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Red Signal Overruns

At or Near Brentwood Rail Yard and Anacostia Station

April 11, 2024 – April 19, 2024

Document Purpose:

This WMSC written report on WMATA Metrorail's safety event investigations and review of Metrorail's findings in accordance with the WMSC Program Standard, in conjunction with the attached Metrorail investigation reports that have undergone WMSC staff review and, if necessary, feedback and revision, describes the investigation activities, identifies factors causing or contributing to the safety events, and sets forth ongoing, additional, or upcoming corrective actions and further oversight work (such as inspections and audits) as necessary or appropriate. The WMSC's ongoing oversight during the investigative process, including safety event reporting and verification, participation in investigative interviews, data review, consistent communication with the Metrorail investigations team, and feedback on Metrorail's reports leads to further improvements prior to consideration of the reports by WMSC Commissioners for adoption. The WMSC's safety event investigation oversight assures the sufficiency and thoroughness of Metrorail's investigations. The WMSC Commissioners are considering these documents (the WMSC review and Metrorail's investigation reports) as a unified item for adoption at the Washington Metrorail Safety Commission meeting on December 10, 2024.

WMSC staff recommend adoption of these investigations.

Red Signal Overruns

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

As of November 15, 2024, there have been 14 such events reported in 2024. WMSC has conducted its own independent review of these events as they occur to understand the contributing causes and to explore methods for correcting precipitating causes to prevent recurrence. WMSC staff have discussed the specifics with key Metrorail personnel and WMATA has developed corrective action plans to create or improve governing procedures, improve work tools and identify additional types of training for Metrorail employees.

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

- Non-compliance with operational rules, procedures and instructions
- Inadequate training, including Metrorail's lack of physical characteristics and territory familiarization and qualification requirements
- Loss of/lack of focus and situational awareness

As a result of these investigations Metrorail required personnel to receive reinstruction and refresher training.

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

- C-0183 addresses the finding that Metrorail creates safety risks by not requiring and conducting territory familiarization and physical characteristics training, and not assessing knowledge of physical characteristics prior

to assigning operations personnel work on a line, in a terminal or in a yard (Scheduled completion September 2025).

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

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

Metrorail conducted safety certification work that may lead to the use of Automatic Train Operation in specific circumstances. Metrorail's initial concept of operations includes multiple scenarios where manual mode will continue to be required as the safest mode of operation. These include mode of operations in single-tracking, in pocket tracks, outside of passenger service, when work crews are on the roadway, in low-adhesion conditions such as snow storms, icy conditions and during fall leaf season, when moving in rail yards or between rail yards and terminals, when provided certain blocks by rail traffic controllers, and in other conditions to reduce the risk of collisions, red signal overruns, and other safety events. The WMSC is currently reviewing Metrorail's safety certification package to determine if Metrorail has followed its own process required to safely activate Automatic Train Operations.

Safety event summaries:

W-0351 – Brentwood Rail Yard – April 11, 2024 (WMATA ID: E24287)

While traveling from the mainline to the Brentwood Rail Yard, Prime Mover 39 (PM-39) moved past a red signal without permission. PM-39, while being operated by a different Equipment Operator, struck the ceiling at McPherson Square Station and was being transported to Brentwood Yard for inspection at the time of this safety event. Just prior to this improper movement, the Radio Rail Traffic Controller in Metrorail's Control Center granted PM-39's Equipment Operator an absolute block to no closer than 10 feet of signal B99-06 red and instructed the Equipment Operator to contact the Interlocking Operator at the Brentwood Yard Tower for permission to enter the rail yard. This instruction was repeated a total of six times by the Radio Rail Traffic Controller, three at the request of the Equipment Operator, who then repeated back the directions as required by Metrorail rules.

