Operator #2): Informed the Terminal Supervisor that the D13-08 signal was lunar; they were approaching the 8-car marker, lighting to Shady Grove, and looking for relief. [Radio NC Terminal]
09:31:43 hours	Train ID 813: Contacted the Radio RTC to inform them they were lighting from New Carrollton to Shady Grove Yard and was looking for a relief. [Ops. 2]
09:31:59 hours	Radio RTC: Gave a 100% repeat back. [Ops. 2]
09:38:13 hours	Train Operator #1: Contacted the Radio RTC on Ops 4 and informed them they were cushioning from Ballston Station and looking for Train ID 621. Radio RTC: Gave a 100% repeat back and instructed the Train Operator to contact Ops 2 once they reached Clarendon Station. [Ops. 4]
09:39:47 hours	Ops 4 RTC: Contacted the Ops.2 Buttons RTC and informed them that a Train Operator was on Train ID 904 cushioning from Ballston Station looking for Train ID 621. [Ops. 4 Phone]
09:46:59 hours	Train Operator #1: Contacted the Radio RTC and informed them they were on Train ID 904 and looking for Train ID 621. Radio RTC: Gave 100% repeat and advised they would let them know when to step off. [Ops. 2]
09:58:43 hours	Radio RTC: Advised the Train Operator on Train ID 904 to disembark at Metro Center. Train Operator #1: Repeated "Metro Center." [Ops. 2]
10:04:17-44 hours	Train Operator #1: Contacted the Radio RTC to ask if they forgot about the Train Operator cushioning on Train ID 904 looking for Train ID 621. Radio RTC: Responded that Train Operator should be standing by at Metro Center waiting for 621. Train Operator #1: Responded they had Train 621 and had no readouts at McPherson Square Station, Track 2. Radio RTC: Instructed the Train Operator to stand by there was a train going into the C & A Connector. [Ops. 2]
10:04:45 hours	Train Operator #3: Stated Train ID 621 was at Metro Center. [Ops. 2]

Time	Description
10:08:02 hours	Radio RTC: Tried several times to contact Train ID 813 before giving them a permissive block no closer than 10 feet to A02-54 signal and contact Ops. 1. [Ops. 2]
10:09:33 hours	Train Operator #1: Identified themselves as Train ID 621 when they contacted the Radio RTC to report they had a lunar at McPherson Square Station, destination to Ballston, a wrong lead was set, and there was an RTRA Supervisor on the trailing end. [Ops. 2]
10:09:51 hours	Train Operator #3: Responded Train ID 621 was approaching McPherson Square Station. [Ops. 2]
10:09:52 hours	Radio RTC: Attempted to contact Train ID 813 to inform them of a permissive block to A02-54 signal and to contact Ops 1. [Ops. 2]
10:10:21 hours	Train Operator #1: Identified themselves as Train ID 621 when they informed the Radio RTC that they had a lunar at McPherson Square Station and took the lead into the C&A Connector. [Ops. 2]
10:10:58 hours	Radio RTC: Contacted the RTRA Supervisor on the trailing car. [Ops. 2]
10:11:41 hours	RTRA Supervisor: Contacted the Buttons RTC and informed them they were on the train. Buttons RTC: Instructed them to clear the C02-26 signal, and they would bring them back out on track 1. [Ops. 2 Phone]
10:17:02 hours	RTRA Supervisor: Advised the Buttons RTC that the Train Operator took the wrong train and picked up customers. Buttons RTC: Instructed them to offload the train. [Ops. 2 Phone]
10:19:10 hours	*Train ID 813 arrived at McPherson Square Station, track 1, and offloaded. [CCTV]*
10:44:58 hours	ROCC OM: Instructed the ROCC AOM to obtain a statement from the involved parties. [Rail 2 Phone]
10:46:16 hours	Ballston Terminal Supervisor: Contacted the ROCC AOM as instructed and advised they instructed the Train Operator to cushion to the train and they would provide a statement. [Rail 2 Phone]
10:50:20 hours	RTRA Supervisor: Contacted the ROCC AOM as instructed and was told to provide a statement of the incident and provided the ROCC AOM with the Train Operator's payroll and division. [Rail 2 Phone]
10:55:23 hours	ROCC AOM: Contacted New Carrollton Division to inform the Superintendent of the situation. [Rail 2 Phone]
11:00:43 hours	ROCC AOM: Asked the original Train Operator of Train ID 813 what happened when they arrived at Metro Center Station and instructed them to provide a written statement. [Rail 2 Phone]
11:05:23 hours	ROCC AOM: Received a call from New Carrollton Superintendent requesting additional information. The ROCC AOM provided an update on the situation. [Rail 2 Phone]
11:18:01 hours	ROCC AOM: Contacted another AOM to provide details of the incident to be included in the report. [Phone]

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

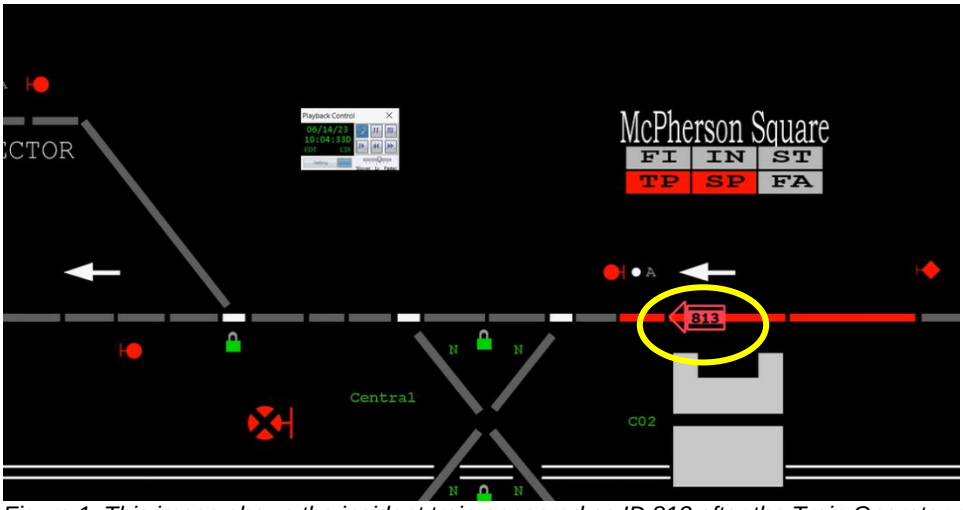


Figure 1: This image shows the incident train appeared as ID 813 after the Train Operator reportedly changed the train ID at Metro Center.

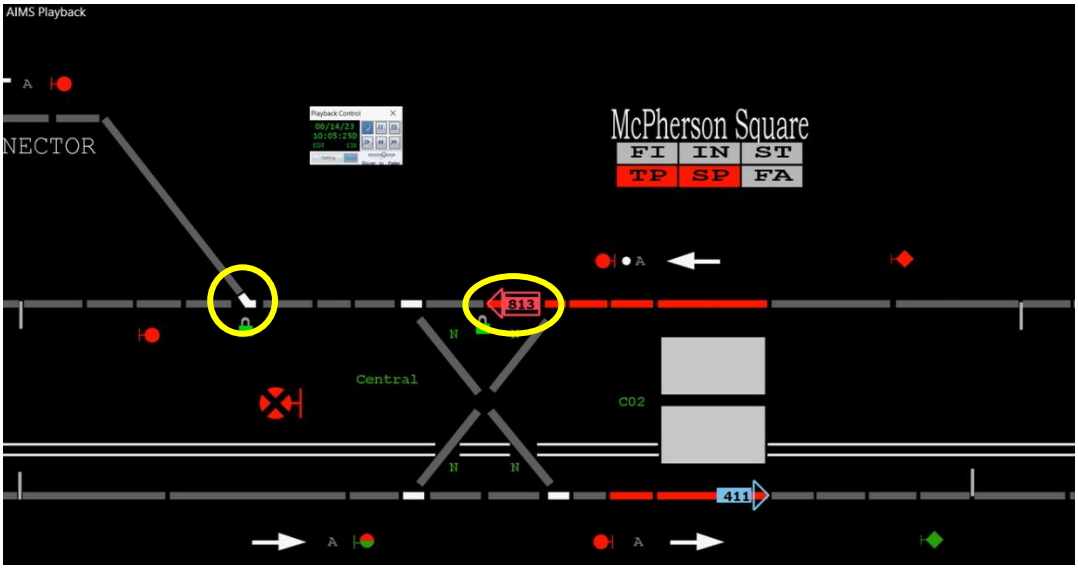


Figure 2: This image shows that when the train departed McPherson Square Station, it still appeared as ID 813 and the lead was set to the C & A Connector.

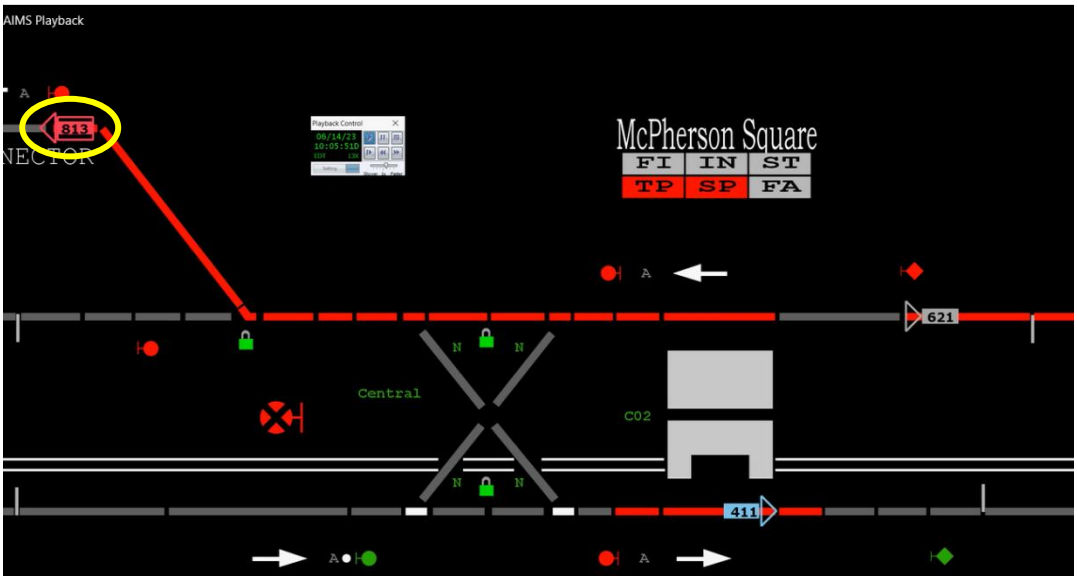


Figure 3: This image shows that Train ID 813 took the lead into the C & A Connector.

The Office of Chief Mechanical Officer (CMOR) / Vehicle Monitoring System (VMS)
Adopted from CMOR IIT report with minor formatting and grammatical edits:

"IIT completed its analysis of this incident. The Train operated as designed, and no faults were found on the Rail Cars that would have contributed to this incident."

Consist Configuration:

(L) 7278/79 X 7671/70 X 7532/7533 x 7653/52 (T)

Yard Activity Report:

Activity By Car Report
Printed:6/14/2023 9:44:16 PM

Car	7278
From	06/14/2023 08:15 AM
To	06/14/2023 12:00 PM

Local Time	Trn ID	Consist	From Trk	To Trk	Operator	Remarks	Recorded By
6/14/2023 8:15 AM	735	7652-7653.7533-7532.7670-7671.7279-7278	C99 11		[redacted]	Assigned	[redacted]
6/14/2023 8:15 AM	735	7652-7653.7533-7532.7670-7671.7279-7278	C99 11	ML		Dispatched to G05	
6/14/2023 9:14 AM	735	7652-7653.7533-7532.7670-7671.7279-7278		D13 02		Arrived	
6/14/2023 9:15 AM	735	7652-7653.7533-7532.7670-7671.7279-7278	D13 02			Departed	
6/14/2023 9:17 AM		7652-7653.7533-7532.7670-7671.7279-7278				Unassigned	
6/14/2023 9:17 AM	735	7652-7653.7533-7532.7670-7671.7279-7278	ML	D99 01	[redacted]	Received	[redacted]
6/14/2023 9:24 AM	813	7652-7653.7533-7532.7670-7671.7279-7278	D99 01			Assigned	
6/14/2023 9:30 AM	813	7652-7653.7533-7532.7670-7671.7279-7278		D13 02		Arrived	
6/14/2023 9:31 AM	813	7652-7653.7533-7532.7670-7671.7279-7278	D13 02			Departed	

AIMS Event Data:

09:29:38.434D	6/14/2023	New Carrollton	TWC D13------2 TRAIN 813 TRAIN ID UPDATED				
09:30:20.533D	6/14/2023	New Carrollton	TRAIN 813 TURNBACK ON TRACK D13-D2-599				
09:30:36.304D	6/14/2023	New Carrollton	TRAIN 813 TWC DESTINATION CODE 87 ACCEPTED FROM FIELD				
10:01:35.572D	6/14/2023	Metro Center L	TWC C01------2 TRAIN 813 RECEIVED ID 621 DOES NOT MATCH CURRENT ID				
10:03:34.863D	6/14/2023	McPherson Sq	TWC C02------2 TRAIN 813 RECEIVED ID 621 DOES NOT MATCH CURRENT ID				
10:03:34.863D	6/14/2023	McPherson Sq	TWC C02------2 TRAIN 813 DESTINATION MISMATCH TWC 62 - TRAIN 87				
10:15:22.963D	6/14/2023	McPherson Sq	TRAIN ID OF TRAIN 813 ON TRACK C02-AC2-33 CHANGED BY 035548 AT ctwksob-wkstpp				
10:15:47.405D	6/14/2023	Farragut West	DESTINATION CODE OF TRAIN 813 ON TRACK C03-C2-41 CHANGED BY 035548 AT ctwksob-w	kstpp			
10:15:47.405D	6/14/2023	Farragut West	CONSIST OF TRAIN 813 ON TRACK C03-C2-41 CHANGED BY 035548 AT ctwksob-wkstpp				
10:15:48.405D	6/14/2023	Farragut West	TRAIN 813 DESTINATION CODE 87 COMMANDED TWC UPDATE				
10:16:09.205D	6/14/2023	Farragut West	TRAIN 813 TWC DESTINATION CODE 87 COMMAND FAILED				
10:16:09.205D	6/14/2023	Farragut West	TRAIN 813 TWC ID COMMAND FAILED				
10:16:45.302D	6/14/2023	Foggy Bottom	TRAIN 813 DESTINATION CODE 87 COMMANDED TWC UPDATE				

Destination Set by Wayside
Train ID Changed @ Metro Center
Train ID Changed @ McPherson
T/O Change Destination Code
Train ID Changed
Destination Code Changed
TWC Update @ Farragut West

ROCS SPOTS Report:

ROCS SPOTS REPORT

Current date/time: Wed Jun 14 22:29:36 2023

and/or Select 4-digit car number: 7278 Leave blank to remove criteria

Select Date: Jun 14 2023 Select Times (0-24HRS): From 10:00 To 11:00

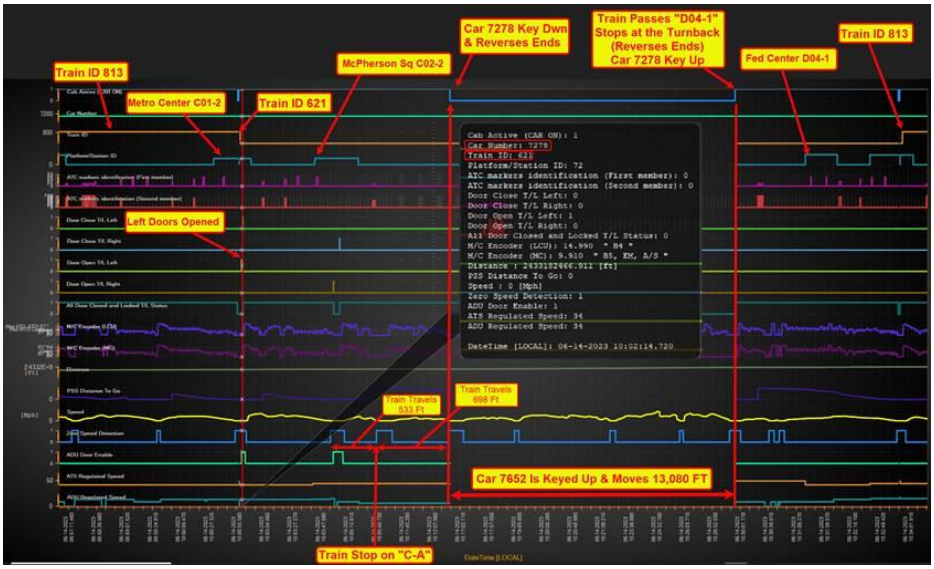
ID	Platform	length	dcode	Right door open	Right door close	dwell	Left door open	Left door close	dwell	Head Arrived	Tail cleared	cars
813	C01-2	2	87	10:01:18	10:01:29	11	10:01:03	10:02:35	92	10:00:21	10:03:00	7652-7653.7533-7532.7670-7671.7279-7278
813	C02-2	2	87	10:04:13	10:05:08	55				10:03:31	10:11:52	7652-7653.7533-7532.7670-7671.7279-7278
813	C02-1	0	87	10:18:46	10:19:12	26				10:17:58	10:19:44	7278-7279.7671-7670.7532-7533.7653-7652
813	C01-1	0	87							10:20:11	10:20:53	7278-7279.7671-7670.7532-7533.7653-7652
813	D01-1	0	87							10:21:00	10:23:24	7278-7279.7671-7670.7532-7533.7653-7652
813	D02-1	0	87							10:23:53	10:24:27	7278-7279.7671-7670.7532-7533.7653-7652
813	D03-1	0	87							10:24:49	10:26:17	7278-7279.7671-7670.7532-7533.7653-7652
813	D04-1	0	87							10:26:27	10:26:59	7278-7279.7671-7670.7532-7533.7653-7652
813	D04-2	0	87							10:31:14	10:32:11	7652-7653.7533-7532.7670-7671.7279-7278

Train Reverses Ends @ "C-A"; Traveled 1,231 FT

Train Reverses Ends @ TurnBack

- **NOTE 1:** The ROCS SPOTS Report Train ID and Destination Code columns are inconsistent with Train EMM Data from Lead Cars 7278 and 7652.
- **NOTE 2:** System Times listed are within tolerance and match events in the Train EMM Data from Lead Cars 7278 and 7652.

Car 7278 EMM Data Graphic:

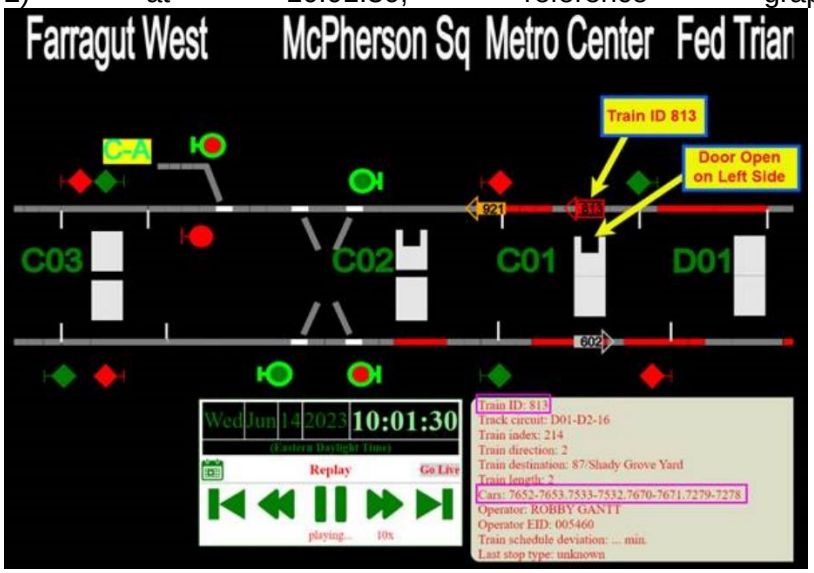


Car 7652 EMM Data Graphic:

Incident Summary:

1. At 09:30 on 06/14/2023, consist made up of Cars (L) 7278/79 X 7671/70 X 7532/33 X 7653/52 (T) left New Carrollton Yard (D99) and arrived at New Carrollton Station (D13) on Track 2; reference Yard Activity Report above.
2. After arriving at New Carrollton Station (D13-2), the Train accepted a TWC Destination Code “87” (Shady Grove Yard) from the wayside, reference AIMS Event Data above.
3. At 09:31:44 on 06/14/2023, Train ID 813 departed from New Carrollton Station (D13-2).
4. At 10:00:45 on 06/14/2023, Train 813 came to a stop at Metro Center (C01-2), per Car 7278 EMM Data Graphic and ROCS SPOTS Report above.
    a. Train Keyed Down at 10:00:57.
    b. Train Keyed Up at 10:01:12.

c. Train ID changed to “621” at 10:01:27.
d. Reference AIMS TPS Executive Traffic Graphic of Train 813 at Metro Center (C01-2) at 10:01:30; reference graphic below.



e. Train ID changed by TWC Wayside to 621 at 10:01:35; reference AIMS Event Data above.
f. Train Operator Opened Left Side Doors at 10:01:58, per EMM Data.
g. Train Operator set a new Route Code of 62 (Ballston Station (K04) at 10:02:07, per PICU Data from Car 7652.

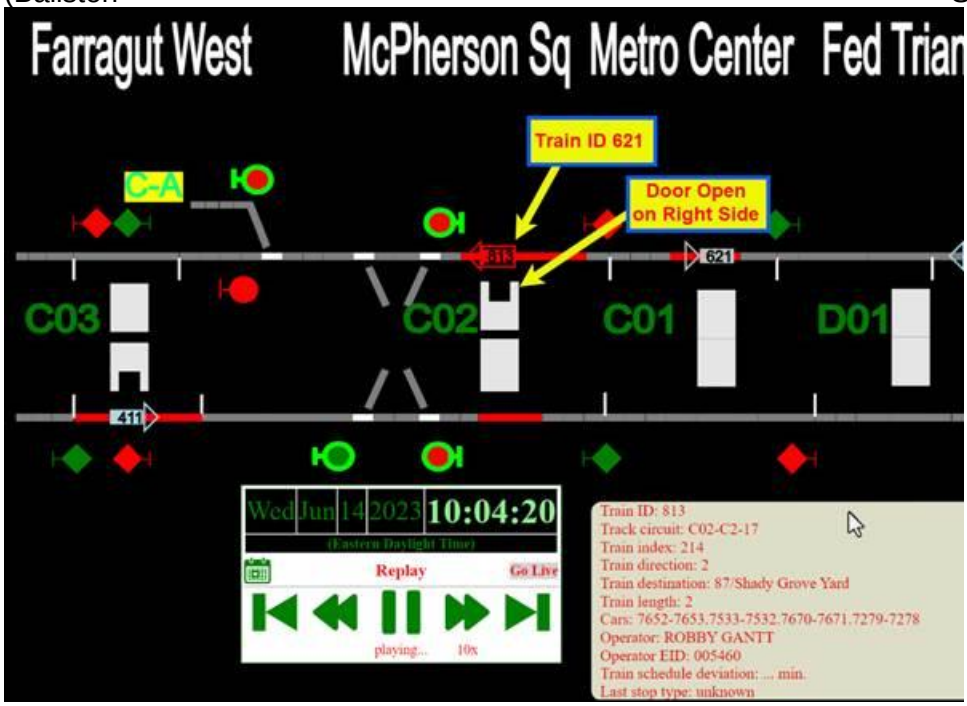
7652	PICU	PICU-A	06/14/2023	10:02:03	177	Set Route
7652	PICU	PICU-A	06/14/2023	10:02:07	139	PICU Information [5:00] [62:72:0:0:0:0]

h. Train Operator Closed Left Side Doors at 10:02:26 per EMM Data.
i. The Train begins to move at 10:02:35.

5. At 10:03:31 on 06/14/2023, Train 621 stopped at McPherson Sq (C02-2), per ROCS SPOT Report Graphic below.

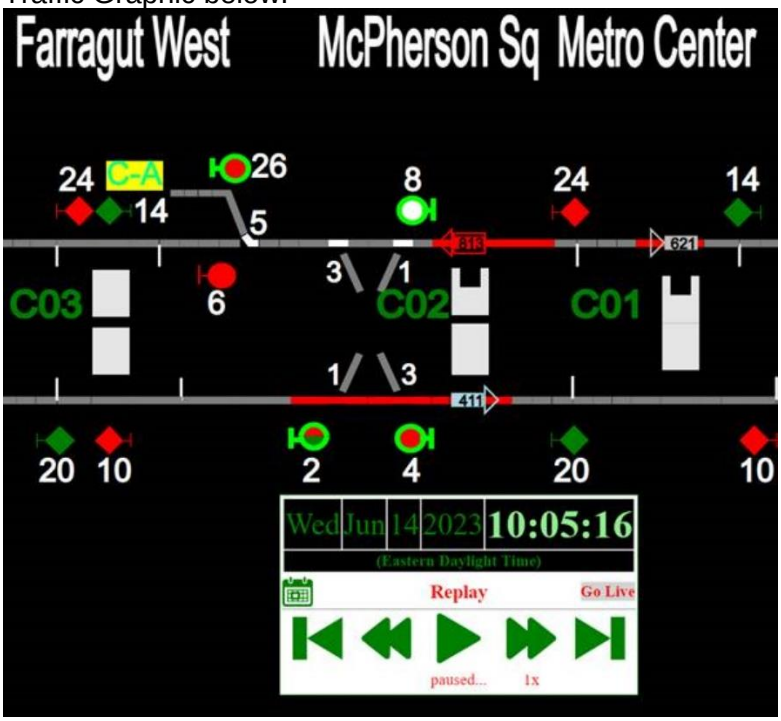
a. Reference AIMS TPS Executive Traffic Graphic of Train 813 at McPherson Sq (C02-2) at 10:04:20; reference graphic below.
Per Car EMM Data, the Train ID is 813, and the Destination Code is set to 62

(Ballston Station).

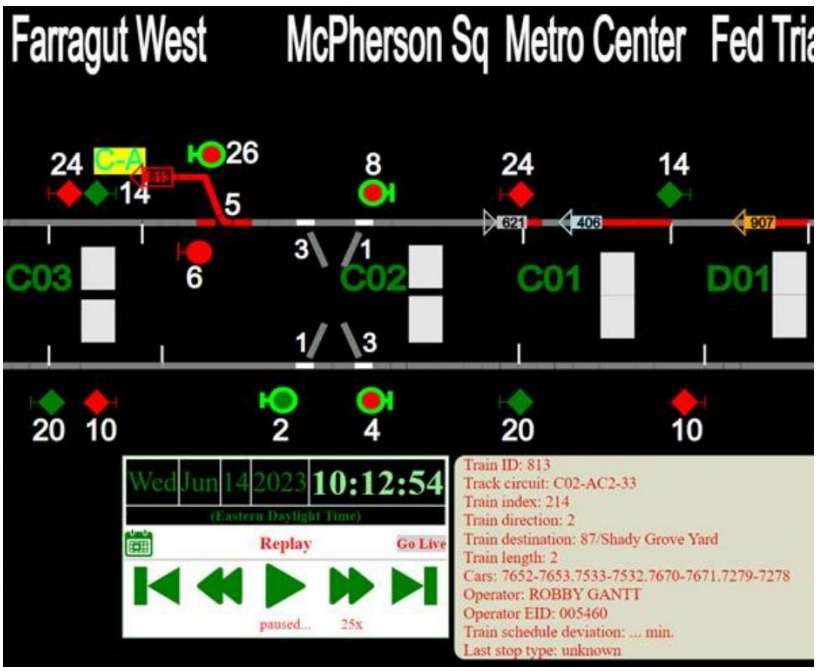


b. Train Operator Opened Left Side Doors at 10:04:04, per EMM Data.
c. Train Operator Closed Left Side Doors at 10:05:00, per EMM Data.

6. The Train begins to move at 10:05:09 and travels 533 feet, stopping at 10:05:40 for Red Signal 8.
7. At 10:05:16, Signal 8 changes to Lunar. Switches 1 and 3 are set for Straight Move, and Switch 5 is set for a divergent move to the “C-A” junction; reference AIMS TPS Executive Traffic Graphic below.

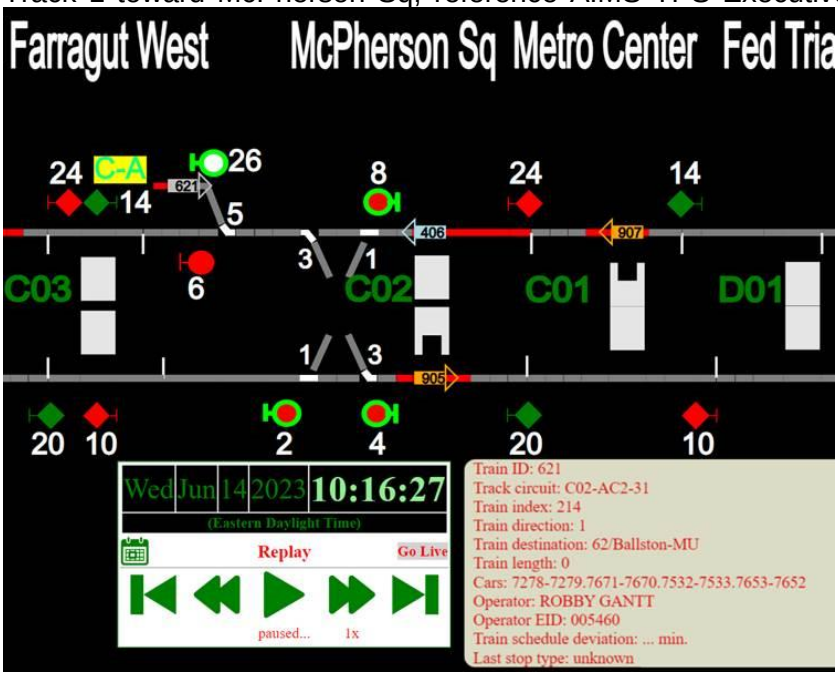


8. The Train begins to move at 10:11:35 and travels 698 feet, stopping at 10:13:27.
9. The Train Keys Down at 10:12:29, reference AIMS TPS Executive Traffic Graphic below.



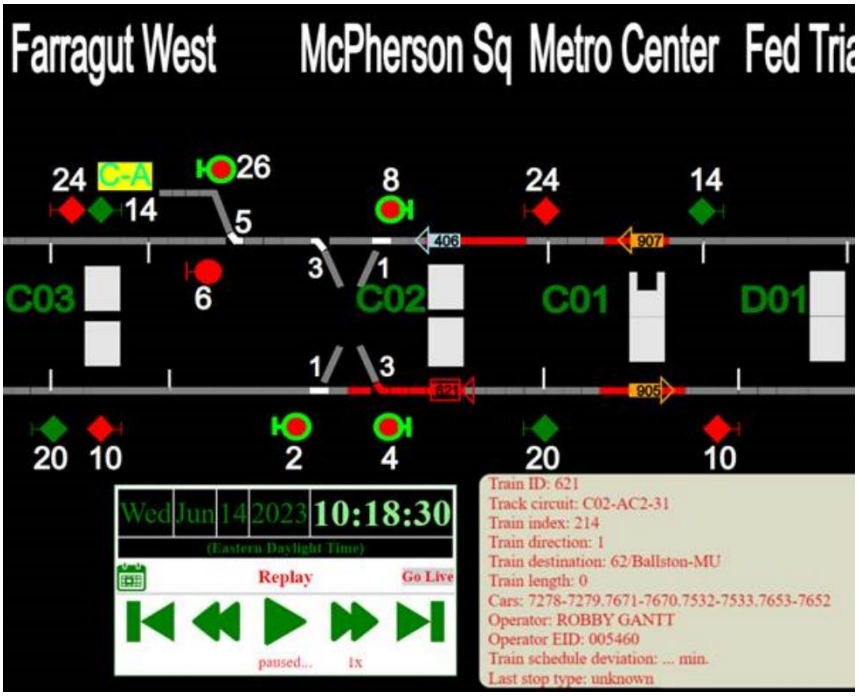
10. At 10:16:33 on 06/14/2023, Train 813 Keyed Up on C-A Junction, per Car 7652 EMM Data Graphic.

11. At 10:16:27, Signal 26 goes Lunar, and Switches 5, 3, and 1 are set for a Crossover to Track 1 toward McPherson Sq; reference AIMS TPS Executive Traffic Graphic below.

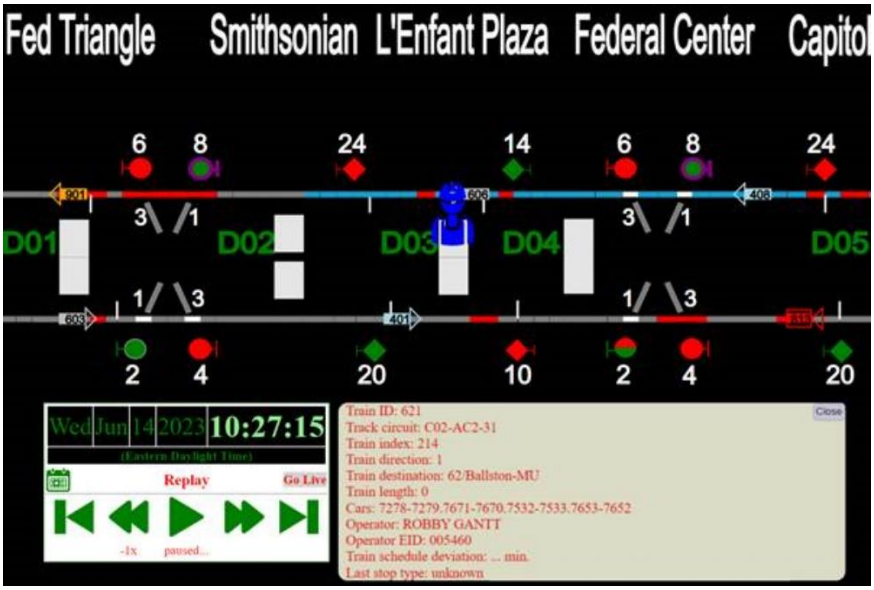


12. At 10:17:15, the Train began moving in reverse toward McPherson Sq (C02) and crossed over to Track 1; reference AIMS TPS Executive Traffic Graphic above, and per Car 7652 EMM Data Graphic.

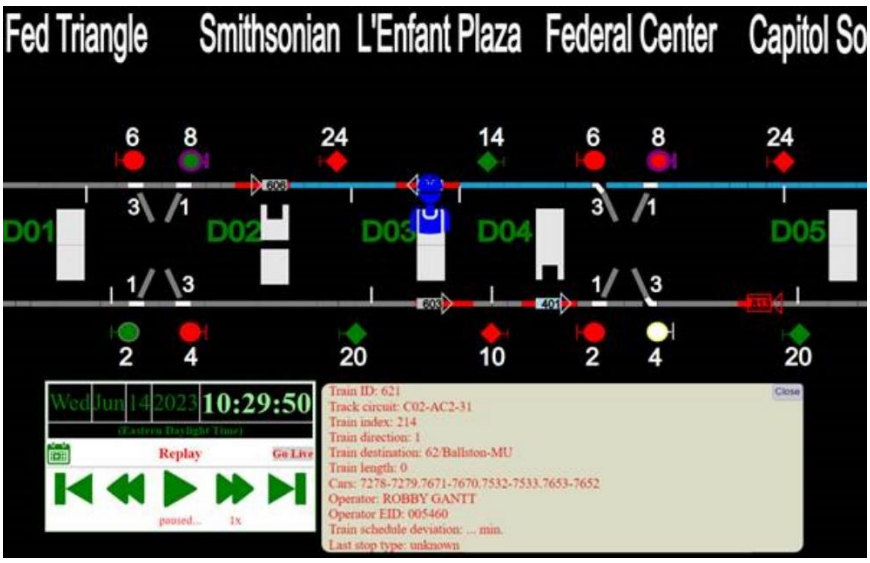
13. At 10:18:30, the Train stops at McPherson Sq (C02-1); reference Car 7658 EMM Data above and AIMS TPS Executive Traffic Graphic below.



14. At 10:21:49, the Train stops at Metro Center (C01-1), per Car 7652 EMM Data Graphic.
15. At 10:25:22, the Train stops at L'Enfant Plz (D03-1); per Car 7652 EMM Data Graphic.
16. At 10:27:15, the Train passes through Federal Center (D04-1) at 21 MPH and travels 1,186 Ft before stopping at the TurnBack, per Car 7652 EMM Data Graphic, reference AIMS TPS Executive Traffic Graphic below.



17. At 10:27:31, Car 7652 Keys Down.
18. At 10:29:50, Interlock Switch 3 and 6 move to a divergent position for Train 813 to cross over to Track 2, and Signal 4 go Lunar.



19. At 10:29:51, Car 7278 Keys Up (Reverses Ends).
20. At 10:30:01, the Train moves 445 feet and stops.
21. At 10:30:46, the Train moves 12 feet and stops at the 8 Car Marker.
22. At 10:30:59, the Train moves 2,541 feet and stops at L'Enfant Plaza (D03-2).
23. The Train continues to Shady Grove Yard.

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

"On Wednesday, June 14, 2023, at approximately 9:40 am the Train Operator was instructed by RTRA Supervisor to board (ID 904) leaving Ballston at 9:43 am to intercept ID 621 that left Largo at 9:32am. ROCC instructed the Operator to intercept ID 621 at Metro Center track 2. The Operator took over the operations of non-revenue train ID 813 from the Operator who was transporting from New Carrollton towards Shady Grove. The Operator inadvertently placed train ID 813 in service at Metro Center track 2 because they thought the train was ID 621. Upon arrival at McPherson Square, the Operator reported a red signal and was told to stand by for a lunar. At approximately 10:03am, the Operator reported accepting a route into the C & A Connector with customers aboard the train. An RTRA Supervisor notified ROCC that they were at McPherson Square and keyed themself aboard, and was in the trailing cab to assist with bringing the train out of the C & A Connector. ROCC instructed the Operator to continue into the C & A Connector and clear the C02-26 signal. After clearing C02-26 signal, an RTRA Supervisor was given a permissive block to McPherson Square track 1, verifying a lunar at CO2- 26 signal, correct rail alignment, speed commands and offload the train. The Operator was removed from service and transported for post-incident testing."

Interview Findings

As part of the investigation launched into the event, SAFE interviewed two 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

- The Train Operator was returning from a break and had to ride another train to reach their assigned train (referred to as "cushioning").
- The Radio RTC instructed them to get off at Metro Center, Track 2.
- The Train Operator got off at Metro Center, and the Train Operator of Train ID 813 asked if they were getting the train.
- The Train Operator was unaware that Train ID 813 was a non-revenue train en route to Shady Grove Yard.
- The only verification the Train Operators did was "visual and verbal."
- The Train Operator put Train ID 813 in service at Metro Center Station without contacting ROCC.
- The Train Operator serviced Metro Center and McPherson Square Station.
- The Train Operator contacted the ROCC at McPherson Square Station because they had a red signal.
- When the Train Operator received the lunar signal, they departed McPherson Square Station without verifying the proper rail alignment or observing that the signal was flashing, which indicated a diverging move.
- The Train Operator stopped the train when they felt it diverging to the C & A Connector.
- The Train Operator contacted the Radio RTC and informed them of the situation.
- There was an RTRA Supervisor on board the train, so they double-ended the train, cleared the switches, returned to McPherson Square Station, and offloaded the customers.

Non-Revenue Train Operator

- They were working in the New Carrollton Yard when they were assigned to transport Train ID 813 to Shady Grove Yard.
- They knew they would be relieved prior to Shady Grove Yard but were not told where they would relieved.
- They were at Federal Triangle Station when they heard the Radio RTC instruct the Train Operator to get off at Metro Center for their train.
- When they arrived at Metro Center, the Train Operator was on the platform and boarded the train.
- They asked the Train Operator if Train ID 813 was their train and they confirmed.
- They relinquished the train operations to the Train Operator.
- The ROCC never informed them who or where they would be relieved.

Weather

On June 14, at the time of the incident, NOAA recorded the temperature as 80° F, with mostly cloudy skies. The weather did not contribute to this incident (Weather source: NOAA) – Location: Washington, DC.

Related Rules and Procedures

General Rule 1.1: All employees of WMATA, regardless of rank or title, shall be knowledgeable of the rules set forth in this manual that ply to the actions that they take, as well as rules and procedures contained in documents pertaining to their specific work assignments.

General Rule 1.46: Failure to maintain attention to operational duties.

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

MOR 2.4.2: When making a relief or change-off on the mainline, both RTC and Rail Vehicle Operators involved shall take every step necessary, including cancelling the relief, to ensure uninterrupted revenue operations with no impact to the customers.

Human Factors

Fatigue

Signs and Symptoms of Fatigue

We evaluated conditions at the time of the incident to distinguish whether evidence of fatigue was present. No video of the Train Operator was available to ascertain whether evidence of fatigue was present. 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

We 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 Train Operator reported keeping a regular sleep schedule in the days leading up to the incident. The Train Operator worked the morning shift in the days leading up to the incident. The Train Operator was awake for 7.4 hours at the time of the incident. The Train Operator reported 6.75 hours of sleep in the 24 hours preceding the incident. The off-duty period was 61 hours, providing an opportunity for 7-9 hours of sleep. This was a comparable amount of sleep as the Train Operator's regular workday sleep durations. The employee reported no issues with sleep.

Post-Incident Toxicology Testing

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

Findings

- The two Train Operators involved believed they were supposed to change off, but failed to share enough information to confirm that their change off was correct.
- The Train Operator of Train ID 813 did not receive instructions on where to meet their relief Operator.
- Train Operator #1 was unaware that Train ID 813 was a non-revenue train being transported to Shady Grove Yard.
- Train Operator #1 was not aware of the lead car number or the operator's name operating Train ID 621 in order to perform the change-off.
- After servicing McPherson Square Station, the Train Operator had a red signal and correctly contacted the ROCC.
- The ROCC set the lead to the C&A Connector because AIMS still showed the train as non-revenue Train ID 813.

Immediate Mitigation to Prevent Recurrence

- In adherence to Standard Operating Procedure 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 accordance with the CMOR Incident Investigation Team (IIT) Operations Administrative Policy (OAP) 102.06, the Rail Operations Control Center (ROCC) promptly initiated the removal of Train ID 813 from revenue service for post-incident investigative measures. This action adhered to the Rail Vehicle Event Investigation Policy, ensuring a comprehensive examination of the incident.

Probable Cause Statement

The probable cause for this Improper Rail Vehicle Movement was a failure to identify a turnout move. The Train Operator should have verified the proper rail alignment and solid lunar signal before departing the station. A contributing factor was the lack of clear communications between all parties involved, which resulted in the Train Operator taking over operation of the incorrect train. Another contributing factor was the lack of a clear and concise process to verify change outs or reliefs.

Recommended Corrective Actions

Corrective Action Code	Description	Responsible Party	Estimated Completion Date
109416_SAFE CAPS_SAFE_ 001	Review and analyze the need for a formal procedure for train assignment verification during changeouts or reliefs.	SAFE SRC	6/31/2024
109416_SAFE CAPS_RTRA_ 001	The Train Operator should complete refresher training with a focus on verifying rail alignments and verifying train assignments during reliefs.	RTRA SRC	Completed

Appendices

Appendix A – Interview Summaries

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

Train Operator

The Train Operator is a WMATA employee with ten (10) years of service with four (4) years as a Train Operator. The Train Operator previously worked as a Bus Operator. The Train Operator is RWP Level 2 certified and must recertify in April 2024. The Train Operator was last recertified as a Train Operator in June 2022. The Train Operator mentioned feeling fully alert right before the incident. The Train Operator stated they were off the day before the incident. The Train Operator mentioned no personal or non-work related circumstances affecting their sleep.

The Train Operator has been working a 3:00 AM run during the Orange line shutdown. They stated they reported to work at their normal time on June 14, 2023, and it was a normal workday. The Train Operator was "As-Directed" at Ballston Station, and when they were about to leave, a Line Platform Instructor (LPI) took their train towards Largo Station because a student needed stick time. The LPI did not return to Ballston Station with the train, so the Terminal Supervisor instructed the Train Operator to cushion towards their train, Train ID 621. The Train Operator stated they informed Central that they were cushioning towards Train ID 621, and Central told them they would let them know when to get off. The Train Operator said the Radio RTC instructed them to get off at Metro Center, Track 2. The Train Operator stated they did a visual and verbal verification at Metro Center Station with the Train Operator that was on track 2. The Train Operator stated they were unaware it was a non-revenue train. They stated that when the Radio RTC instructed them to get off at Metro Center, they assumed the train on track 2 was their train. The Train Operator stated that the visual and verbal verification was the only verification that was done, and they should have contacted Central.