Minutes later, the Button Rail Traffic Controller identified on their Advanced Information Management System (AIMS) screen that PM-39 had passed Signal B99-06, a red (stop) signal, and was located at Signal B99-16. The Button Rail Traffic Controller inquired with the Interlocking Operator about what they observed. After confirming the red signal overrun, the Interlocking Operator instructed the Equipment Operator to hold their location, and the Radio Rail Traffic

Controller instructed the Equipment Operator to inspect the unit for damage under foul time protection. The Equipment Operator confirmed there was no damage to the unit.

While the majority of signals on the roadway throughout the Metrorail system are located on the right side of the track, signal B99-06 is located on the left side. This event highlights the need for territory familiarization training. There is signage displayed at the 8-car marker at NoMa-Gallaudet Station on track 1 and at Chain Marker B1 114+00 to inform operators of the signal's location, demonstrating the Equipment Operator's lack of focus and situational awareness.

During an investigative interview, the Equipment Operator, who had less than one year of experience in the position, stated they were unfamiliar with the Red Line due to limited on-the-job training, they did not have their map book with them because they were not expecting to operate a vehicle and that they felt rushed to clear the track.

The Equipment Operator was removed from service for post-event toxicology testing. The Prime Mover was removed from service and moved to Brentwood Rail Yard by another operator for further inspection. There was no damage to the switch and no damage to the prime mover.

W-0352 – Anacostia Station – April 19, 2024 (WMATA ID: E24312)

A Train Operator moved Green Line Train 528 past a red signal at Anacostia Station on track 1. Prior to the event, Green Line trains were passing red signals at Naylor Road Station due to a down track circuit. The Train Operator notified the Rail Traffic Controller in the Control Center that their train lost speed commands in the center of the platform at Anacostia Station. The Rail Traffic Controller in the Control Center granted the Train Operator a permissive block to berth the train on the platform at the 8-car marker, advised that signal F06-08 was red and instructed the Train Operator to standby. The Train Operator repeated by the instructions as required by Metrorail rules. The Train Operator then entered Stop and Proceed, a mode that enables train operators to take a point of power in the absence of speed commands. Stop and Proceed mode does not reset after a door operation until the train gets speed commands. After the Train Operator serviced the station, the mode remained active, allowing the Train operator to continue on despite the red signal and contrary to the direction provided by the Rail Traffic Controller. Two minutes later the Rail Traffic Controller identified an alarm on their AIMS screen and asked if the Train Operator overran the red signal. The Train Operator confirmed they overran the red signal. This created a near-miss of a head on collision with another train that reversed ends outside the station platform limits on the same track and had just crossed over to opposite track as the Train Operator of Train 528 overran the red signal.

Train Service was suspended. The Rail Traffic Controller instructed the Train Operator, who had advised them that the train had two to three cars still on the platform, to walk riders through the train onto the station's platform.

There was no damage to the switch and the train was removed from service and moved to Branch Avenue Rail Yard. The investigation determined that the emergency brake was not activated, there were no faults and that the train operated as commanded by the Train Operator.

The Train Operator was removed from service for post-event toxicology testing.

As part of the WMSC's order regarding Metrorail's noncompliance with its train operator certification requirements issued in February 2024, Metrorail identified that the Train Operator, who completed their certification exam in December 2023, was only tested on one of the required types of scenarios.

During an investigative interview the Train Operator, who became certified in December 2023, stated that during the safety event they were rushing, did not identify the red signal and did not remember the instruction to standby.