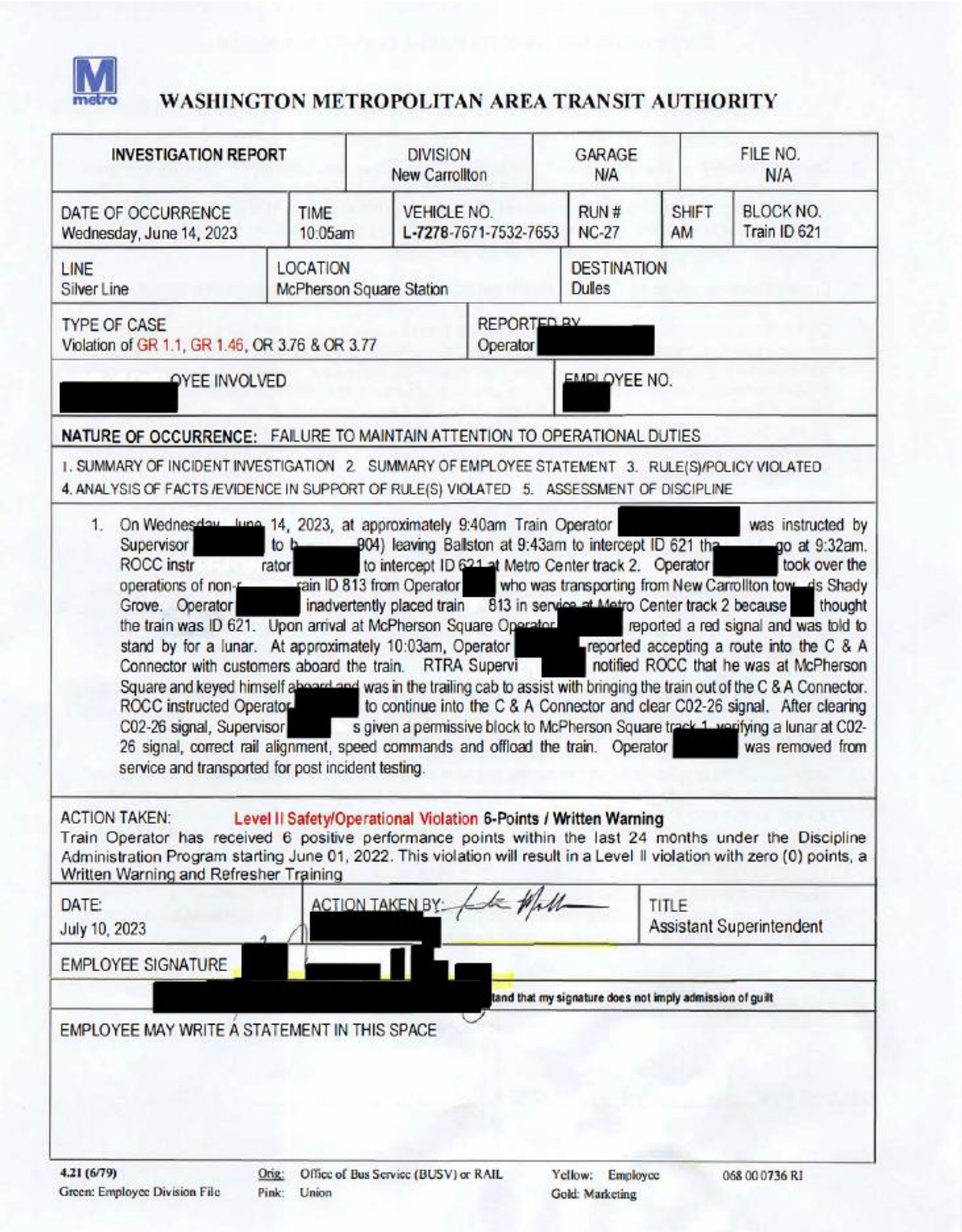
The Train Operator stated that when you depart a diverging station, you should check for lunar signals, readouts, and proper rail alignment. The Train Operator said that when they were about to depart McPherson Square Station, they had a red signal and no readouts, so they contacted Central. After receiving the lunar signal, the Train Operator closed the doors and proceeded without verifying the proper rail alignment. The Train Operator stated a flashing signal indicates if the rail alignment is set for a diverging move to the C&A Connector. They realized they were operating the wrong train when they felt the train diverging to the C&A. There was an RTRA Supervisor on board that double-ended the train. The Train Operator stated they should have contacted Central to verify they were about to operate the correct train.

Non-Revenue Train Operator

The Non-Revenue Train Operator is a WMATA employee with twenty (20) years of service with ten (10) years as a Train Operator. The Non-Revenue Train Operator previously worked as a Bus Operator. The Train Operator is RWP Level 2 certified and must recertify in April 2024. The Non-Revenue Train Operator last recertified as a Train Operator in March 2023. The Non-Revenue Train Operator mentioned they were working in the New Carrollton Yard when they were asked to transport a train to Shady Grove Yard. They said they were supposed to meet someone prior to Shady Grove Yard but was never informed where they would be relieved.

The Non-Revenue Train Operator said when they were at Federal Triangle Station, they heard the Radio RTC instruct the Train Operator to get off at Metro Center for their train. The Non-Revenue Train Operator said the Train Operator did not seem confused that the train was out of service. The Non-Revenue Train Operator said a "visual and Verbal" is when you visually see the

other Train Operator and verbally talk to them. They said they never received any communication from the ROCC on where they would be relieved.



WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

INVESTIGATION REPORT	DIVISION New Carrollton	GARAGE N/A	FILE NO. N/A

DATE OF OCCURRENCE	TIME	VEHICLE NO.	RUN #	SHIFT	BLOCK NO.
Wednesday, June 14, 2023	10:05am	L-7278-7671-7532-7653	NC-27	AM	Train ID 621

LINE	LOCATION	DESTINATION
Silver Line	McPherson Square Station	Dulles

TYPE OF CASE	REPORTED BY
Violation of GR 1.1, GR 1.46, OR 3.76 & OR 3.77	Operator [redacted]

[redacted]OYEE INVOLVED	EMPLOYEE NO.
[redacted]	[redacted]

NATURE OF OCCURRENCE: FAILURE TO MAINTAIN ATTENTION TO OPERATIONAL DUTIES

1. SUMMARY OF INCIDENT INVESTIGATION 2. SUMMARY OF EMPLOYEE STATEMENT 3. RULE(S)/POLICY VIOLATED
4. ANALYSIS OF FACTS /EVIDENCE IN SUPPORT OF RULE(S) VIOLATED 5. ASSESSMENT OF DISCIPLINE

1. On Wednesday, June 14, 2023, at approximately 9:40am Train Operator [redacted] was instructed by Supervisor [redacted] to b[redacted]904) leaving Ballston at 9:43am to intercept ID 621 tha[redacted]go at 9:32am. ROCC instr[redacted]rator [redacted] to intercept ID 621 at Metro Center track 2. Operator [redacted] took over the operations of non-r[redacted]ain ID 813 from Operator [redacted] who was transporting from New Carrollton tow[redacted]ds Shady Grove. Operator [redacted] inadvertently placed train 813 in service at Metro Center track 2 because [redacted] thought the train was ID 621. Upon arrival at McPherson Square Operator [redacted] reported a red signal and was told to stand by for a lunar. At approximately 10:03am, Operator [redacted] reported accepting a route into the C & A Connector with customers aboard the train. RTRA Supervi[redacted] notified ROCC that he was at McPherson Square and keyed himself aboard and was in the trailing cab to assist with bringing the train out of the C & A Connector. ROCC instructed Operator [redacted] to continue into the C & A Connector and clear C02-26 signal. After clearing C02-26 signal, Supervisor [redacted] s given a permissive block to McPherson Square track 1 verifying a lunar at C02-26 signal, correct rail alignment, speed commands and offload the train. Operator [redacted] was removed from service and transported for post incident testing.

ACTION TAKEN: **Level II Safety/Operational Violation 6-Points / Written Warning**
Train Operator has received 6 positive performance points within the last 24 months under the Discipline Administration Program starting June 01, 2022. This violation will result in a Level II violation with zero (0) points, a Written Warning and Refresher Training

DATE:	ACTION TAKEN BY:	TITLE
July 10, 2023	[redacted]	Assistant Superintendent

EMPLOYEE SIGNATURE [redacted]

[redacted]tand that my signature does not imply admission of guilt

EMPLOYEE MAY WRITE A STATEMENT IN THIS SPACE

4.21 (6/79) Orig: Office of Bus Service (BUSV) or RAIL Yellow: Employee 068 00 0736 RI
Green: Employee Division File Pink: Union Gold: Marketing

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

Investigation Report Continuation Sheet

2. Operator [redacted], in your incident report you stated, "On the above date I operator [redacted] was given instructions to intercept #621 on track 2 Metro Center. The operator and I did a visual verbal and I then proceeded to McPherson Square. I had a red signal and notified central, and was told to stand by for a lunar, once I received the lunar and readouts I continued, and noticed the lead was wrong diverting towards the C and A. I then notified ROCC. I called ROCC and identified as #621 at McPherson Square Track #2.

3. Operator [redacted], this incident has been investigated and the following rules and procedures were violated:

   GR 1.1 All employees of WMATA, regardless of rank or title, shall be knowledgeable of the rules set forth in this manual that apply to the actions that they take, as well as rules and procedures contained in documents pertaining to their specific work assignments. The Roadway Worker in Charge (RWIC) and/or Escort shall be responsible for ensuring WMATA contractors and visitors abide by the rules set forth in this manual as it pertains to specific work assignments Failure of any employee to abide by established rules and procedures or failure to use sound judgment, regardless of the time, place or circumstance, so as to compromise the safety of the public or fellow employees will result in the employee's immediate removal from service, pending an investigation. Disciplinary action will include permanent disqualification from safety sensitive positions or dismissal.

   GR 1.46 Failure to maintain attention to operational duties

   OR 3.76 Rail vehicles shall not be operated through improperly aligned track switches.

   OR 3.77 If a rail vehicle runs through an improperly aligned track switch, the operator shall stop the vehicle immediately, and report the occurrence to ROCC or the Interlocking Operator. All parties shall treat the situation as if the vehicle has derailed (SOP # 9), and the vehicle shall not be moved. Subsequent movement of the affected rail vehicle shall not be undertaken until investigated and determined to be safe, by authorized personnel

4. Operator [redacted], based on your interview with Assistant Superintendent [redacted] and Superintendent [redacted] your incident report, VMS Reports and ROCC incident report it has been determined that you did not verify correct rail alignment and a solid lunar signal before leaving McPherson Station.

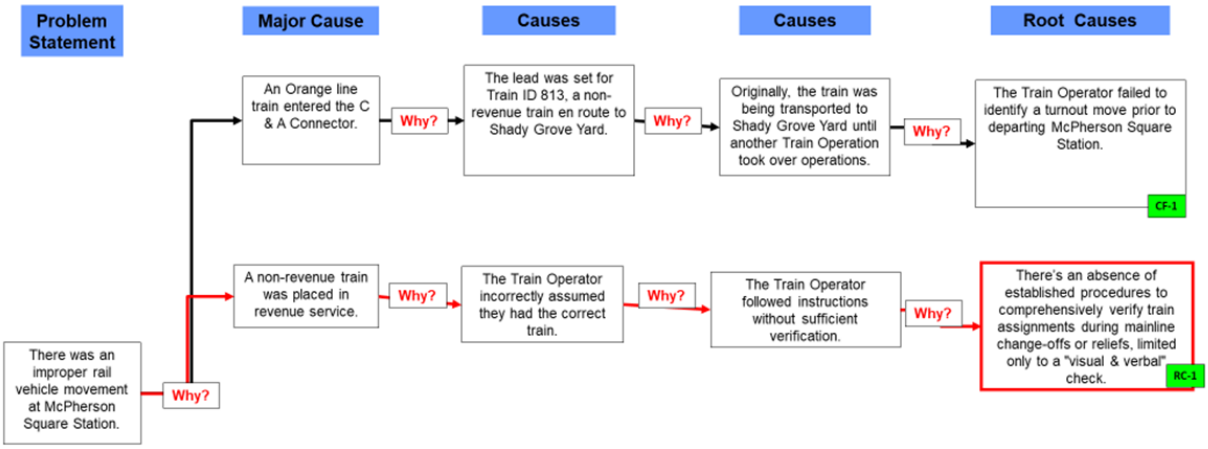
5. In determining the appropriate disciplinary penalty for your actions, New Carrollton Division Management considered many factors. The records of WMATA indicate that you have been an employee since April 29, 2013. You have been a Train Operator since October 27, 2019. Your performance record indicates that prior to this violation you had a total of zero (0) Discipline Administration Program (DAP) points. For your failure to maintain attention to operational duties, you are hereby issued a Level II Safety/Operational Violation, Written Warning, with six (6) DAP points assessed. Operator [redacted], you have six (6) performance points which will be used to reduce the number of points in this case. You will now be issued a Level II Safety Violation with a Written Warning and zero (0) points assessed. Operator [redacted] any future violations of this nature will result in progressive disciplinary actions taken to include termination of your employment with the Washington Metropolitan Area Transit Authority.

A copy of this incident will be kept in your personnel file.

EMPLOYEE [redacted] PLOYEE #: [redacted]

DATE: 7-10-23

Appendix C – Why-Tree Analysis



Root Cause Analysis

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

FINAL REPORT OF INVESTIGATION A&I E23666

Date of Event:	09/23/2023
Type of Event:	O-7: Improper Rail Vehicle Movement
Incident Time:	23:02 hours
Location:	Federal Center SW Station, Track 1
Time and How received by SAFE:	23:07 hours via the Mission Assurance Coordinator (MAC)
WMSC Notification Time:	09/24/2023 at 00:50 hours
Responding Safety Officers:	WMATA SAFE: No WMSC: No Other: No
Rail Vehicle:	Train ID 908 [L7734-7735.7221-7220.7568-7569.7573-7572T]
Injuries:	None
Damage:	None
Emergency Responders:	Office of Rail Transportation (RTRA)
SMS I/A Incident Number:	20230926#111684

Federal Center SW Station – Improper Rail Vehicle Movement

September 23, 2023

Table of Contents

Abbreviations and Acronyms

AIMS	Advanced Information Management System
ARS	Audio Recording System
CAP	Corrective Action Plan
CCTV	Closed-Circuit Television
CMNT	Office of Car Maintenance
CMOR	Office of Chief Mechanical Officer
I/A	Incidents/Accidents
IIT	Incident Investigation Team
MOR	Metrorail Operating Rulebook
NOAA	National Oceanic and Atmospheric Administration
NVR	Network Video Recorder
OSI	Office of Safety Investigations
ROCS	Rail Operations Control System
RTC	Rail Traffic Controller
RTRA	Office of Rail Transportation
ROCC	Rail Operations Control Center
SAFE	Department of Safety
SMS	Safety Measurement System
SPOTS	System Performance On-Time Summary
SRC	Safety Risk Coordinator
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 record systems. **

On Saturday, September 23, 2023, at 23:02 hours, a New Carrollton Division Train Operator operating outbound Train ID 908 [L7734-7735.7221-7220.7568-7569.7573-7572T] moved their train in the opposite direction of normal traffic after servicing Federal Center SW Station on Track 1.

Before the event, the Rail Operations Control Center (ROCC) Radio Rail Traffic Controller (RTC) contacted the Train Operator of Train ID 908 and instructed them to offload their train, clear the interlocking, reverse ends, and proceed in the direction of Vienna Station on Track 2. This instruction was in response to an event at Minnesota Avenue Station that caused rail traffic to back up. The Train Operator offloaded their train, proceeded to the trailing end, and keyed up car 7572. The Train Operator subsequently entered stop and proceed mode and moved the train 442 feet toward L'Enfant Plaza Station on Track 1, while Train ID 612 was berthed at the 8-car marker on Track 1 at L'Enfant Plaza Station.

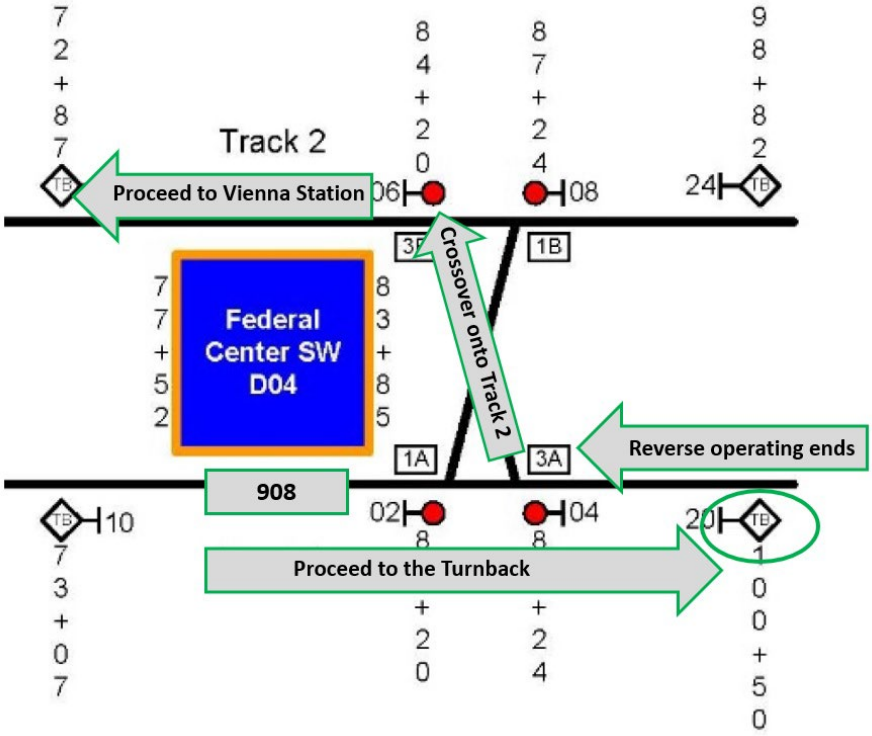
The Radio RTC contacted the Train Operator of Train ID 908 and directed them to stop the train, key down, and return to the New Carrollton end, car 7734. After returning to the platform, the Train Operator of Train ID 908 was removed from service for post-incident testing. No injuries or damages were reported as a result of this incident.

The probable cause of the Improper Rail Vehicle Movement event at Federal Center SW Station on September 23, 2023, was a failure to follow instructions. The Train Operator confirmed the instructions given by ROCC RTC for a turnback operation. However, the Train Operator did not follow the instructions when executing their turnback move, which resulted in the Train Operator operating the train against the normal traffic flow. Despite repeating back the instructions from the Radio RTC to clear the interlocking, and reverse ends, the Train Operator reversed ends and proceeded away from the interlocking.

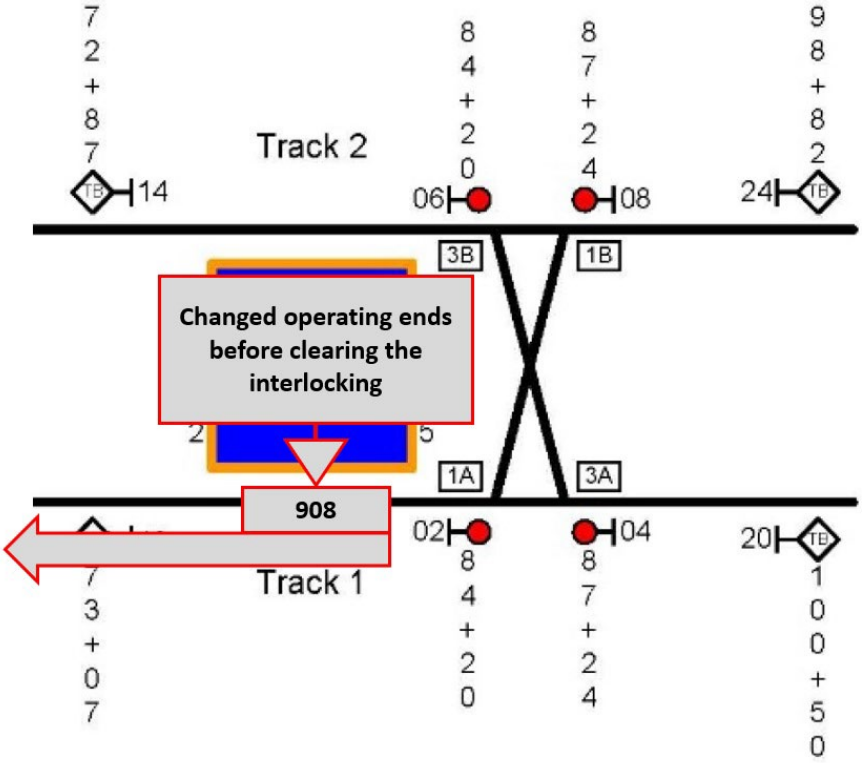
Incident Site

This is a below-ground station with a center platform. Federal Center SW Station is a Direct Fixation Track governed by signals D04-06, 08 signals, and D04-02, 04 signals and an interlocking at Chain Marker 84+20 to 87+24.

Field Sketch/Schematics



Intended move with proper turnback operations. Not to scale.



Actual move (Improper movement). Not to scale.

Purpose and Scope

The purpose of this incident investigation and candid self-evaluation is to collect and analyze available facts, determine the probable cause(s) of the incident, identify contributing factors, and make recommendations to prevent a recurrence.

Investigative Methods

The investigative methodologies included the following:

- Site Assessment through document review

- Formal Interviews – SAFE interviewed one individual 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 individual(s):
    - Train Operator – Train ID 908

- Documentation Review – A collection of relevant work history information and process documentation contained in WMATA systems of record. These records include:
    - Train Operator Incident Statement
    - Train Operator Training Record
    - Train Operator 30-day Work History
    - RTRA Supervisor Report
    - Managerial Incident Investigation Report
    - Metrorail Operating Rulebook (MOR)
    - National Oceanic and Atmospheric Administration (NOAA)

- System Data Recording Review – A collection of information contained in Metro Data Recording Systems. This data includes:
    - Advanced Information Management System (AIMS) playback
    - Audio Recording System (ARS) playback, including Operations (OPS) 2 Radio
    - Closed-circuit television (CCTV)
    - Rail Operations Control System (ROCS) System Performance On-Time Summary (SPOTS) Report

Investigation

On Saturday, September 23, 2023, at 23:02 hours, the Train Operator of Train ID 908, located at Federal Center SW Station on Track 1, moved the train in the opposite direction of normal traffic.

Before the event, at 22:30 hours, Train ID 904 was approaching Minnesota Avenue Station on Track 1 when the Train Operator reported observing a bike on the roadway and stopped the train. The Radio RTC instructed multiple trains traveling on Track 1 to hold their positions.

The Audio Recording System (ARS) revealed that at 22:53 hours, Train ID 908 was instructed to hold at Federal Center SW Station. The Advanced Information Management System (AIMS) revealed that ROCC de-energized third rail power at Minnesota Avenue Station on Track 1, at 22:52 hours to permit the Office of Rail Transportation (RTRA) personnel to retrieve the bike from the roadway.

At 22:55 hours, the Radio RTC instructed Train ID 908 to make announcements and offload the train and then advised the Train Operator that the train would clear the interlocking at Federal Center SW Station and the Operator would reverse ends at that time. The Train Operator acknowledged and repeated the instructions and confirmed that the train would return to Vienna Station.

Closed-Circuit Television (CCTV) revealed that customers alighted the train, closed doors, and the train was keyed down on the lead car 7734 at 22:57 hours. At 22:59 hours, the Train Operator of Train ID 908 contacted the Radio RTC and reported their train was clear of customers.

The System Performance On-Time Summary (SPOTS) Report revealed that Train ID 612 arrived at L'Enfant Plaza Station on Track 1 at 22:57 hours and remained on the platform.

Based on the Office of Chief Mechanical Officer (CMOR) / Incident Investigation Team (IIT) CMOR/IIT analysis, at 23:01 hours, the train was keyed up on the trailing car 7572. At 23:02 hours, the Train Operator of Train ID 908 activated stop and proceed mode on car 7572. The Master Controller was placed in the P5 position, and the train began to move against normal traffic towards L'Enfant Plaza on Track 1.

The Radio RTC instructed Train ID 908 to verify a lunar at D04-02 and granted a permissive block to the turn back, key down, and reverse ends. The Train Operator responded, "Verify lunar, permissive block to the turn back." At 23:03 hours, the Radio RTC instructed the Train Operator to stop the train. Train ID 908 stopped with two rail cars remaining on the Federal Center SW platform. The Radio RTC instructed the Train Operator to key down and return to the New Carrollton Station end of the train.

At 23:04 hours, the Train Operator keyed down car 7572. At 23:09 hours, the Train Operator reported that the train was keyed up on the New Carrollton Station end of the train. The Radio RTC instructed the Train Operator to change their identification marker to Train ID 708 and continue in non-revenue status.

At 23:15 hours, a Rail Supervisor was instructed to board Train ID 908 at Minnesota Avenue Station. Train ID 908 arrived at New Carrollton Station at 23:31 hours, and at 23:50 hours, Train ID 908 was dispatched to New Carrollton Yard and stored on track 10. The Train Operator was

removed from service and transported for post-incident testing. There were no reported injuries or damages as a result of the incident.

ROCS SPOTS REPORT

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

Current date/time: Sun Sep 24 16:13:28 2023

Select Platform: **and/or Select ID:** Leave blank to remove criteria

and/or Select 4-digit car number: 7734 Leave blank to remove criteria

Select Date: Sep 23 2023 **Select Times (0-24HRS): From** 22:00 **To** 24:00

Generate Report

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
908	K08-2	2	20	22:09:53	22:12:20	147	22:04:26	22:04:34	8	22:03:39	22:12:52	7572-7573.7569-7568.7220-7221.7735-7734	-
908	K07-1	2	20				22:16:52	22:17:02	10	22:16:09	22:17:26	7734-7735.7221-7220.7568-7569.7573-7572	12:26
908	K06-1	2	20				22:20:54	22:21:02	8	22:20:11	22:21:28	7734-7735.7221-7220.7568-7569.7573-7572	4:02
908	K05-1	2	20				22:24:30	22:24:38	8	22:23:48	22:25:03	7734-7735.7221-7220.7568-7569.7573-7572	3:36
908	K04-1	2	20	22:28:33	22:28:41	8				22:27:55	22:29:04	7734-7735.7221-7220.7568-7569.7573-7572	4:03
908	K03-1	2	20	22:30:14	22:30:22	8				22:29:41	22:30:46	7734-7735.7221-7220.7568-7569.7573-7572	1:41
908	K02-1	2	20	22:31:40	22:31:49	9				22:31:08	22:32:12	7734-7735.7221-7220.7568-7569.7573-7572	1:26
908	K01-1	2	20				22:33:20	22:33:36	16	22:32:41	22:33:58	7734-7735.7221-7220.7568-7569.7573-7572	1:40
908	C05-1	2	20				22:36:03	22:36:13	10	22:35:25	22:36:37	7734-7735.7221-7220.7568-7569.7573-7572	2:43
908	C04-1	2	20				22:38:42	22:38:58	16	22:38:03	22:39:24	7734-7735.7221-7220.7568-7569.7573-7572	2:39
908	C03-1	2	20	22:40:26	22:40:38	12				22:39:55	22:41:01	7734-7735.7221-7220.7568-7569.7573-7572	1:44
908	C02-1	2	20	22:41:49	22:42:01	12				22:41:17	22:42:27	7734-7735.7221-7220.7568-7569.7573-7572	1:23
908	C01-1	2	20				22:45:35	22:45:53	18	22:44:56	22:46:17	7734-7735.7221-7220.7568-7569.7573-7572	3:46
908	D01-1	2	20				22:47:00	22:48:28	88	22:46:24	22:48:54	7734-7735.7221-7220.7568-7569.7573-7572	1:25
908	D02-1	2	20	22:49:51	22:51:14	83				22:49:17	22:51:38	7734-7735.7221-7220.7568-7569.7573-7572	2:51
908	D03-1	2	20				22:52:40	22:53:01	21	22:52:00	22:53:26	7734-7735.7221-7220.7568-7569.7573-7572	2:49
708	D04-1	2	74				22:54:14	22:57:10	176	22:53:36	23:10:52	7734-7735.7221-7220.7568-7569.7573-7572	1:34
708	D05-1	8	74							23:13:59	23:14:27	7734-7735.7221-7220.7568-7569.7573-7572	-
708	D06-1	8	74							23:15:26	23:15:30	7734-7735.7221-7220.7568-7569.7573-7572	-
708	D06-1	8	74							23:15:32	23:16:01	7734-7735.7221-7220.7568-7569.7573-7572	-
708	D07-1	8	74							23:17:12	23:17:41	7734-7735.7221-7220.7568-7569.7573-7572	-
708	D08-1	8	74							23:18:38	23:18:39	7734-7735.7221-7220.7568-7569.7573-7572	-
708	D08-1	8	74							23:19:02	23:19:34	7734-7735.7221-7220.7568-7569.7573-7572	-
708	D08-1	8	74							23:19:38	23:19:41	7734-7735.7221-7220.7568-7569.7573-7572	-
708	D09-1	8	74							23:23:12	23:24:46	7734-7735.7221-7220.7568-7569.7573-7572	-
708	D10-1	8	74							23:26:06	23:26:42	7734-7735.7221-7220.7568-7569.7573-7572	-

Image 1 - ROCS SPOTS Report showing arrival and departure times for Train ID 908 (reblocked to Train ID 708).

ROCS SPOTS REPORT

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

Current date/time: Wed Oct 4 12:46:08 2023

Select Platform: [ ] **and/or Select ID:** [612] Leave blank to remove criteria

and/or Select 4-digit car number: [ ] Leave blank to remove criteria

Select Date: [Sep] [23] [2023] **Select Times (0-24HRS): From** [22:00] **To** [23:00]

Generate Report

ID	Platform	length	dcode	Right door open	Right door close	dwell	Left door open	Left door close	dwell	Head Arrived	Tail cleared	cars	Travel Time door open to door open
612	N07-1	8	51				22:01:59	22:02:17	18	22:01:23	22:02:40	unknown	-
612	N06-1	8	51				22:04:42	22:05:00	18	22:04:06	22:05:26	unknown	2:43
612	N04-1	8	51				22:12:45	22:13:04	19	22:12:12	22:13:29	unknown	8:03
612	N03-1	8	51				22:14:50	22:15:06	16	22:14:14	22:15:33	unknown	2:05
612	N02-1	8	51				22:17:08	22:17:25	17	22:16:28	22:17:51	unknown	2:18
612	N01-1	8	51				22:19:07	22:19:25	18	22:18:30	22:19:51	unknown	1:59
612	K05-1	8	51				22:26:21	22:26:36	15	22:25:40	22:27:00	unknown	7:14
612	K04-1	8	51	22:30:19	22:30:37	18				22:29:43	22:30:56	unknown	3:58
612	K03-1	8	51	22:31:58	22:32:11	13				22:31:25	22:32:33	unknown	1:39
612	K02-1	8	51	22:33:28	22:33:42	14				22:32:53	22:34:07	unknown	1:30
612	K01-1	8	51	22:35:37	22:35:52	15	22:35:13	22:35:54	41	22:34:34	22:36:17	unknown	1:45
612	C05-1	8	51				22:38:28	22:38:50	22	22:37:50	22:39:15	unknown	3:15
612	C04-1	8	51				22:41:29	22:41:44	15	22:40:53	22:42:09	unknown	3:01
612	C03-1	8	51	22:43:12	22:44:53	101				22:42:39	22:45:16	unknown	1:43
612	C02-1	8	51	22:46:04	22:48:38	154				22:45:33	22:49:03	unknown	2:52
612	C01-1	8	51				22:50:02	22:52:03	121	22:49:27	22:52:28	unknown	3:58
612	D01-1	8	51				22:53:12	22:55:04	112	22:52:36	22:55:28	unknown	3:10
612	D02-1	8	51	22:56:20	22:56:40	20				22:55:45	22:57:02	unknown	3:08
612	D03-1	8	51				22:58:03	23:12:05	842	22:57:27	23:12:29	unknown	1:43

Image 2 - ROCS SPOTS Report showing arrival time at L'Enfant Plaza, Track 1 for Train ID 612.

Advanced Information Management System (AIMS)

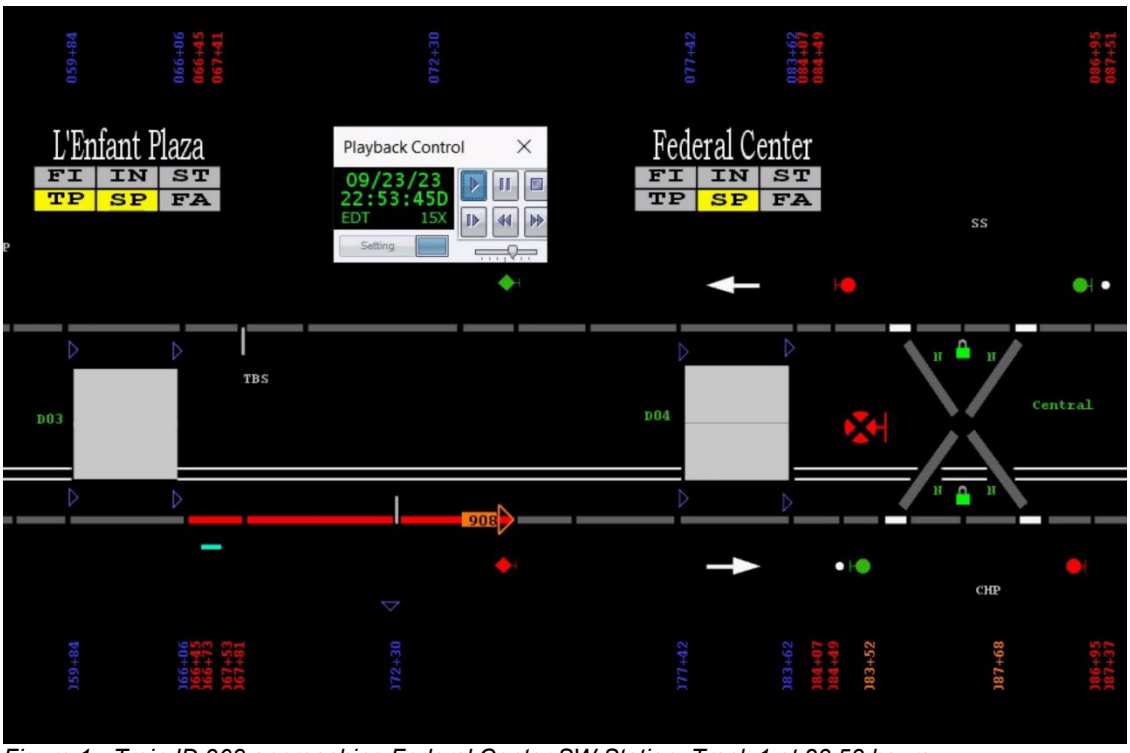


Figure 1 - Train ID 908 approaching Federal Center SW Station, Track 1 at 23:53 hours.

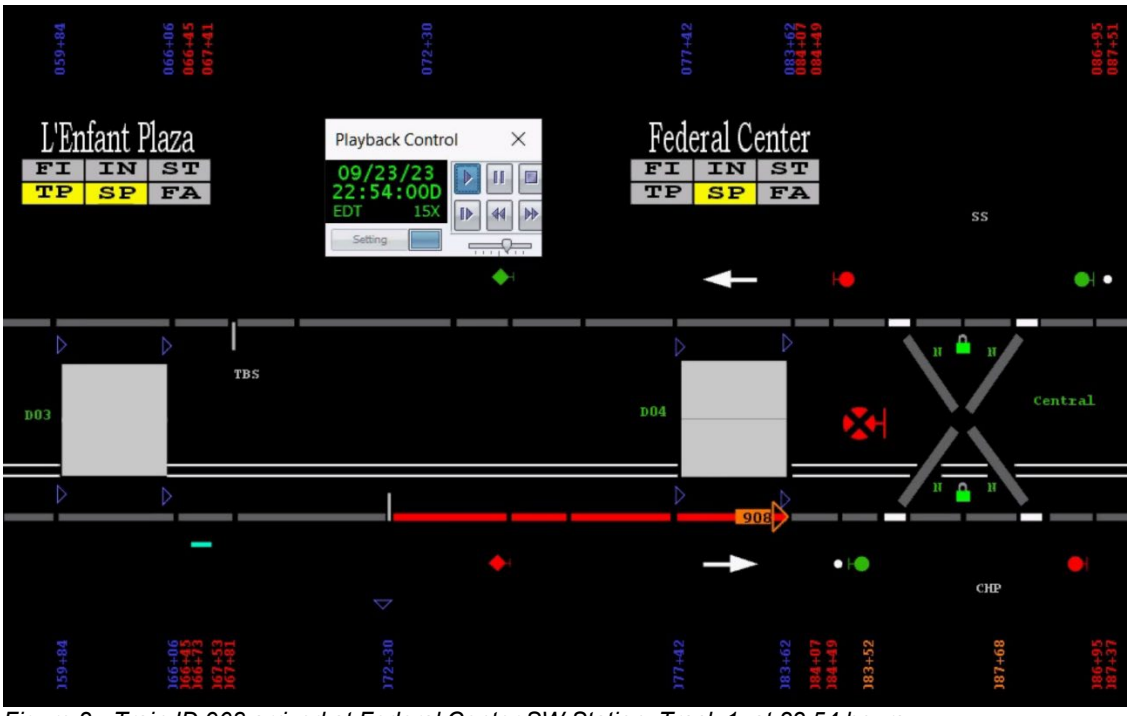


Figure 2 - Train ID 908 arrived at Federal Center SW Station, Track 1, at 22:54 hours.

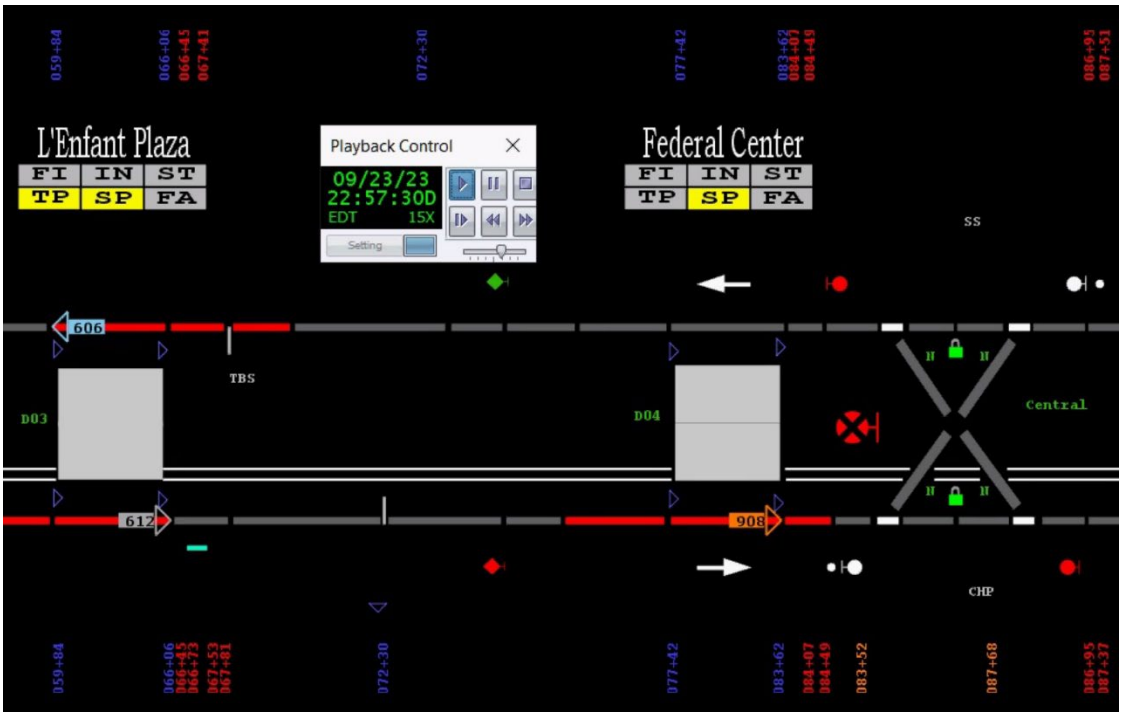


Figure 3 - Train ID 612 arrived at L'Enfant Plaza Station on Track 1 as Train ID 908 was berthed at Federal Center SW Station, Track 1, at 22:57 hours.

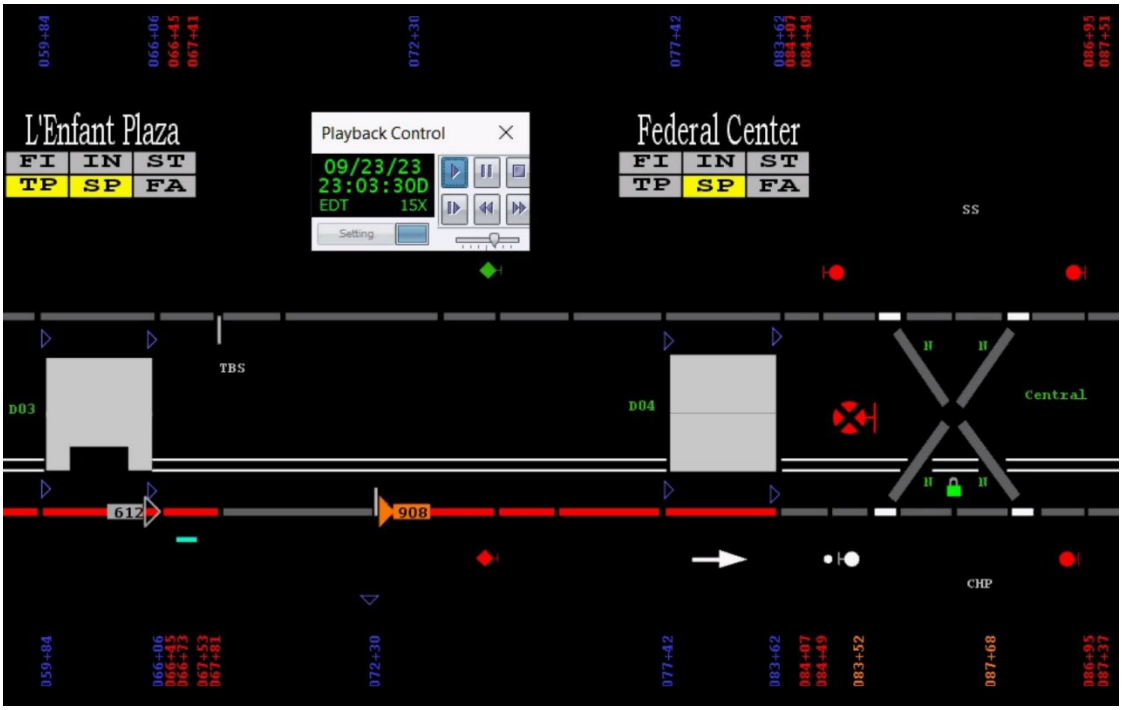


Figure 4 - AIMS Playback shows Train ID 908 traveled in the opposite direction of normal traffic flow as Train ID 612 was berthed at L'Enfant Plaza Station on Track 1 at 23:03 hours. The displayed location is not exact and cannot be used to calculate distance.

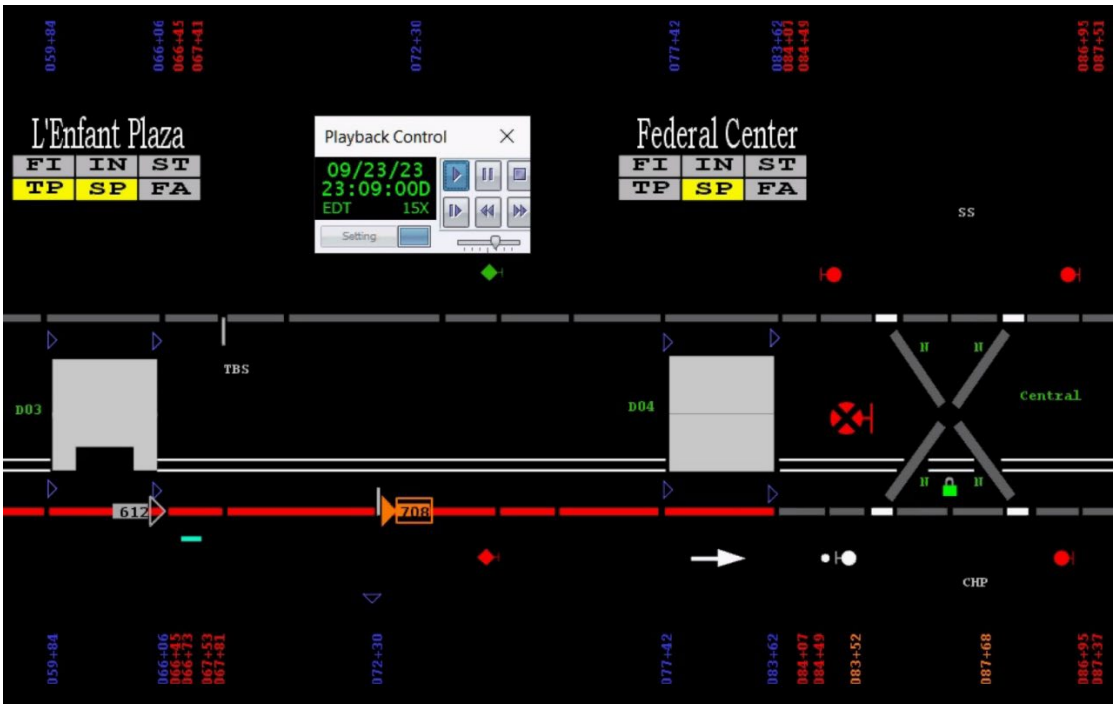


Figure 5 - Train ID 608 changed its identification marker to Train ID 708 in non-revenue service at 23:09 hours.

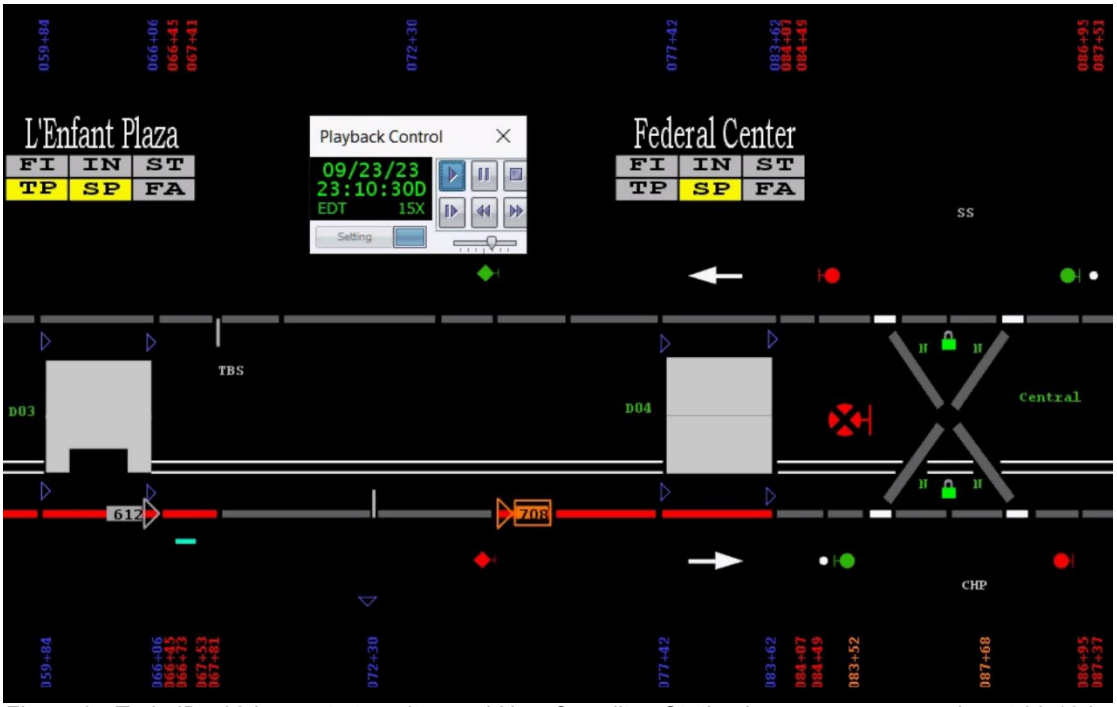


Figure 6 - Train ID 708 began to travel toward New Carrollton Station in non-revenue service at 23:10 hours.