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

FINAL REPORT OF INVESTIGATION A&I E24287

Date of Event:	April 11, 2024
Type of Event:	O-8, Red Signal Overrun
Incident Time:	06:04 Hours
Location:	B99-06 signal, Chain Marker B1 114+60
Time and How received by SAFE:	06:13 Hours, Safety Information Officer (SIO)
WMSC Notification Time:	06:16 Hours
Responding Safety Officers:	Office of Safety Investigations (OSI)
Rail Vehicle:	Prime Mover (PM 39)
Injuries:	None
Damage:	None
Emergency Responders:	None
SMS I/A Number	20240411#116080

Abbreviations and Acronyms

AIMS	Advanced Information Management System
AOM	Assistant Operations Manager
ARS	Audio Recording System
ATCM	Automatic Train Control Maintenance
CTEM	Car Track Equipment Maintenance
IO	Interlocking Operator
OSI	Office of Safety Investigations
MOC	Maintenance Operations Center
MICC	Metro Integrated Command and Communication Center
MOR	Metrorail Operating Rulebook
NOAA	National Oceanic and Atmospheric Administration
OM	Operations Manager
PM	Prime Mover
RTRA	Office of Rail Transportation
RTC	Rail Traffic Controller
SAFE	Department of Safety
SDOC	Safety Director on Call
SMS	Safety Measurement System
SIO	Safety Information Officer
TRST	Office of Track and Structure
WMATA	Washington Metropolitan Area Transit Authority
WMSC	Washington Metrorail Safety Commission

B99-06 Signal, CM B1 114 + 60 – Red Signal Overrun

April 11, 2024

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Executive Summary

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

On Thursday, April 11, 2024, at 06:06 hours, the Button Rail Traffic Controller (RTC) within the Metro Integrated Communication and Command Center (MICC) contacted the Interlocking Operator at Brentwood Yard and reported that they observed a Red Signal Overrun event via the Advanced Information Management System (AIMS).

At 06:02 hours, the Radio Rail Traffic Controller (RTC) granted Track Unit Prime Mover (PM 39) an Absolute Block to no closer than 10 feet of signal B99-06 red. The Equipment Operator was instructed by the Radio RTC to contact the Brentwood Control Tower Interlocking Operator for permission to enter the Yard and notify the MICC Rail Traffic Controller (RTC) when clear of the mainline. The RTC contacted the Brentwood Interlocking Operator and advised them that PM-39 was approaching signal B99-06 red.

At 06:08 hours, the Button RTC contacted the Brentwood Interlocking Operator to verify which direction the PM-39 was entering Brentwood Yard. During the conversation, the Button RTC noticed on the Advance Information Management System (AIMS), that the track unit was holding at signal B99-16 indicating the track unit passed signal B99-06 which displayed a red aspect. The Interlocking Operator contacted Equipment Operator on PM 39 and instructed them to hold their location.

Notifications were made to the Operation Manager (OM), Assistant Operations Manager (AOM), the Safety Information Officer (SIO), Washington Metropolitan Safety Commission (WMSC), Safety Director on Call (SDOC). Automatic Train Control (ATC) and the Office of Safety Investigation (OSI) were dispatched to the scene.

The Radio RTC requested the Equipment Operator inspect the track unit for damage under foul time protection. The Automatic Train Control Maintenance (ATCM) confirmed no damage to Switch 7 by Chain Marker (CM) B1 114+60, after the switch was tested. SAFE personnel arrived and conducted an investigation.

After the investigation, the scene was released by WMSC and SAFE personnel. In accordance with the Office of the Chief Mechanical Officer, Incident Investigation Team, Operations Administrative Policy 102.06, the Metro Integrated Command and Communications Center promptly initiated the removal of PM 39 non-revenue service for post-incident investigative measures.

The Equipment Operator was removed from service for post-incident testing. This action adhered to the Rail Vehicle Event Investigation Policy, ensuring a comprehensive examination of the incident. A relief Equipment Operator moved PM 39 from the incident location to Brentwood Yard track 18 for storage and further inspection. No damage or injuries resulted from the event.

The probable cause of the Red Signal Overrun event on April 11, 2024, at Brentwood Yard was the Equipment Operator's lack of situational awareness and unfamiliarity with the Redline. The Equipment Operator failed to notice the signage located at the 8-car marker on the platform of

NoMa-Gallaudet Station indicating signal B99-06 was on the left side when entering Brentwood Yard.