Closed-Circuit Television (CCTV)

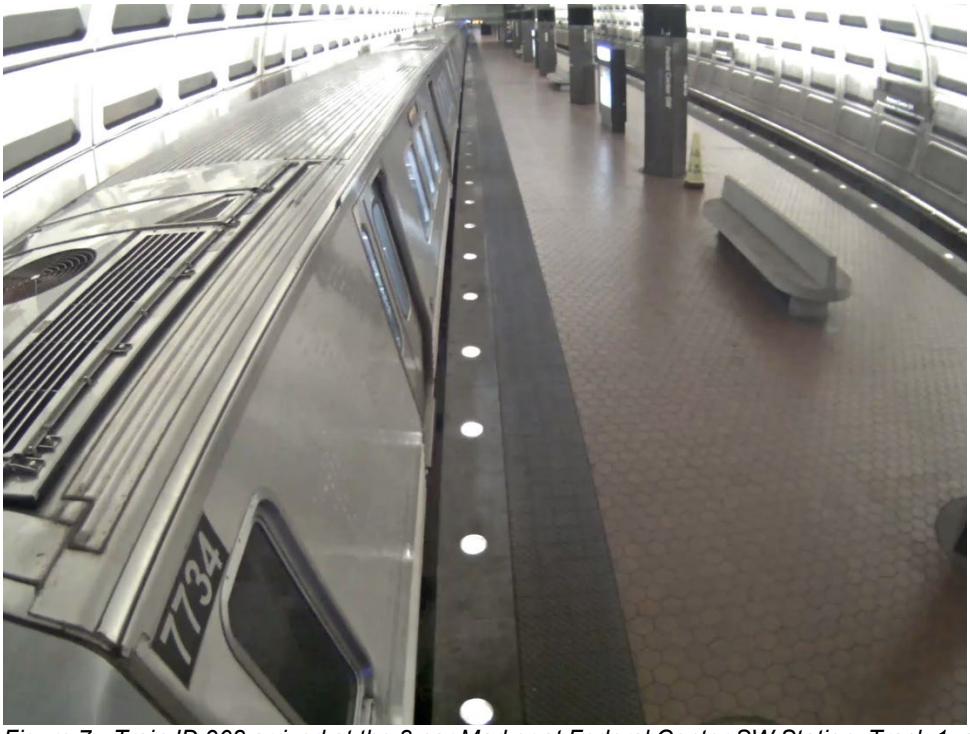


Figure 7 - Train ID 908 arrived at the 8-car Marker at Federal Center SW Station, Track 1, at 22:54 hours.

Figure 8 - Train ID 908 departed Federal Center SW Station, Track 1, at 23:02 hours in the direction of L'Enfant Plaza Station (against the normal flow of train traffic).

Chronological Event Timeline

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

Time	Description
22:29:18 hours	ROCC: Received a landline notification from MTPD stating there is a bike in the roadway at Minnesota Avenue Station. [Landline Ops 2]
22:29:41 hours	Radio RTC: Train ID 901 Train Operator at Minnesota Avenue Station on track 2 stop the train. [Radio Ops 2]
22:30:06 hours	Radio RTC: Train ID 904 approaching Minnesota Avenue Station on track 1, "Do you see a bike?" [Radio Ops 2]
22:30:52 hours	Train ID 904: Responded, "I think I see a bike stopping the train. Radio RTC: Train ID 905 hold, Train ID 410 at Potomac Avenue hold. [Radio Ops 2]
22:53:33 hours	Radio RTC: Instructed Train ID 908 to hold at Federal Center. Train ID 908: Acknowledged and repeated. [Radio Ops 2]
22:53:35 hours	Train ID 908 arrived at Federal Center SW Station. [SPOTS]
22:54:11 hours	Train doors open on the platform. [CCTV]
22:55:15 hours	Radio RTC: Instructed Train ID 908 to make announcements and offload the train. Train ID 908: Acknowledged and inquired what the next instruction would be. Radio RTC: Advised to clear the interlocking at Federal Center SW Station and reverse ends. Train ID 908: Acknowledged and inquired in the direction of Vienna Station. Radio RTC: Confirmed the transmission. Train ID 908: Requested a personal relief. Radio RTC: Acknowledged and repeated. [Radio Ops 2]
22:56:31 hours	Customers began to offload the train. [CCTV]
22:56:41 hours	Radio RTC: Instructed Train ID 908 to advise when the train was offloaded. Train ID 908: No response. [Radio Ops 2]
22:57:06 hours	Train doors on the platform were closed. [CCTV]
22:57:27 hours	Train ID 612 arrived at L'Enfant Plaza Station on track 1. [SPOTS]
22:57:56 hours	Train Operator keyed down in rail car 7734 [IIT Report]
22:59:00 hours	Train ID 908: The Train Operator of Train ID 908 verified the train was clear of customers. [Radio Ops 2]
23:02:04 hours	Train Operator keyed up in rail car 7572. [CCTV]
23:02:28 hours	Radio RTC: Instructed Train ID 908 to verify a lunar at D04-02, granted a permissive block to the turn back, key down, and reverse ends. Train ID 908: Responded, "Verify lunar, permissive block to the turn back." Radio RTC: Acknowledged. [Radio Ops 2]
23:02:52 hours	Train ID 908 departed the station in the direction of Vienna Station on track 1. [CCTV]
23:03:26 hours	Train ID 908 stopped with two rail cars remaining on the platform. [CCTV]
23:03:30 hours	Radio RTC: Instructed Train ID 908 to stop the train. [Radio Ops 2]
23:03:45 hours	Train ID 908: Advised the train was stopped. [Radio Ops 2]

Time	Description
23:04:00 hours	Radio RTC: Instructed the Train Operator to key down and go to the New Carrollton Station end. Advised the Train Operator that they were instructed to clear the interlocking. Train ID 908: Responded, "You instructed me to go to the Vienna Station end." Advised they were going back to the New Carrollton Station end. Radio RTC: Advised the Train Operator that they were instructed to clear the interlocking, with a permissive block to the turn back and a lunar in front of the train. Train ID 908: Responded, "I'm in the tunnel, and the lunar is not always in our immediate distance of sight." Radio RTC: Instructed, key down, and go to the New Carrollton Station end. Train ID 908: Acknowledged and repeated. [Radio Ops 2]
23:04:21 hours	Train Operator keyed down in rail car 7572. [CCTV]
23:08:19 hours	Radio RTC: Inquired if the train was keyed up on the New Carrollton Station end. Train ID 908: Responded, headed back to the lead car, walking through an 8-car consist. [Radio Ops 2]
23:09:28 hours	Train ID 908: Advised that the train was keyed up on the New Carrollton Station end. Radio RTC: Responded, "You have a lunar and will have speed commands. Train ID 908: Acknowledged and inquired if the train was continuing to New Carrollton Station. Radio RTC: Responded, "Continue non-revenue; a Rail Supervisor will meet you." Train ID 908: Requested a personal relief. Radio RTC: Acknowledged and repeated. [Radio Ops 2]
23:09:36 hours	Train Operator keyed up in rail car 7734. [CCTV]
23:10:53 hours	Train ID 908 departed Federal Center SW Station. [SPOTS]
23:15:42 hours	ROCC Button RTC: Instructed a Rail Supervisor to standby at Minnesota Avenue Station on track 1 and remove the Train Operator from service. [Phone Ops 2]
23:31:39 hours	Train ID 908 (708) arrived at New Carrollton Station. [SPOTS]
23:50:16 hours	Train ID 908 (708) was dispatched to New Carrollton Yard to secure on track 10. [Radio NC YD2]

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

The Office of Chief Mechanical Officer (CMOR) / Incident Investigation Team (IIT)

Adopted from the CMOR IIT report with minor edits and grammatical changes

"Based on Vehicle Monitoring and Diagnostic System (VMDS) and Network Video Recorder (NVR) data, Train ID 908, Lead Car 7734, arrived at the 8-car marker of Federal Center SW Station, Track 1, before the incident. After the station was serviced, Lead Car 7734 was keyed down at 22:57:46 hours. Video evidence showed the Train Operator proceeded to the trailing end and keyed up Car 7572 against the normal traffic flow. After Car 7572 was keyed up, the Train Operator initiated stop-and-proceed mode. Car 7572 began to move in stop-and-proceed mode against the normal traffic flow. The train stopped after traveling against normal traffic flow for 442.4 feet from the 8-car marker of Federal Center SW Station. Based on VMDS and NVR data, there was no fault with the train that contributed to the cause of this incident. The train performed as designed. See the timeline of events below:"

Time	Description of Events	Master Controller	Train Speed	Regulated Speed	Limiting Speed	Distance to 8-car Marker
22:53:30 hours	Train ID 908, Lead Car 7734, entered Federal Center Station, Track 1, platform limits.	P1-P4	26.84 MPH	34 MPH	45 MPH	600 feet
22:53:38 hours	Train ID 908 reached the center of the platform (4th Car Marker)	Coast	26.6 MPH	34 MPH	45 MPH	301 feet
22:53:57 hours	Train ID 908 reached the end of the platform and came to a complete stop at the 8-car marker.	B5	0 MPH	49 MPH	50 MPH	0 feet
22:54:06 hours	All doors closed and locked (T/L de-energized). Doors were opened on the platform side, and the station was serviced.	B1	0 MPH	49 MPH	50 MPH	0 feet
22:57:02 hours	All doors closed and locked (T/L energized).	B5	0 MPH	49 MPH	50 MPH	0 feet
22:57:46 hours	Lead Car 7734 is keyed down.	B4	0 MPH	49 MPH	50 MPH	0 feet
23:01:35 hours	Car 7572, the trailing car, is keyed up. The train is key-up against normal traffic flow at Federal Center SW Station, Track 1.	B4	0 MPH	0 MPH	0 MPH	0 feet

Time	Description of Events	Master Controller	Train Speed	Regulated Speed	Limiting Speed	Distance to 8-car Marker
23:02:34 hours	Car 7572, stop and proceed mode is activated.	B5	0 MPH	0 MPH	1 MPH	0 feet
23:02:37 hours	Car 7572, MC was placed in P5, and the train began to move against normal traffic flow at Federal Center SW Station, Track 1.	P5	0 MPH	0 MPH	1 MPH	0 feet
23:02:39 hours	MC was moved from "P5" to "P1-P4".	P1-P4	3.6 MPH	0 MPH	1 MPH	-6 feet
23:02:40 hours	MC was moved from "P1-P4" to "CST.	Coast	7 MPH	0 MPH	1 MPH	-18.6 feet
23:02:43 hours	MC is moved from "Coast" to "P1-P4".	P1-P4	9.8 MPH	0 MPH	1 MPH	-60 feet
23:02:45 hours	MC is moved from "P1-P4" to "Coast."	Coast	9.9 MPH	0 MPH	1 MPH	-93 feet
23:02:52 hours	MC is moved from "Coast" to "P1-P4".	P1-P4	10.7 MPH	0 MPH	1 MPH	-194.3 feet
23:02:53 hours	MC is moved from "P1-P4" to "Coast."	Coast	10.6 MPH	0 MPH	1 MPH	-217 feet
23:02:53 hours	MC is moved from "Coast" to "B1-B3".	B1-B3	10.7 MPH	0 MPH	1 MPH	-223 feet
23:02:57 hours	MC is moved from "B1-B3" to "Coast."	Coast	9.6 MPH	0 MPH	1 MPH	-278.2 feet
23:03:08 hours	MC is moved from "Coast" to "B1-B3".	B1-B3	7.9 MPH	0 MPH	1 MPH	-408.6 feet
23:03:10 hours	MC is moved from "B1-B3" to "B5".	B5	6.9 MPH	0 MPH	1 MPH	-431 feet
23:03:13 hours	Train ID 908 stopped after it traveled 442.4 feet from the 8-car marker at Federal Center SW Station against normal traffic flow.	Coast	0 MPH	0 MPH	1 MPH	-442.4 feet
23:03:59 hours	Car 7572 is keyed down.	B1	0 MPH	0 MPH	0 MPH	-442.4 feet
23:09:23 hours	Car 7734 is keyed up.	B4	0 MPH	0 MPH	0 MPH	-442.4 feet

Time	Description of Events	Master Controller	Train Speed	Regulated Speed	Limiting Speed	Distance to 8-car Marker
23:10:11 hours	MC was placed in "P1-P4". Train ID 708 began to move with normal traffic flow to Federal Center SW Station, Track 1.	P1-P4	0 MPH	45 MPH	45 MPH	-442.4 feet

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

Office of Car Maintenance (CMNT)

CMNT personnel performed the necessary operational checks and inspections as recommended by CMOR IIT. CMNT personnel inspected the brakes and Master Controller. All checks performed resulted in no discrepancies found. CMNT personnel determined the cause was train operator error and cleared the train for revenue service (see Appendix C).

Interview Findings

As part of the investigation launched into the event, SAFE interviewed one employee. The interview 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.

Train Operator

- Stated they received multiple, unclear instructions from the ROCC[1].
- Reported the order of instructions received from the ROCC was incorrect.
- Reported there were no mechanical issues with the train consist.

Weather

On September 23, 2023, at the time of the incident, NOAA recorded the temperature as 64° F, light rain and fog, winds 17 mph, and 94% humidity. This is a below-ground station. Weather was not a contributing factor in this incident (Weather source: NOAA – Location: Washington, DC).

Related Rules and Procedures

- Metrorail Operating Rulebook – 1.1.5 – Guiding Safety Principles
- Metrorail Operating Rulebook – 9.8 – Speed Commands
- Metrorail Operating Rulebook – 12.4.3 – Radio Transmission & Reception Procedures

[1] Note that the Train Operator repeated back the instructions of the Radio RTC, which included a Signal number and permissive block to the turnback

Human Factors

Evidence of Fatigue

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

Fatigue Risk

SAFE evaluated incident data for fatigue risk factors. No significant risk was identified. The incident time of day (23:02 hours) 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 and worked evening shifts in the days leading up to the incident. The employee was awake for 13.03 hours at the time of the incident. The employee reported a total of 8 hours of sleep in the 24 hours preceding the incident. The off-duty period preceding the incident was 14.55 hours, which, taking into account the employee's reported commute and days off, would have provided an opportunity for 7-9 hours of sleep. This was a comparable amount to the employee's usual workday sleep durations. The employee reported usual workday sleep durations of 8 hours and no issues with sleep.

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 7.7.3/7.

Work History

The Train Operator is a WMATA employee with nearly eight years of total service: three years and five months as a Train Operator. The Train Operator is certified to the RWP-2 Level and expires on September 30, 2024. This employee has no history of sleep issues to report.

Certifications

The Train Operator completed their train qualification on August 25, 2023, with 72% on the MSRPH Exam and 73% on the TVOIM Exam. The Train Operator completed the practical application portion on August 25, 2023, with a QL-1 rating.

Findings

- ROCC instructed the Train Operator to offload their train, make announcements to customers, clear the interlocking, reverse ends, and proceed to Vienna Station.
- The Train Operator reversed ends on the platform opposite to the interlocking and proceeded against the normal traffic flow.
- The Train Operator entered Stop and Proceed mode without contacting the Radio RTC to report a lack of speed commands.
- No mechanical defects that would have contributed to the event were identified with the train.

Immediate Mitigation to Prevent Recurrence

- RTRA removed the Train Operator service for post-incident toxicology testing.
- RTRA removed the incident train from service for CMNT inspection and CENV analysis.

Probable Cause Statement

The probable cause of the Improper Rail Vehicle Movement event at Federal Center SW Station on September 23, 2023, was a failure to follow instructions. The Train Operator confirmed the instructions given by ROCC RTC for a turnback operation. However, the Train Operator did not follow the instructions when executing their turnback move, which resulted in the Train Operator operating the train against the normal traffic flow. Despite repeating the instructions from the Radio RTC to clear the interlocking and reverse ends, the Train Operator reversed ends and proceeded away from the interlocking.

Recommended Corrective Actions

Corrective Action Code	Description	Responsible Party	Estimated Completion Date
111684_SAFECAPS_RTRA_001	(RC-1, CF-1) Office of Rail Transportation Management will schedule and ensure the train operator completes refresher training to include observing operations and communications within the Rail Operations Control Center (ROCC).	RTRA SRC	12/31/2023

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.

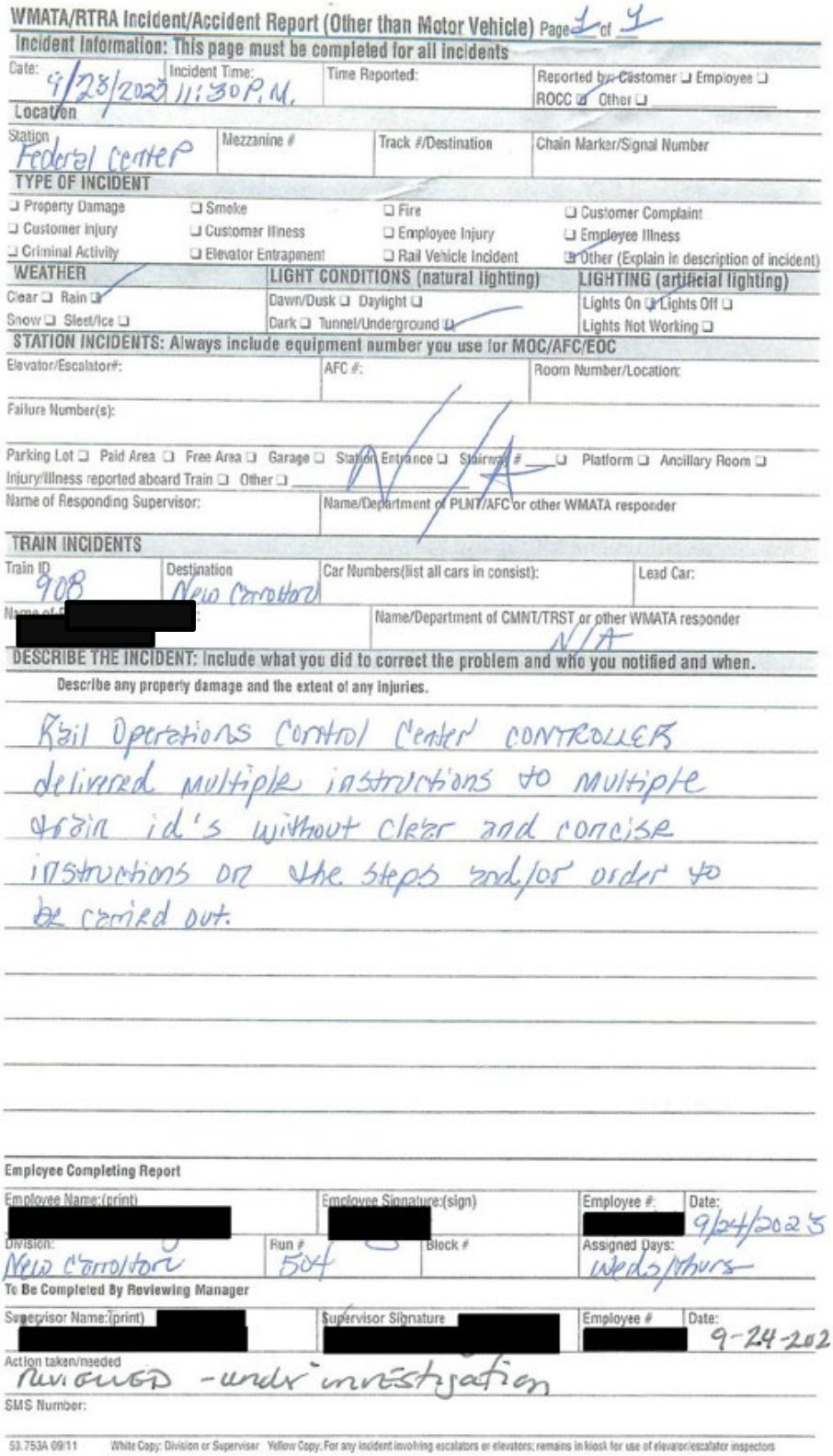
The Train Operator is a WMATA employee with nearly eight years of total service: four years as a Bus Operator and three years and five months as a Train Operator. The Train Operator is certified to the RWP-2 Level and expires on September 30, 2024. This employee has no history of sleep issues to report.

During the interview, the Train Operator stated they were on their third and final trip of the day. The Train Operator reported they requested relief from ROCC at Federal Center SW Station. They stated ROCC instructed them to offload, reverse ends, and continue in service to Vienna; however, the instructions received from the ROCC RTC were not in the correct order and were confusing. The Train Operator stated there were some issues with communication between them and the ROCC RTC.

The Train Operator stated after they keyed up on the trailing end, they proceeded on Track 1 to L'Enfant Plaza and were directed by the Radio RTC to stop, key down, and proceed towards New Carrollton on the lead car 7734. After they stopped the train, the Train Operator reported they were removed from service. The Train Operator stated there were no mechanical issues with the train. When asked if anything might have prevented the incident, the Train Operator stated there was nothing they could have done to prevent it from occurring. The Train Operator highlighted their feelings towards the ROCC RTCs communicating unprofessionally and that it may have contributed to their misunderstanding of the instructions by the RTC.[2] The Train Operator stated they were fully alert during the incident and had no sleep issues.

[2] As of this report, there were no significant findings related to the communications between the ROCC and Train Operator to support this statement.

Appendix B – Operator's Statement and RTRA Investigative Documents (Abridged)



WMATA/RTRA Incident/Accident Report (Other than Motor Vehicle) Page 1 of 4

Incident Information: This page must be completed for all incidents

Date: 9/23/2023 | Incident Time: 11:30 P.M. | Time Reported: | Reported by: Customer ❑ Employee ❑ ROCC ☑ Other ❑

Location

Station: Federal Center | Mezzanine # | Track #/Destination | Chain Marker/Signal Number

TYPE OF INCIDENT

❑ Property Damage ❑ Smoke ❑ Fire ❑ Customer Complaint
❑ Customer Injury ❑ Customer Illness ❑ Employee Injury ❑ Employee Illness
❑ Criminal Activity ❑ Elevator Entrapment ❑ Rail Vehicle Incident ☑ Other (Explain in description of incident)

WEATHER: Clear ❑ Rain ❑ Snow ❑ Sleet/Ice ❑

LIGHT CONDITIONS (natural lighting): Dawn/Dusk ❑ Daylight ❑ Dark ❑ Tunnel/Underground ☑

LIGHTING (artificial lighting): Lights On ☑ Lights Off ❑ Lights Not Working ❑

STATION INCIDENTS: Always include equipment number you use for MOC/AFC/EOC

Elevator/Escalator#: | AFC #: | Room Number/Location:

Failure Number(s):

Parking Lot ❑ Paid Area ❑ Free Area ❑ Garage ❑ Station Entrance ❑ Stairway # ___ ❑ Platform ❑ Ancillary Room ❑
Injury/Illness reported aboard Train ❑ Other ❑

Name of Responding Supervisor: | Name/Department of PLNT/AFC or other WMATA responder

TRAIN INCIDENTS

Train ID: 908 | Destination: New Carrollton | Car Numbers(list all cars in consist): | Lead Car:

Name of [redacted] | Name/Department of CMNT/TRST or other WMATA responder: N/A

DESCRIBE THE INCIDENT: Include what you did to correct the problem and who you notified and when.

Describe any property damage and the extent of any injuries.

Rail Operations Control Center CONTROLLER delivered multiple instructions to multiple train id's without clear and concise instructions on the steps and/or order to be carried out.

Employee Completing Report

Employee Name:(print) [redacted] | Employee Signature:(sign) [redacted] | Employee #: [redacted] | Date: 9/24/2023

Division: New Carrollton | Run # 504 | Block # | Assigned Days: Weds/Thurs

To Be Completed By Reviewing Manager

Supervisor Name:(print) [redacted] | Supervisor Signature [redacted] | Employee # [redacted] | Date: 9-24-2023

Action taken/needed: Reviewed - under investigation

SMS Number:

53.753A 09/11 White Copy: Division or Supervisor Yellow Copy: For any incident involving escalators or elevators; remains in kiosk for use of elevator/escalator inspectors

Document 1 - Train Operator's Incident Report.

RTRA Supervisors' Report

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

DEPARTMENT OF OPERATIONS-RAIL SERVICE
Office of Rail Transportation

Date	Incident Time:	Incident Location (Station Mezzanine#)	Track/Mezzanine#
9/23/23	11:22 pm	Federal Center	1

Equipment Number (Train ID & Car Numbers; Escalator/Elevator #, Room #)

ID 908 7734 7220 7568 7573

Incident Description

moving without speed commands

WMATA Personnel Involved	Employee #	Rule Violation?	Home Division	Post Incident

Name	Address	Injury?
Name	Address	Injury?
Name	Address	Injury?

Arrival Time	Unit Number	Person In Charge	Remarks

Chronological Account of Incident

Note time for each entry; Include statement of Employee or Witness at conclusion

11:02 pm Train ID 908 was instructed to clear Federal Center Interlocking and reverse ends.

11:22 pm Operator [redacted] was instructed to offboard and change ID to 708.

11:32 pm ROCC contacted unit 45 [redacted] to relieve ID 908 (708) at Minnesota track 1 and to take operator out of service.

Supervisor Submitting Report (include payroll #)	Date	Report Reviewed by	Date
[redacted]	9/23/23	[redacted]	9-24-2023

50.437 09/10

REPORT MUST BE FAXED TO ROCC 301-618-1012 at end of tour

Document 2 - RTRA Supervisor's Report.

Washington Metropolitan Area Transit Authority

Office of Rail Transportation: Managerial Incident Investigation Report

Incident Status: PRELIMINARY

GENERAL INCIDENT INFORMATION

Incident Type:	Moved in Wrong Direction w/o Speed Commands	Delay (Minutes):	N/A
Incident Date:	Saturday, September 23, 2023	Vehicles Involved:	L-7573-7568-7220-7734
Incident Time:	11:02pm	First Reported By:	ROCC
Location:	Federal Center SW – Track 1		

BRIEF DESCRIPTION:

At approximately 10:55pm Operator [redacted] was instructed by ROCC to offload her train, make good announcements, clear the interlocking at Federal Center SW and reverse ends. 11:02pm ROCC instructed Operator [redacted] to stop the train, key down, and go to the New Carrollton end of the train. 11:09pm ROCC instructed Operator [redacted] to verify a lunar/speed commands, non-revenue to New Carrollton, and a Supervisor will meet you down the line. 11:39pm Operator [redacted] was removed from service and transported for post incident testing.

Key Employees Involved & Employee Statements:

- Train Operator [redacted]

Operator [redacted]

Operator [redacted] stated in her incident report, "Rail Operations Control Center Controller delivered multiple instructions to multiple train id's without clear and concise instructions on the steps and/or order to be carried out."

Post Incident Testing & Employee History:

- **Operator** [redacted] was transported for post incident testing by Supervisor [redacted]
- Operator has been employed by the Authority since date October 13, 2015.
- Operator has been on the rail as a Train Operator since April 1, 2020.
- Operator [redacted] worked a total of 41 hours within the last seven (7) days. There were no reported instances of overtime and/or 8-hour rule violations noted within Trapeze.
- Last Certification Date: August 25, 2022
- There were no reported discrepancies with the employee's performance and/or fitness for duty.
- Recent Incidents – None

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

Washington Metropolitan Area Transit Authority

Office of Rail Transportation: Managerial Incident Investigation Report

SIGNIFICANT INCIDENT TIMELINE:

10:55pm ROCC instructed Train ID 908 to offload, make good announcements, clear the interlocking at Federal Center SW and reverse ends. Operator [redacted] repeated those instructions.
10:56pm ROCC let me know when you're offloaded.
11:01pm ROCC 908 verify a lunar @ D04-02, permissive block to the turnback and reverse ends. Operator [redacted] repeated those instructions.
11:02pm ROCC stop your train. Operator [redacted] my train is stopped.
11:03pm ROCC key down and go to your New Carrollton end.
11:09pm ROCC lunar, speed commands, non revenue to New Carrollton, and a Supervisor will meet you down the line.
11:39pm Operator [redacted] was removed from service and transported for post incident testing.

SIGNIFICANT FINDINGS & PENDING ISSUES:

- Operator [redacted] was removed from service pending post incident D&A test results.
- Operator [redacted] failed to follow ROCC instructions.
- Operator [redacted] moved her train in the wrong direction with zero speed commands without authorization.

CORRECTIVE ACTIONS:

- Operator [redacted] will be issued the appropriate corrective action pending the outcome of the investigation (Level III Safety/Operational Violation – 12 points – Training w/ROQT).

Root cause:

1. Operator inattention.

Document 4 - RTRA Managerial Incident Investigation Report, page 2 of 3.

Washington Metropolitan Area Transit Authority

Office of Rail Transportation: Managerial Incident Investigation Report

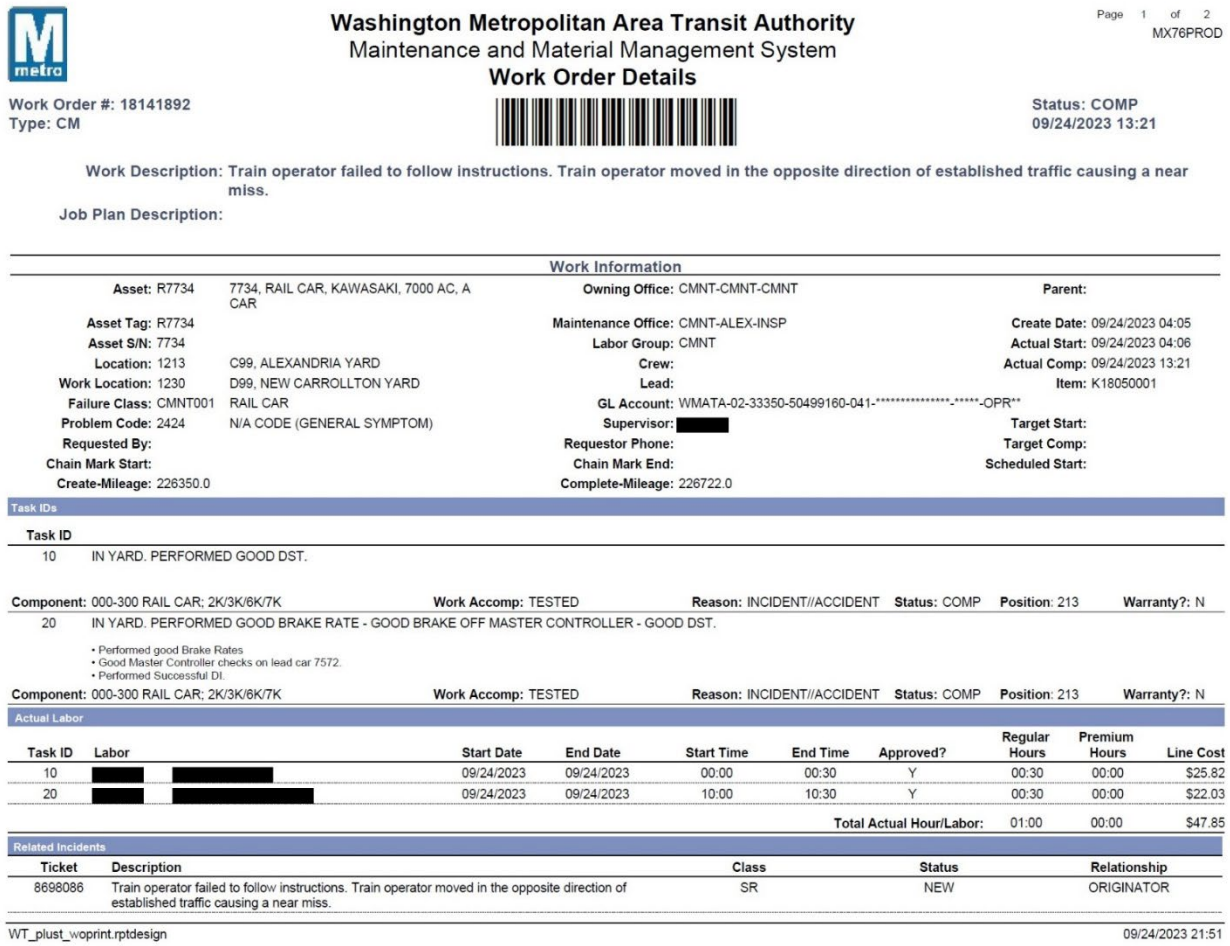
INCIDENT PHOTOS: ATTACH ANY SIGNIFICANT PHOTOS BASED ON THE INITIAL INCIDENT INVESTIGATION.

Report Prepared by: [redacted] 9/24/2023

Report Reviewed by:

Document 5 - RTRA Managerial Incident Investigation Report, page 3 of 3.

Appendix C – CMNT Maximo Work Order



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

Page 1 of 2
MX76PROD

Work Order #: 18141892
Type: CM

Status: COMP
09/24/2023 13:21

Work Description: Train operator failed to follow instructions. Train operator moved in the opposite direction of established traffic causing a near miss.

Job Plan Description:

Work Information

Asset:	R7734	7734, RAIL CAR, KAWASAKI, 7000 AC, A CAR	**Owning Office:**	CMNT-CMNT-CMNT	**Parent:**
Asset Tag:	R7734		**Maintenance Office:**	CMNT-ALEX-INSP	**Create Date:** 09/24/2023 04:05
Asset S/N:	7734		**Labor Group:**	CMNT	**Actual Start:** 09/24/2023 04:06
Location:	1213	C99, ALEXANDRIA YARD	**Crew:**		**Actual Comp:** 09/24/2023 13:21
Work Location:	1230	D99, NEW CARROLLTON YARD	**Lead:**		**Item:** K18050001
Failure Class:	CMNT001	RAIL CAR	**GL Account:**	WMATA-02-33350-50499160-041-**********-*****-OPR**	
Problem Code:	2424	N/A CODE (GENERAL SYMPTOM)	**Supervisor:**	[redacted]	**Target Start:**
Requested By:			**Requestor Phone:**		**Target Comp:**
Chain Mark Start:			**Chain Mark End:**		**Scheduled Start:**
Create-Mileage:	226350.0		**Complete-Mileage:**	226722.0	

Task IDs

Task ID	
10	IN YARD. PERFORMED GOOD DST.

Component: 000-300 RAIL CAR; 2K/3K/6K/7K **Work Accomp:** TESTED **Reason:** INCIDENT//ACCIDENT **Status:** COMP **Position:** 213 **Warranty?:** N

20 IN YARD. PERFORMED GOOD BRAKE RATE - GOOD BRAKE OFF MASTER CONTROLLER - GOOD DST.

- Performed good Brake Rates
- Good Master Controller checks on lead car 7572.
- Performed Successful DI.

Component: 000-300 RAIL CAR; 2K/3K/6K/7K **Work Accomp:** TESTED **Reason:** INCIDENT//ACCIDENT **Status:** COMP **Position:** 213 **Warranty?:** N

Actual Labor

Task ID	Labor	Start Date	End Date	Start Time	End Time	Approved?	Regular Hours	Premium Hours	Line Cost
10	[redacted]	09/24/2023	09/24/2023	00:00	00:30	Y	00:30	00:00	$25.82
20	[redacted]	09/24/2023	09/24/2023	10:00	10:30	Y	00:30	00:00	$22.03
						Total Actual Hour/Labor:	01:00	00:00	$47.85

Related Incidents

Ticket	Description	Class	Status	Relationship
8698086	Train operator failed to follow instructions. Train operator moved in the opposite direction of established traffic causing a near miss.	SR	NEW	ORIGINATOR

WT_plust_woprint.rptdesign 09/24/2023 21:51

Document 6 - CMNT work order showing inspections conducted, page 1 of 2.

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

Work Order #: 18141892
Type: CM

Status: COMP
09/24/2023 13:21

Work Description: Train operator failed to follow instructions. Train operator moved in the opposite direction of established traffic causing a near miss.

Job Plan Description:

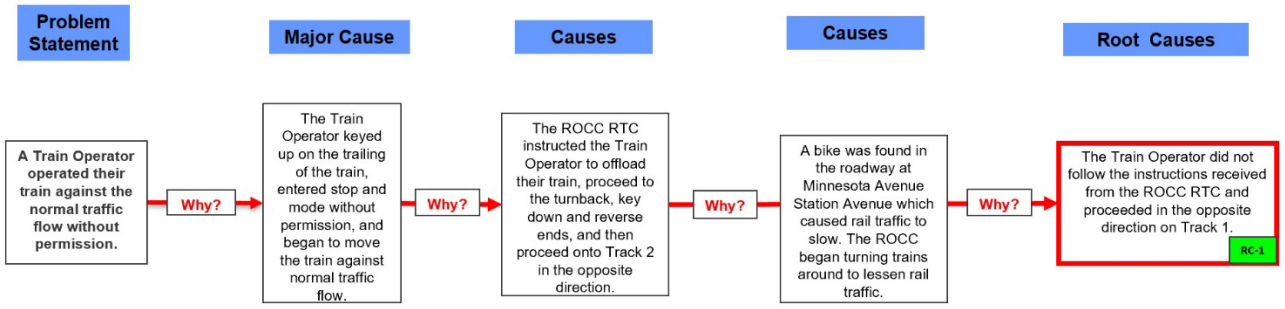
Failure Reporting

Cause		Remedy		Supervisor	Remark Date
2477	NO DEFECT; OPERATOR ERROR	3192	TESTED / INSPECTED	[redacted]	09/24/2023
Remarks:	COMPLETED IIT RECOMMENDATIONS; GOOD CAR FOR SERVICE				

Document 7 - CMNT work order showing inspections conducted, page 2 of 2.

Appendix D – Why-Tree Analysis

E23666 – Improper Rail Vehicle Movement – Federal Center SW



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

FINAL REPORT OF INVESTIGATION A&I E23840

Date of Event:	November 20, 2023
Type of Event:	0-7, Improper Rail Vehicle Movement
Incident Time:	05:27 Hours
Location:	Huntington Station, Track 2 – Switch 1A
Time and How received by SAFE:	05:41 Hours, Mission Assurance Coordinator (MAC)
WMSC Notification Time:	06:37 Hours
Responding Safety Officers:	WMATA: Operations Safety Oversight (OSO)
Rail Vehicle:	Train ID 309 – [L2039-38x3083-82x3003-02T]
Injuries:	None
Damage:	None
Emergency Responders:	None
SMS I/A Incident Number:	20231120#112922

Table of Contents

Abbreviations and Acronyms

AIMS	Advanced Information Management System
ARS	Audio Recording System
ATCM	Automatic Train Control Maintenance
CCTV	Closed-Circuit Television
CM	Chain Marker
CMOR	Office of Chief Mechanical Officer
IIT	Incident Investigation Team
MAC	Mission Assurance Coordinator
MC	Master Controller
MICC	Metro Integrated Command and Communication
MOR	Metrorail Operating Rulebook
NOAA	National Oceanic and Atmospheric Administration
OM	Operations Manager
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 Procedures
WMATA	Washington Metropolitan Area Transit Authority
WMSC	Washington Metrorail Safety Commission
VMDS	Vehicle Monitoring and Diagnostic System

Executive Summary

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

On Monday, November 20, 2023, at 05:19 hours, an Office of Rail Transportation (RTRA), Rail Supervisor #1 (Terminal Supervisor), notified the Metro Integrated Command and Communication (MICC) that switch 1A at Huntington Station was out of correspondence. The Button Rail Traffic Controller (RTC) advised Rail Supervisor #1 that they would have to clamp the interlocking. Rail Supervisor #1 was granted foul time to enter the roadway to clamp switches 1A and 3A in a normal position to allow Train ID 309 to make a straight move toward Eisenhower Avenue Station.

At 05:27 hours, Rail Supervisor #1 reported that switch 1A was clamped and tucked in the normal position. The Radio RTC requested Rail Supervisor #1 to clamp switch 3A in the normal position. At 05:32 hours, Rail Supervisor #1 reported that switch 3A was clamped in the normal position for a straight-through train move.

At 05:36 hours, Train ID 309 was dispatched from Huntington Station on Track 1, then began to crossover from Track 1 towards Track 2. The Train Operator of Train ID 309 stopped the train and reported to the MICC that the train was taking a diverging route. Rail Supervisor #1 had clamped switch 1A in the reverse position, leading the train to make a crossover move.

Rail Supervisor #2 responded to the platform at Huntington Station and assisted the Train Operator of Train ID 309, who was having radio communication issues repeating the instructions from the Radio RTC.

The Radio RTC instructed Train ID 309 to pass signal C15-02 “red, verifying switches 1A and 3A were clamped in the normal position”. The Train Operator of Train ID 309 repeated the instructions and began moving the train when Rail Supervisor #2 instructed the train to stop. Rail Supervisor #1 also instructed Train ID 309 to hold their location.

The Train Operator of Train ID 301 on Track 2 reported to the Radio RTC that Train ID 309 was turning towards them. The Radio RTC instructed Train ID 309 to stop and hold their location within the interlocking.

The Radio RTC instructed the Train Operator of Trian ID 309 to key down and reverse to the opposite operating end of the train. Rail Supervisor #2 advised the Radio RTC that they were aboard Train ID 309 on the trailing end of the train and would pull it back to the platform.

Rail Supervisor #2 pulled Train ID 309 back to the platform. There were no damages resulting from this event. The Office of Rail Transportation (RTRA) removed Rail Supervisor #1 and the Train Operator of Train ID 309 from service for a post-incident medical examination. Train ID 309 was removed from service for post-incident inspection.

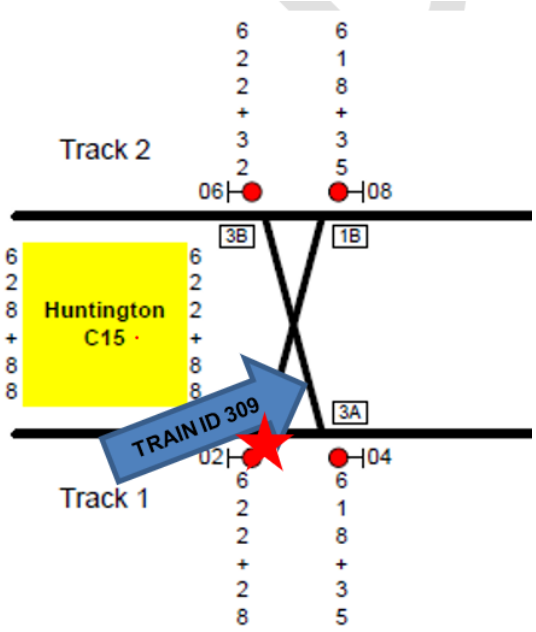
The probable cause of the Improper Rail Vehicle Movement incident at Huntington Station on November 20, 2023, was primarily attributed to human error involving both Rail Supervisor #1 and the Train Operator of Train ID 309. The investigation identified that Rail Supervisor #1 incorrectly clamped Switch 1A in the reverse position, setting the stage for an improper route. This misalignment led Train ID 309 to take a diverging route instead of proceeding straight towards Eisenhower Avenue Station.

A contributing factor to the incident was the inattention of the Train Operator of Train ID 309, who failed to verify the correct rail alignment before departing from the platform. The reliance on the instructions provided by Rail Supervisor #1, coupled with a lack of awareness due to fatigue on the part of Rail Supervisor #1, further complicated the situation. The Rail Supervisor #1 had worked ten consecutive days leading up to the incident, potentially contributing to a diminished state of alertness and decision-making.

Incident Site

Huntington Station Interlocking, Switch 1A at Chain Marker (CM) C1 622+28

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

- Formal Interviews – SAFE interviewed two (2) 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:
  - Rail Supervisor #1
  - Train Operator (Train ID 309)

- 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:
    - Employees Written Statements
    - Employees Training Records
    - Employees 30-day Work History
    - RTRA Supervisor Report
    - MICC Incident Report
    - Maximo Report
    - Metrorail Operating Rulebook (MOR)
    - National Oceanic and Atmospheric Administration (NOAA)

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

Investigation

On Monday, November 20, 2023, at 05:19 hours, RTRA Rail Supervisor #1 (Terminal Supervisor) notified the MICC that switch 1A at Huntington Station was out of correspondence. The Button RTC advised Rail Supervisor #1 that they would have to clamp the interlocking. Rail Supervisor #1 was granted foul time to enter the roadway to clamp switches 1A and 3A in a normal position to allow Train ID 309 to make a straight move toward Eisenhower Avenue Station on track 1. Rail Supervisor #1 confirmed that the switches were clamped in a normal position.

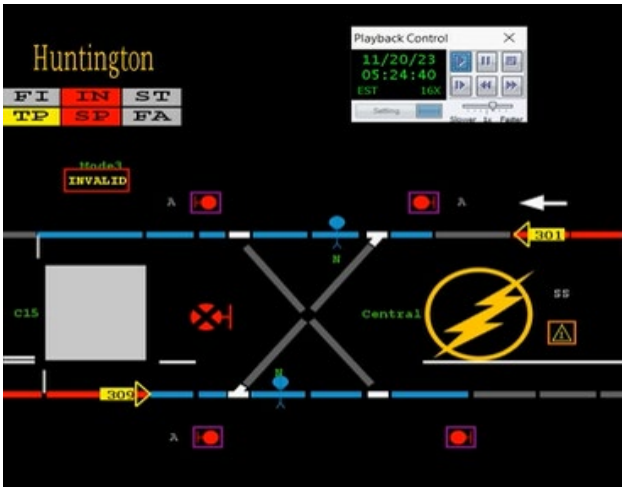


Figure 1 - AIMS depicts blue blocking, prohibited exits, and personnel at switches 1A & 3A for clamping at 05:24 hours.

Train ID 309 was dispatched from Huntington Station on track 1, then began to crossover from track 1 toward track 2. The Train Operator of Train ID 309 stopped the train and reported to the MICC that the train was taking a diverging route. Rail Supervisor #1 had clamped switch 1A in a reverse position, leading the train to make a crossover move.

According to the Audio Recording System (ARS), at 05:15 hours, Train ID 309 arrived at C15-08 signal, Rail Supervisor #1 advised the Train Operator that the train would crossover from Track 2 to Track 1. Train ID 309 arrived at Huntington Station on track 1.