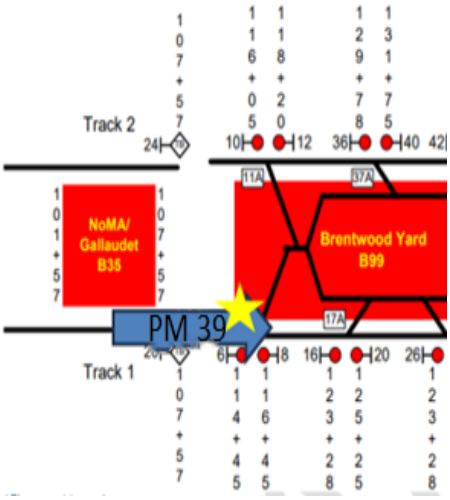
This sign was meant to alert the operator that B99-06 was ahead on the left side of the track. Additionally, a second warning sign was located at Chain Marker B1 114+00, which was 60 feet before the signal and interlocking. This sign was also intended to alert operators that the B99-06 signal is located on the left side of the track.

A contributing factor was the Equipment Operator's failure to follow the instruction to stop no closer than 10 feet to signal B99-06 red.

Incident Site

B99-06 signal, Chain Marker 114+60

Field Sketch/Schematics



The above depiction is not to scale.

Purpose and Scope

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

Investigative Methods

Upon receiving notification of the Red Signal Overrun at the Brentwood Rail Yard signal B99-06 on April 11, 2024, SAFE dispatched a cross-functional team to assess the scene and conduct the subsequent investigation. SAFE team members worked with relevant WMATA subject matter experts to review the incident's facts and data.

The investigative methodologies included the following:

- Physical site assessment

- 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:
    - Equipment Operator

- Informal Interviews – Collected through conversations with individuals during the investigation to provide background and supporting information. Written statements were reviewed by personnel present during the event.

- Documentation Review – A collection of relevant work history information and process documentation contained in Metro systems of record. These records include:
    - Metrorail Operating Rulebook (MOR)
    - National Oceanic and Atmospheric Administration (NOAA)
    - Equipment Operator 30-day Work History
    - Equipment Operator Certification
    - MICC Report
    - Maximo Work Orders
    - Car Tack Equipment Maintenance (CTEM) Inspection of PM 39
    - Office of Track and Structure (TRST) Managerial Incident Investigation Report
    - Equipment Operator Incident 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 1, BWYD Radio and OPS 1 Phone.
    - Closed-Circuit Television (CCTV)
    - Advance Information Management System (AIMS)

Investigation

On Thursday, April 11, 2024, at 06:06 hours, the Button Rail Traffic Controller (RTC) within the Metro Integrated Communication and Command Center (MICC) contacted the Interlocking Operator at Brentwood Yard and reported that they observed a Red Signal Overrun event.

PM 39 was traveling from McPherson Square Station to Brentwood Yard by a second Equipment Operator. The original Equipment Operator was removed from service after PM 39 struck a ceiling tile at McPherson Square Station. According to the Audio Recording System (ARS), at 06:02 hours, the MICC Radio RTC granted the Equipment Operator of PM 39 an absolute block no closer than 10 feet of signal B99-06 red and contact Brentwood Control Tower for permission to enter Bentwood Yard.

The instruction was given three times during the initial exchange. The instruction was repeated at the Equipment Operator's request another three times. The Equipment Operator responded with 100% repeat back of the message. The Equipment Operator was instructed to contact Brentwood Control Tower for permission to enter the Yard and notify the MICC when clear of mainline. The Button RTC contacted the Brentwood Interlocking Operator and informed them that PM 39 was approaching signal B99-06 red.

Signage was in place at the 8-car marker, track 1 of NoMa-Gallaudet Station was present regarding the positioning of signal B99-06. This sign was meant to alert the operation personnel

that signal B99-06 was ahead on the left side of the track. Additionally, a second warning sign was located at CM B1 114+00, which was 60 feet before the signal and interlocking.