At 05:19 hours, Rail Supervisor #1 notified the MICC that switch 1A at Huntington Station was out of correspondence. The Button RTC advised Rail Supervisor #1 that they would have to clamp the interlocking and provide a radio check on their handheld radio.

At 05:23 hours, the Radio RTC granted foul time and instructed Rail Supervisor #1 to clamp switches 1A and 3A in the normal position for a straight-through train move. Before clamping the switches, Rail Supervisor #1 requested that the Radio RTC exercise switch 1A in the normal position. The Radio RTC advised that switch 1A was not responding.

At 05:27 hours, Train ID 301 approached Huntington Station and stopped at signal C15-08 on track 2. Rail Supervisor #1 reported that switch 1A was clamped and tucked in the normal position. The Radio RTC instructed Rail Supervisor #1 to clamp switch 3A in the normal position.

At 05:28 hours, the Radio RTC instructed the Train Operator of Train ID 301 to secure the train and granted foul time to clamp switches 1B and 3B on track 2 in the normal position.
Rail Supervisor #1 requested that switch 1B be clamped in reverse; the Radio RTC denied the request and instructed that all four switches be clamped in the normal position.

At 05:32 hours, Rail Supervisor #1 reported that switch 3A was clamped in the normal position for a straight-through train move.

At 05:33 hours, the Radio RTC instructed the Train Operator of Train ID 309 to place the train in service on track 1 and to pass signal C15-02 "red, verifying switches 1A and 3A were clamped in the normal position for a straight-through train move". However, the Train Operator could not understand the instructions due to intermittent radio issues and requested the Radio RTC to repeat them. Before the instructions could be repeated back to Train ID 309 the Train Operator on Train ID 301 began communicating with the Radio Rail Traffic Controller.

At 05:36 hours, the Train Operator of Train ID 301 relinquished foul time and reported that they were aboard the train.

Seconds later, the Radio RTC requested a radio check with the Train Operator of Train ID 309, which the Train Operator acknowledged. The Radio RTC made a second attempt to instruct Train ID 309 to pass signal C15-02 "red," and verify that switches 1A & 3A were clamped in the normal position for a straight-through train move; the Train Operator acknowledged and repeated the instructions.

The Closed-Circuit Television (CCTV) revealed that Rail Supervisor #2 arrived on the platform at Huntington Station to assist Train ID 309 since they were having radio communication issues while repeating the instructions from the Radio RTC.

At 05:40 hours, Rail Supervisor #1 reported that switch 3B was clamped in the normal position.

The Radio RTC instructed Train ID 309 to pass signal C15-02 "red, verifying switches 1A and 3A were clamped in the normal position". The Train Operator could not understand the communication, and Rail Supervisor #2 repeated the instruction to the Train Operator via the radio. The train operator of Train ID 309 repeated the instructions to the Radio RTC.

Seconds later, Rail Supervisor #2 instructed Train ID 309 to stop because the train was crossing over. Rail Supervisor #1 instructed Train ID 309 to hold their location.

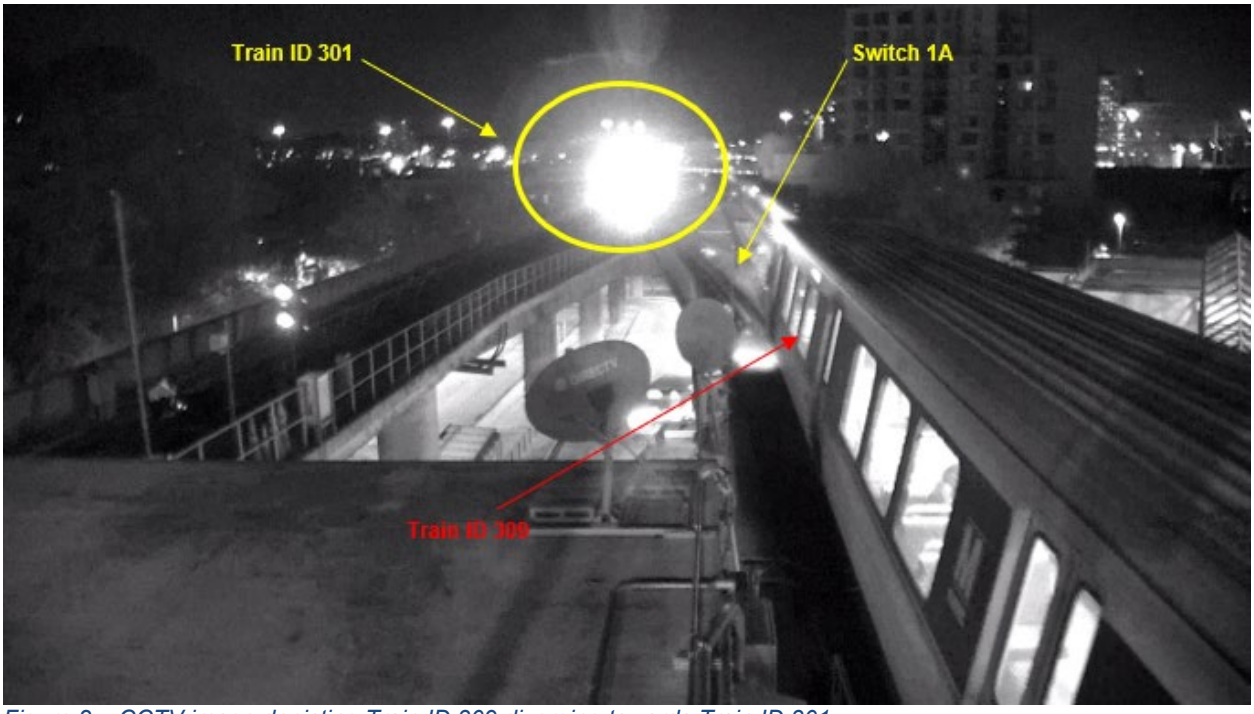


Figure 2 – CCTV image depicting Train ID 309 diverging towards Train ID 301.

The Train Operator of Train ID 301 reported to the Radio RTC that the train was turning out towards them. The Radio RTC instructed Train ID 309 to hold their location within the interlocking.

Figure 3 – CCTV image depicting Train ID 309 traversing the interlocking from Track 1 toward Track 2.

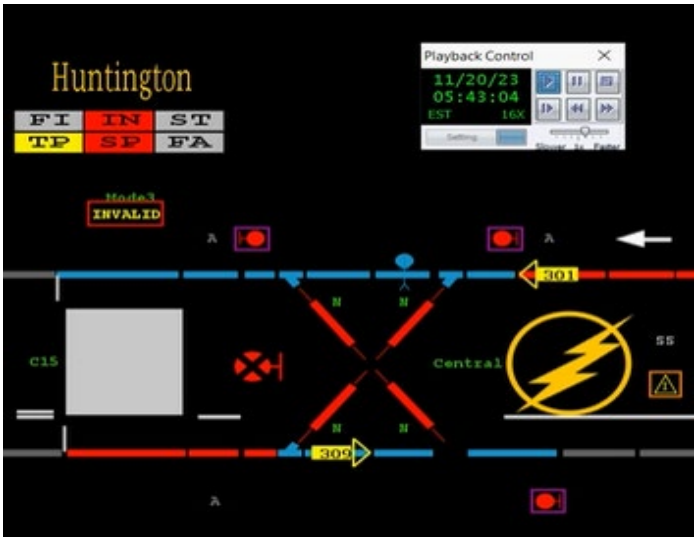


Figure 4 - AIMS depicts a false Train ID 309 straight-through switch 1A image.

At 05:41 hours, the Button RTC notified the Operations Manager (OM) of the event.

The Radio RTC instructed the Train Operator to key down the train and reverse ends. Rail Supervisor #2 advised the Radio RTC that they had keyed aboard Train ID 309 on the trailing end of the train and would pull the train back to the platform.

At 05:44 hours, Rail Supervisor #2 advised the Radio RTC that they were moving Train ID 309 back to the platform with speed commands. The Radio RTC acknowledged that the train returned to the platform.

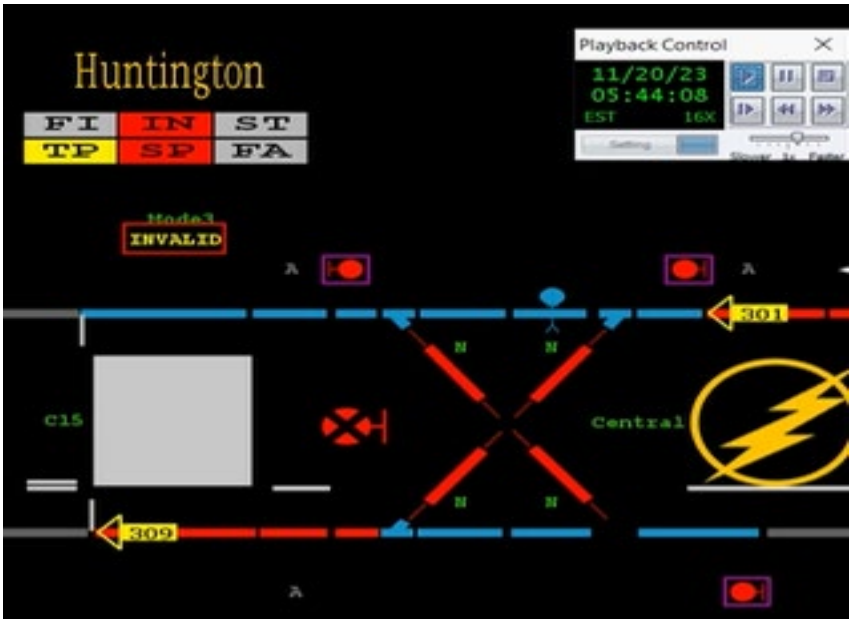


Figure 5 - AIMS depicts Train ID 309 back on the platform of Huntington Station, Track 1.

At 05:47, the Radio RTC advised Rail Supervisor #2 that the four switches should be clamped in the normal position. At 05:51 hours, the Radio RTC advised Rail Supervisor #1 that the four switches should be clamped in the normal position.

At 05:58 hours, Rail Supervisor #1 reported that the switches were clamped in the normal position for normal service to resume.

At 06:08 hours, an Automatic Train Control Mechanic arrived at Huntington Station. At 06:15 hours, ATCM confirmed that they were in the company of Emergency Response Team personnel and requested Foul Time to unclamp switch 3.

At 06:37 hours, the Mission Assurance Coordinator (MAC) notified the Washington Metropolitan Safety Commission (WMSC) of the Improper Rail Vehicle Movement event and received the event scene release. At 06:50 hours, the MAC advised the Safety Director on-call that Huntington Station had returned to normal service.

Chronological Event Timeline

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

Time	Description
05:15:40 hours	Train ID 309: Arrived at C15-08 signal in lead railcar 3009. Rail Supervisor #1: Acknowledged and granted permission to cross from track 2 to 1. [Radio OPS HUN/YD]
05:19:20 hours	Rail Supervisor #1: Notified the Button RTC that switch 1A was out of correspondence. Button RTC: Instructed the supervisor to give the MICC a radio check and prepare to clamp the interlocking. [Phone OPS 3]
05:23:08 hours	Rail Supervisor #1: Performed a radio check with the MICC. Requested permission to go to the roadway. Radio RTC: Acknowledged and confirmed with 100% repeat back. [Radio OPS 3]
05:23:35 hours	Radio RTC: Granted foul time to Rail Supervisor #1 on tracks 1 and 2, to clamp 1A and 1B in a normal position. Rail Supervisor #1: Requested the MICC to set a straight-through (normal) alignment at signal C15-02. [Radio OPS 3]
05:27:57 hours	Rail Supervisor #1: Advised the MICC that switch 1A was clamped and tucked in a normal position for a straight-through move. Radio RTC: Acknowledged and requested switch 3A be clamped in the normal position. Rail Supervisor #1: Acknowledged. [Radio OPS 3]
05:27:03 hours	Radio RTC: Instructed Train ID 301 to key the train down and clamp switches on track 2. Train ID 301: Acknowledged with 100% repeat back. [Radio OPS 3]
05:28:49 hours	Radio RTC Granted foul time to the Train Operator to clamp switches 1B and 3B in a normal position for a straight-through train move. Rail Supervisor #1: Requested that switch 1B be clamped in the reverse position to utilize only track 1. Radio RTC: Denied the request and instructed that the four switches be clamped in the normal position. Train ID 301: Acknowledged with 100% repeat back. [Radio OPS 3]
05:32:42 hours	Rail Supervisor #1: Advised that switch 3A was clamped in the normal position. Radio RTC: Acknowledged. [Radio OPS3]

Time	Description
05:33:24 hours	Radio RTC: Instructed Train ID 309 to place the train in service and granted permission to pass signal C15-02 "red," verifying switches 1A and 3A are clamped/tucked in the normal position for a straight-through train move. Rail Supervisor #1: Advised that switch 1B on track 2 was clamped in the normal position. Train ID 309: Requested Radio RTC to repeat instruction. [Radio OPS3]
05:36:12 hours	Train ID 301: Reported relinquished foul time and back aboard the train. Radio RTC: Acknowledged. [Radio OPS3]
05:36:49 hours	Radio RTC: Requested a radio check from Train ID 309. Train ID 309: Acknowledged radio the check. Radio RTC: Instructed Train ID 309 to place the train in service and granted permission to pass signal C15-02 "red," verifying switches 1A and 3A are clamped/tucked in the normal position for a straight-through train move. Train ID 309: Acknowledged with 100% repeat back. [Radio OPS3]
05:40:23 hours	Rail Supervisor #1: Advised that switch 3B was clamped in the normal position. Rail Supervisor #2: Announced, "Stop your train; why are you crossing over?" Rail Supervisor #1: Announced, "Stop your train, stop your train, stop your train." Train ID 301: Advised the Radio RTC that Train ID 309 was turning towards them. Radio RTC: Acknowledged with 100% repeat back. [Radio OPS3]
05:41:56 hours	Radio RTC: Requested confirmation that Train ID 309 was holding within the interlocking. Train ID 309: Confirmed the train was stopped. Radio RTC: Acknowledged and instructed the Train Operator to key down the train and reverse ends. Requested confirmation if they have passed signal C15-02. Train ID 309: Confirmed they had passed signal C15-02. Radio RTC: Requested if the train traveled through the interlocking in the normal or reverse position. Train ID 309: Confirmed that the train was crossing over to track 2. Radio RTC: Acknowledged and requested Train ID 309 to standby. Rail Supervisor #2: Advised they were on the trailing end of the train and could pull the train back to the platform. [Radio OPS3]
05:41:59 hours	Button RTC: Notified the OM of the incident. [Phone Ops 3]
05:44:27 hours	Rail Supervisor #2: Advised Radio RTC they were moving Train ID 309 back to the platform with speed commands. Radio RTC: Acknowledged that Train ID 309 was back at the platform. [Radio OPS3]
05:47:08 hours	Radio RTC: Advised Rail Supervisor #2 that all four switches needed to be clamped in the normal position. [Radio OPS3]
05:51:41 hours	Radio RTC: Advised Rail Supervisor #1 that switches 1A,3A,1B, and 3B need to be clamped in the normal position. Rail Supervisor #1: Acknowledged with 100% repeat back. [Radio OPS3]
05:58:40 hours	Rail Supervisor #1: Reported that switches 1A,3A,1B, and 3B were clamped in the normal position. [Radio OPS3]
06:01:22 hours	MAC: Notify the on-call safety personnel of the event. [Phone MAC]

Time	Description
06:02:40 hours	Train ID 301 entered the Huntington Station platform, track 2. [AIMS]
06:08:49 hours	ATCM: Arrived at Huntington Station [Radio Ops 3]
06:13:21 hours	MAC: Notified the on-call Safety Director of the event. [Phone MAC]
06:15:34 hours	ATCM: Advised the Radio RTC that they were with ERT and requested permission to unclamp switch 3. Radio RTC: Granted permission under Foul Time. [Radio Ops 3]
06:19:24 hours	ATCM: Reported switch 3 was in service and requested permission to unclamp switches 1A & 1B.
06:37:39 hours	MAC: Notified WMSC and received an event scene release. [Phone MAC]
06:40:49 hours	MAC: Notified the on-call Safety Director that normal service was re-established at Huntington Station. [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:

The Office of the Chief Mechanical Officer (CMOR) and Incident Investigation Team (IIT) completed an analysis of data regarding improper rail vehicle movement at Huntington Station, Track 1.

Based on the Vehicle Monitoring and Diagnostic System (VMDS), lead railcar 2038 Train ID 309, after entering stop and proceed mode, the train began to move to the end of the platform at Huntington Station, Track 1 platform limits.

Train ID 309 began to move outside the platform limits in the normal traffic flow and stopped after traveling 150 feet. The Master Controller (MC) was placed in power mode, and the train traveled an additional 159 feet. Train ID 309 traveled a total of 309 feet, leaving 141 feet back at the platform limits. The train came to a complete stop at the interlocking before entering Track 2.

Railcar 2038 was keyed down when the train stopped, and railcar 3002 was keyed up in the opposite direction facing the platform. Train ID 309 traveled back to Huntington Station, Track 1.

Based on VMS data, no faults with the train contributed to the cause of this incident. The train performed as designed.

See the timeline of events below:

Time	Description of Events	Master Controller	Train Speed	Regulated Speed	Limiting Speed	Distance from platform limits.
05:28:28.333	Train ID 309, lead car **2038**, keyed up at Huntington track 1 (C15-1). Destination code 28 (Mt Vernon Sq). Normal traffic flow, Facing inbound direction.	***B4***	***0 MPH***	***0 MPH***	***0 MPH***	***0***

Time	Description of Events	Master Controller	Train Speed	Regulated Speed	Limiting Speed	Distance from platform limits.
05:36:14.276	DCKR is energized, and the doors are closed and locked at this time.	***B4***	***0 MPH***	***0 MPH***	***0 MPH***	***0***
05:36:21.276	**Stop and Proceed mode is initiated**. Limiting and regulated speed remain at 0 MPH.	***B4***	***0 MPH***	***0 MPH***	***0 MPH***	***0***
05:36:22.171	The Master Controller is placed in the P5 position. The train begins to move.	***P5***	***0 MPH***	***0 MPH***	***0 MPH***	***0***
05:36:40.904	The train comes to a complete stop after traveling **149 feet. The train stops at the end of the platform limits—an 8-car Marker.**	***B5***	***0 MPH***	***0 MPH***	***0 MPH***	***0***
05:38:13.616	The Master Controller is placed in the P5 position. The train begins to move out of platform limits—normal traffic flow.	***P5***	***0 MPH***	***0 MPH***	***0 MPH***	***0***
05:38:34.428	The train comes to a completed stop after traveling **150 feet** from platform limits and stopping **at switch 1A.**	***B4***	***0 MPH***	***0 MPH***	***0 MPH***	***150 feet.***
05:38:37.113	Master Controller is placed in P1 Position. The Train begins crossing over to track 2 at the interlock switch.	***P1***	***0 MPH***	***0 MPH***	***0 MPH***	***150 feet.***
05:38:52.104	The train reaches a maximum speed of 6Mph. The train continues to cross over to track 2.	***B1***	***6 MPH***	***0 MPH***	***0 MPH***	***237 feet.***
05:39:02.176	The train comes to a complete stop after traveling an additional **159 feet**. Train stopped by CM **621+38.** Approx. **126 feet** before entering track 2. The train stops at the interlock.	***B5***	***0 MPH***	***0 MPH***	***0 MPH***	***309 feet.***
05:41:30.636	**Lead car 2038 is keyed down.**	***B4***	***0 MPH***	***0 MPH***	***0 MPH***	***309 feet***
05:41:39.772	**Car 3002 is keyed-up reversed end. The train is facing back to platform Huntington Track 1.**	***B4***	***0 MPH***	***0 MPH***	***0 MPH***	***309 feet.***

Time	Description of Events	Master Controller	Train Speed	Regulated Speed	Limiting Speed	Distance from platform limits.
05:42:44.052	The Master Controller is placed in the P2 position. The train begins to move back to platform limits.	***P2***	***0 MPH***	***28 MPH***	***28 MPH***	***309 feet***
05:44:14.748	The train comes to a completed stop at the 8-car marker. The train traveled a total of 457 feet back to the platform. The train was repositioned back to the platform.	***B4***	***0 MPH***	***0 MPH***	***0 MPH***	***0 feet***

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

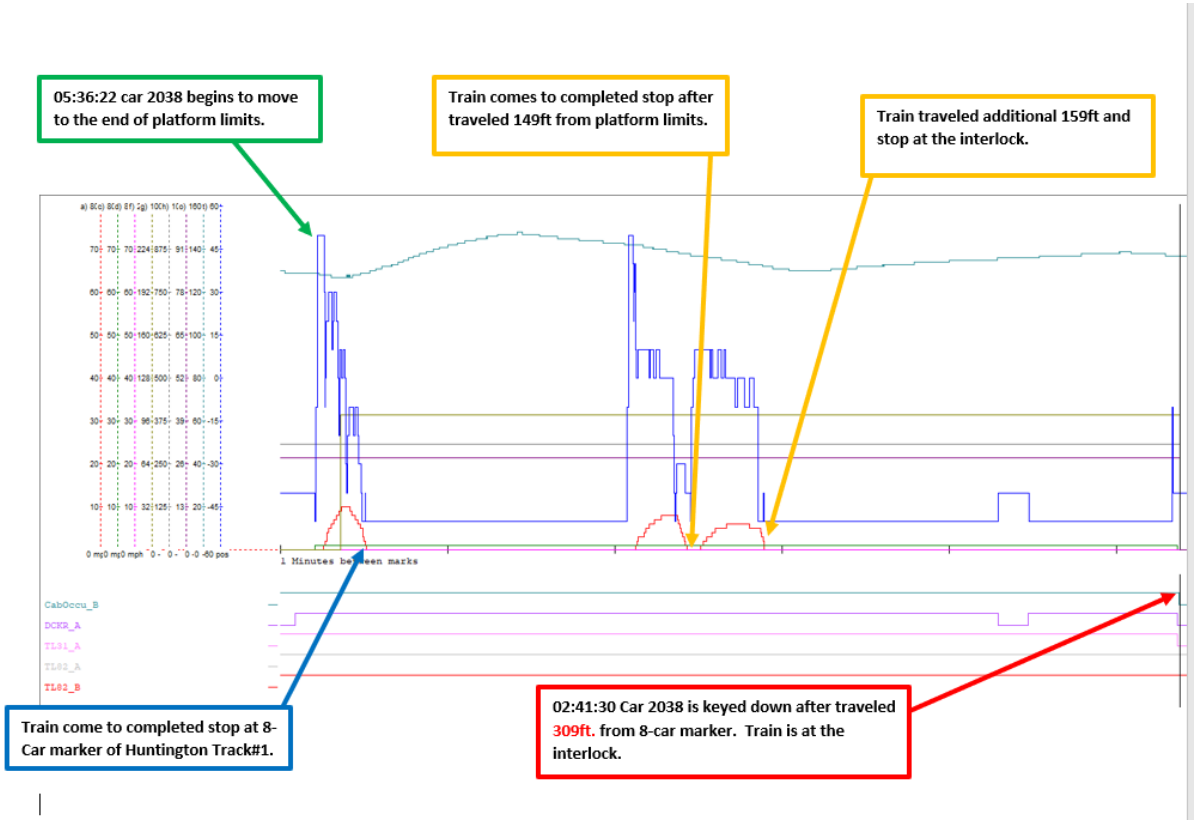


Figure 6 - depicts the VMS graph from Railcar 2038.

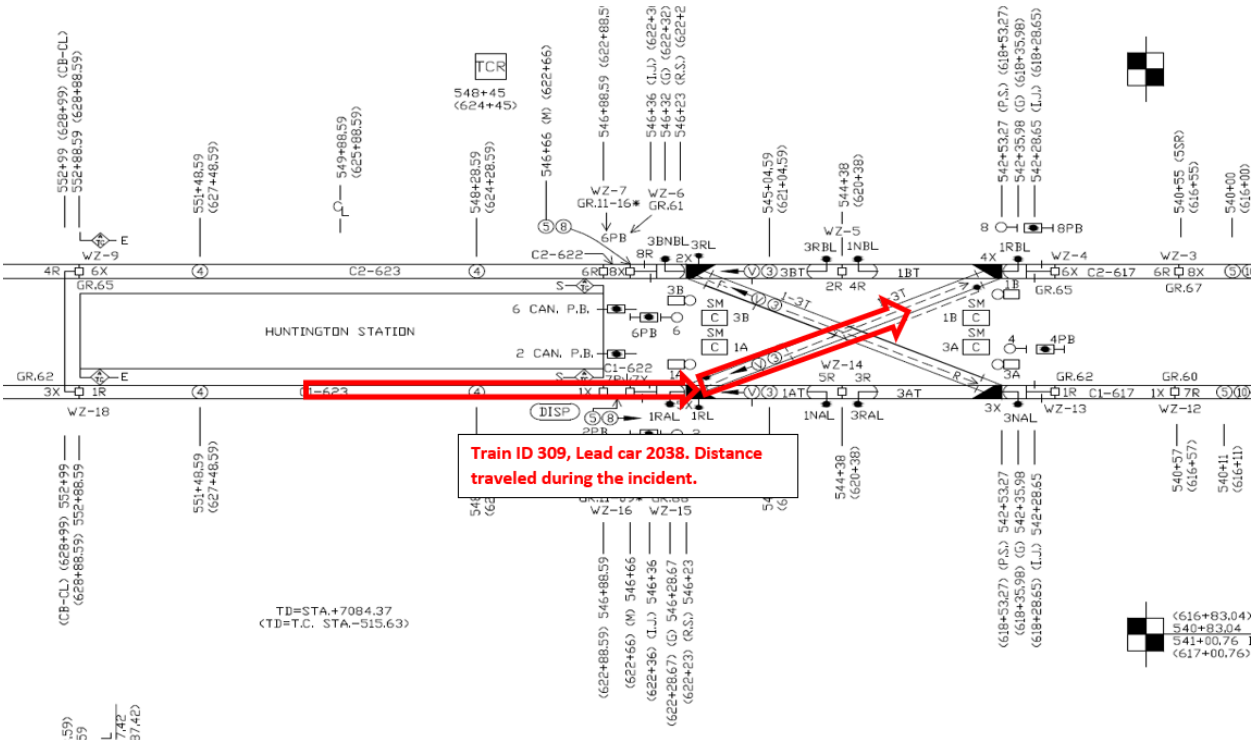


Figure 7 - depicts the distance Train ID 309 traveled from the platform to the interlocking.

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

The Office of Systems Maintenance (SMNT) and the Office of Radio Communications (COMR) performed a thorough radio check on the platform located at Huntington Station with the blockhouse. The radio check revealed that most transmission checks were broken and digitized. COMR has recommended conducting engineering checks on the alignment and placement of antennas, as the signal coverage on the platform is very poor.

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

The Office of Rail Transportation's periodic performance review of the Rail Supervisor found that they were involved in two incidents of improper terminal operation: an incorrect route setting on 10/15/2023 and incorrectly clamped switches on 11/20/2023.

On Monday, November 20, 2023, the Rail Supervisor worked at Huntington Terminal on run HT-1, scheduled between 4:30 am and 2:30 pm. Around 5:41 am, the Rail Supervisor was given permission to clamp switches 1A, 3A, 1B, and 3B in a normal position at Huntington Interlocking on tracks 1 and 2. The Rail Supervisor informed MICC Rail that switch 1A was clamped in a normal position. Train ID 309 was authorized to pass the signal red at C15-02, which verified that switches 1A and 3A were clamped in a normal position and allowed for a straight-through move and a permissive block to Eisenhower Ave Station. Then, the Rail Supervisor instructed train ID 309 to stop their train after transmitting that the train was crossing over to track 2. It was later discovered that switch 1A was clamped in the wrong position by the Rail Supervisor. As a result, both the Rail Supervisor and Train Operator were removed from service and transported for post-incident testing.

During an interview regarding this incident, the Rail Supervisor stated, "I clamped the interlocking incorrectly, which caused train ID 309 to take the wrong lead."

In summary, the rail supervisor failed to clamp the switches correctly for train ID 309 departing from Huntington Station.

When determining the appropriate disciplinary penalty for the Rail Supervisor's actions, the Rail Transit Authority (RTRA) considered several factors. According to the Washington Metropolitan Area Transit Authority (WMATA) records, the Rail Supervisor has been an employee since May 3, 2004, and a Rail Operations Supervisor since August 17, 2014. The Rail Supervisor's performance record shows that they have had no safety incidents within three (3) years from the date of the first incident listed.

As a result of the violations on October 15, 2023, and November 20, 2023, the Rail Supervisor will receive a five (5) day suspension. Additionally, the Rail Supervisor will have undergone refresher training on November 8, 2023, for incorrectly setting an incorrect lead and clamping switches incorrectly on November 27, 2023.

Interview Findings

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

Rail Supervisor #1

- The Rail Supervisor stated they clamped the switch incorrectly.
- The Rail Supervisor stated they were fully alert before the incident.
- The Rail Supervisor stated the interlocking at Huntington Station goes out of correspondence at least twice a day and several times with other supervisors.
- The Rail Supervisor stated a train crossed from track 2 onto track 1 before the interlocking went out of correspondence.
- The Rail Supervisor stated the last time they cranked and blocked an interlocking was in October and were comfortable completing a crank and block task.
- The Rail Supervisor stated they had worked 40 hours of overtime in the past two weeks and did not feel comfortable performing the terminal duties on the day of the incident.
- The Rail Supervisor stated that while on the roadway giving updates to the RTC, holding the flashlight and cranking/clamping switches can be overwhelming.

Train Operator (Train ID 309)

- The Train Operator stated they were unaware of the switch being out of correspondence until they turned their radio to OPS 3 and saw the Supervisor in the interlocking.
- The Train Operator stated rail Supervisor #2 came to the cab window to assist them with communicating with the Radio RTC due to the poor radio communication at Huntington Station.
- The Train Operator stated they tried using their handheld radio and train radio to contact the Radio RTC to receive permission to pass the red signal ahead of them.
- The Train Operator stated they heard the Radio RTC permit them to pass signal C15-02 "red," verifying 1A and 3A were clamped in the normal position for a straight-through train move with speed no greater than 5 MPH and gave 100% repeat back.
- The Train Operator stated that Train ID 301 on track 2 began flashing their lights.

- The Train Operator said they looked out the operator's cab window and heard Rail Supervisor #2 say they would pull the train back onto the platform.
- The Train Operator stated they were familiar with reading the rail alignment, but it was dark.
- The Train Operator stated that this was their first trip of the day.

Weather

At the time of the incident, NOAA recorded the temperature at 42 ° F. Weather was not a contributing factor in this incident (Weather source: NOAA – Location: Alexandria, VA).

Related Rules and Procedures

Standard Operating Procedure (SOP) #35

- 35.5.1.4 – When the RTC or the Yard Interlocking Operator concours, the qualified wayside person shall check for proper switch position tuck and closure of each switch on the instructions.

- 35.5.2.1 – If a switch is NOT in the desired position or is NOT properly tucked closed, the qualified wayside personnel shall crank the switch as follows.

Metrorail Operating Rulebook (MOR) #3

- MOR 1.6.2– Failure of any employee to abide by the established rules and procedures, failure to comply with the verbal instructions of supervisors, or failure to use sound judgement, regardless of the time, place, or circumstance, to compromise the safety of the public or fellow employees will result in the employee's immediate removal from service, pending an investigation. Disciplinary action will include permanent disqualification from safety sensitive positions or dismissal.
- MOR 3.4.1 Rail vehicles shall not be operated through improperly aligned track switches.

Human Factors

Evidence of Fatigue

Rail Supervisor #1

Conditions at the time of the incident were evaluated to distinguish whether evidence of fatigue was present. Video of the incident was reviewed for behaviors suggesting fatigue. No signs or symptoms of fatigue were evident from the video. The employee reported feeling fully alert at the time of the incident. The employee reported experiencing no symptoms of fatigue leading up to the incident.

Train Operator (Train ID 309)

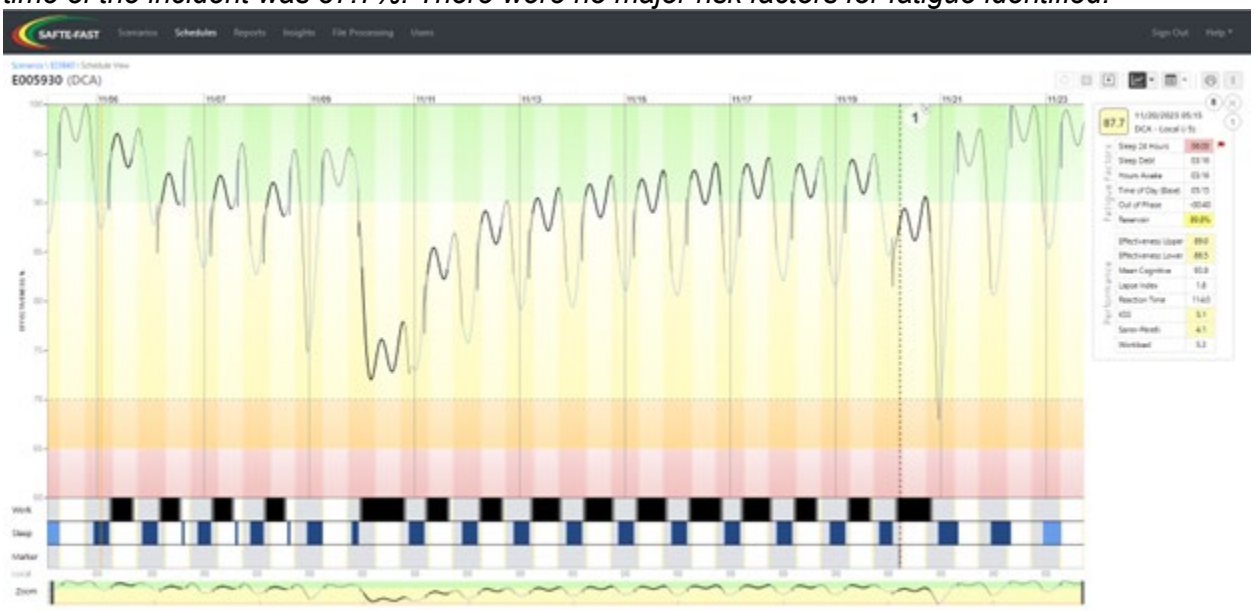
SAFE evaluated signs and symptoms of fatigue that may have been present during the incident. No signs or symptoms of fatigue were detected from the available data. Video of the incident was reviewed for signs of the Train Operator's fatigue. No signs or symptoms of fatigue were evident from the video.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

Fatigue Risk

Rail Supervisor #1

Incident data was evaluated for fatigue risk factors. The incident time of day (5:15 hours) suggests an increased risk of fatigue-related impairment. The employee worked day and overnight shifts in the days leading up to the incident. The employee reported a total of 6 hours of sleep in the last sleep period preceding the incident and was awake for 3.25 hours at the time of the incident. The off-duty period preceding the incident was 13 hours, which provided the opportunity for 7-8 hours of sleep. The employee reported usual workday sleep durations of 7 hours and no issues with sleep.

A biomathematical fatigue modelling application (SAFTE-FAST WebSFC) was used to further evaluate fatigue risk factors that may have been present in the Rail Supervisor's schedule. The analysis was based on the Rail Supervisor's work schedule, reported sleep from the day before the incident, and reported habitual sleep durations. Estimated performance effectiveness at the time of the incident was 87.7%. There were no major risk factors for fatigue identified.



Graph 1 - SAFTE-FAST modeling analysis output.

Modeling analysis output shows estimated performance effectiveness during the incident work shift and for the 15 days leading up to the work shift, based on the employee work and reported sleep schedule. Estimates were based on the Rail Supervisor's work schedule, reported sleep from the day preceding the incident, and reported habitual sleep durations (7 hours a day). Bold portions of the modeled curve show work (in black) and sleep times (in blue). Effectiveness is shown on the vertical axis, with colored fields in the chart background signifying ranges of effectiveness scores including high effectiveness (>90%) in green, and low effectiveness (<65%) in red. Time is shown on the horizontal axis. Markers for work and sleep times are shown in the lanes above the time of day on the horizontal axis.

Train Operator (Train ID 309)

SAFE evaluated incident data for fatigue risk factors. Risk factors for fatigue were present. The incident occurred at a time of low circadian alertness. The Train Operator reported a regular sleep schedule in the days leading up to the incident. The Train Operator worked the morning shift in the days leading up to the incident. The Train Operator was awake for two hours and twenty-three minutes at the time of the incident. The Train Operator reported eight hours and forty minutes of sleep in the 24 hours preceding the incident. The off-duty period was sixty-three hours and thirty-six minutes, providing an opportunity for 7-9 hours of sleep. This was more than the Train Operator's usual workday sleep durations. The Train Operator reported no issues with sleep. The Train Operator worked the morning shift in the days leading up to the incident.

Post-Incident Toxicology Testing

Rail Supervisor #1

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

Train Operator (Train ID 309)

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

Findings

- Rail Supervisor #1 clamped Switch 1A in the reverse position.
- The Train Operator for Train ID 309 reiterated the instructions to verify that switches 1A and 3A were securely clamped in their normal positions before moving the train from Huntington Station.
- The Train Operator for Train ID 309 failed to confirm that the position of switches 1A and 3A were normal.
- The train operator had trouble hearing the instructions from the RTC.
- Rail Supervisor #2 assisted the Train Operator with radio communication and instructions from the RTC.

Immediate Mitigation to Prevent Recurrence

- Train ID 309 was moved back to the platform at Huntington Station and placed out of service for post-incident inspection.
- The switches at Huntington interlocking were repositioned and inspected to affirm proper alignment.
- Rail Supervisor #1 was removed from service for post-incident testing.
- The Train Operator of Train ID 309 was removed from service for post-incident testing.

Probable Cause Statement

The probable cause of the Improper Rail Vehicle Movement incident at Huntington Station on November 20, 2023, was primarily attributed to human error involving both Rail Supervisor #1 and the Train Operator of Train ID 309. The investigation identified that Rail Supervisor #1 incorrectly clamped Switch 1A in the reverse position, setting the stage for an improper route. This misalignment led Train ID 309 to take a diverging route instead of proceeding straight towards Eisenhower Avenue Station.

A contributing factor to the incident was the inattention of the Train ID 309 Train Operator, who failed to verify the correct rail alignment before departing from the platform. The reliance on the instructions provided by Rail Supervisor #1, coupled with a lack of awareness due to fatigue on the part of Rail Supervisor #1, further complicated the situation. The Rail Supervisor #1 had worked ten consecutive days leading up to the incident, potentially contributing to a diminished state of alertness and decision-making.

Recommended Corrective Actions

Corrective Action Code	Description	Responsible Party	Estimated Completion Date
112922_SAFECAPS_RTRA_001	Provide additional training on clamping/blocking for the involved Rail Supervisor.	RTRA SRC	Completed

Appendices

Appendix A – Interview Summaries

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

Rail Supervisor #1

The Rail Supervisor has been a WMATA employee since May 3, 2004, and has been a Rail Supervisor since August 17, 2014. The Rail Supervisor's last terminal certification was November 9, 2022, where they received a QL-1 on the first attempt. *(QL-1 = passed, QL-2 = passed with minor errors and QL-3 = failed)* The Rail Supervisor had a prior incident at Huntington Station on October 15, 2023, where they set an incorrect lead.

The rail supervisor stated that the interlocking at Huntington Station went out of correspondence, and they contacted the MICC. The Radio RTC instructed them to crank and block the interlocking. They stated that this was not an unusual occurrence at Huntington Station.

The Rail Supervisor stated that they clamped the interlocking incorrectly, and the train that departed Huntington Station platform on track one took a crossover move due to them cracking and blocking incorrectly.

Train Operator (Train ID 309)

The Train Operator has been a WMATA employee since April 16, 2007, and a Train Operator since April 2, 2023. The Train Operator's last certification was March 2, 2023, where they received a QL-1 on the first attempt. *(Primary Qualification Proficiency Practicum is graded using a system based on three "Quality Levels". Quality Level 1 (QL-1) is reserved for Train Operators whose exam performance demonstrates that no additional training or instruction is required.)*

The Train Operator stated that their train was due off the platform in 2 minutes and did not have a lunar signal, so they attempted to contact the Terminal Supervisor until they noticed them in the interlocking. They switched their radio to OPS 3 to hear what was happening in the interlocking. As they listened to the Terminal Supervisor clamping the interlocking over the radio, a 2nd Supervisor approached them to assist.

The Train Operator stated they could hear the MICC Radio RTC, but the MICC could not hear them or the 2nd Supervisor. The Train Operator said the MICC Radio RTC instructed them to pass signal C15-02 "red," verifying that 1A and 3A are clamped for a straight-through train move. The Train Operator stated that the radio would beep each time they attempted to repeat the instructions. When the radio cleared, they repeated the instructions and began moving the train.

The Train Operator stated that they noticed the train was not going straight and saw the train on track 2 began to flash its light, so they stopped the train and stuck their head out the operator's cab window to communicate to the 2nd Supervisor. The Train Operator stated the 2nd Supervisor advised them that they would pull the train back to the platform.

The Train Operator stated that they went into the operator breakroom once the train was pulled back onto the platform until the Supervisor came to get them.

Appendix B – Work Order

Page 1 of 1
MX76PROD

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

Work Order #: 18248300
Type: EMI

Status: CLOSE
11/22/2023 22:49

Work Description: C15, OPS #3 REPORTED NO RADIO COMMS FROM ROCC TO C15 BLOCKHOUSE
Job Plan Description:

Work Information

Asset:	COMMC15 COMM, COMMUNICATIONS SYSTEM, C15	**Owning Office:**	COMM-TSSM	**Parent:**	
Asset Tag:		**Maintenance Office:**	COMM-TSSM-CFLD	**Create Date:**	11/20/2023 13:13
Asset S/N:	COMM C15	**Labor Group:**	COMMR3RADO	**Actual Start:**	11/22/2023 22:48
Location:	7817 C15, HUNTINGTON, STATION, MEZZANINE, 050, N, ROOM 105, COMMUNICATIONS ROOM	**Crew:**		**Actual Comp:**	11/22/2023 22:48
Work Location:		**Lead:**	[redacted]	**Item:**	R60000001
Failure Class:	COMR003 RADIO COMMUNICATIONS SYSTEMS	**GL Account:**	WMATA-02-33540-50499280-042-**********-*****-OPR**		
Problem Code:	3669 COMMS FAILURE	**Supervisor:**	[redacted]	**Target Start:**	
Requested By:	[redacted]	**Requestor Phone:**	[redacted]	**Target Comp:**	
				Scheduled Start:	
Create-Mileage:	0.0	**Complete-Mileage:**	0.0		

Task IDs

Task ID	
10	Operator on duty reported problem was not with ROCC, but significant problems with personnel/trains on platform and/or in the tail tracks. Conducted radio checks on platform with blockhouse, most checks were broken and/or digitized. (See more in long description) Operator on duty reported problem was not with ROCC, but significant problems with personnel/trains on platform and/or in the tail tracks. Conducted radio checks on platform with blockhouse, most checks were broken and/or digitized. Recommend engineering check into alignment/placement of antennas, as signal coverage on platform is very poor.

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]	11/20/2023	11/20/2023	19:00	22:00	Y	03:00	00:00	$154.93
10	[redacted]	11/20/2023	11/20/2023	19:00	22:00	Y	03:00	00:00	$144.84
						Total Actual Hour/Labor:	06:00	00:00	$299.78

Related Incidents

Ticket	Description	Class	Status	Relationship
8711915	OPS #3, REPORTED NO RADIO COMMS FROM ROCC TO BLOCKHOUSE	SR	INPROG	RELATED

Failure Reporting

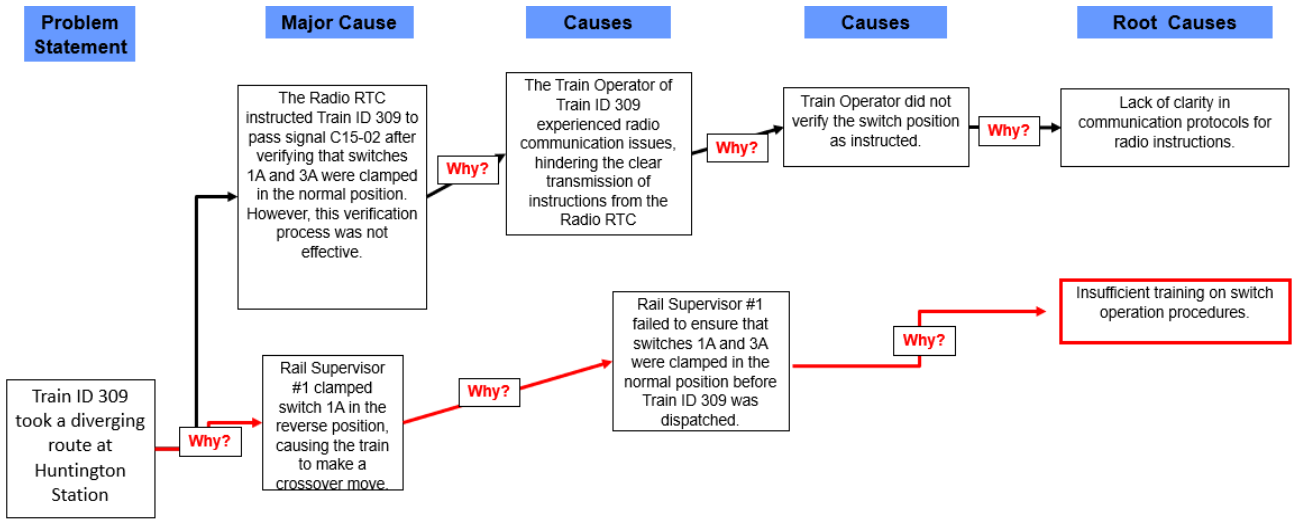
Cause	Remedy	Supervisor	Remark Date
		[redacted]	11/22/2023

Remarks: This station has been turned over to ENGA for supplemental coverage-Duplicate ticket

WT_plust_woprint.rptdesign 01/5/2024 19:25

Figure 8 - Work Order for radio communication.

Appendix C – Why-Tree Analysis



Root Cause Analysis

Figure 9 - Root Cause Analysis.