At 06:03 hours, the Equipment Operator of PM 39 advised the Radio RTC that they were clear of NoMa-Gallaudet Station, and PM 39 began moving towards Brentwood Yard from the NoMa-Gallaudet Station on track 1. During this time the Button RTC contacted the Interlocking Operator and inquired why PM 39 was holding at signal B99-16.

The Interlocking Operator stated, no PM 39 was holding at signal B99-06. The Button RTC explained they observed via the AIMS, that PM 39 was holding at signal B99-16 which indicated overran signal B99-06, which displayed a red aspect.

At 06:06 hours, the Buttons RTC and Brentwood Interlocking Operator confirmed that PM 39 had run the signal B99-06 red via the Interlocking Board and AIMS system. The Radio RTC notified the Equipment Operator on PM 39 they had overrun the Signal B99-06 red and to standby. The Radio RTC instructed the Equipment Operator on PM 39 to switch to Brentwood Yard Ops and contact the Interlocking Operator via the radio.

At 06:07 hours, the Buttons RTC notified the Assistant Operations Manager (AOM) of the event. The AOM directed that PM 39 remain at that position.

At 06:08 hours, the Button RTC instructed the Interlocking Operator to contact the Equipment Operator on PM 39 to advise the track unit to hold their location.

At 06:09 hours, OPS 1 began single-tracking between Noma and Rhode Island Avenue Station byway of Brentwood on track 2.

At 06:10 hours the Safety Information Officer (SIO) notified the Safety Director on Call (SDOC) of the event. The SDOC directed OSI respond to the scene.

At 06:12 hours, the SIO notified the on call SAFE investigator who responded.

At 06:14 hours, Rail 2 notified the Maintenance Operations Center (MOC) and was advised MOC units were already enroute to scene.

At 06:14 hours, the Brentwood Interlocking Operator instructed the Equipment Operator of PM 39 to switch back to OPS 1 Radio. The Equipment Operator did and was advised by the Radio RTC to hold their location.

At 06:16 hours, the SIO left a voicemail notification for the on call WMSC representative. Two (2) additional attempts were made to reach the WMSC on call representative.

Between 06:18 and 06:21 hours, the Radio RTC requested the Equipment Operator inspect the PM for damage under foul time protection. The Equipment Operator acknowledged foul time, completed the ground walk, and confirmed no damage to PM 39. The Equipment Operator was removed from service and transported for post-incident testing.

At 06:25 hours, ATCM requested and was granted foul time protection to inspect the switch and complete manual test of the switch. ATCM then requested that the Button RTC exercise the switch. ATCM reported the Switch 7 at Chain Marker (CM) B1 114+60 was in working order with no damage.

At 06:37 hours, the relief Equipment Operator for PM 39 arrived and was standing by.

At 06:42 hours, the SIO was advised by the SDOC that the WMSC had been notified and had granted a WMSC scene release.

At 06:49 hours, ATCM advised Switch 7 was revenue ready and relinquished foul time.

At 06:58 hours, the SAFE investigator arrived and requested foul time on track 1 from NoMa-Gallaudet Station to the end of the roadway. The Radio RTC granted foul time and advised the 3rd rail was still energized. The RTC also requested the SAFE investigator photograph the switch and forward them to MICC and call landline when completed. The SAFE Investigator acknowledged.

At 07:06 hours, the SAFE investigator boarded PM 39, relinquished foul time, and released the scene.

At 07:07 hours, the Radio RTC directed PM 39 to switch to Brentwood Yard 1 radio and prepare for movement to a Brentwood storage track. The Equipment Operator of PM 39 acknowledged and switched.

At 07:08 hours, the Brentwood Interlocking Operator gave PM 39 an absolute block to the north bump post track 18 and storage. The Equipment Operator of PM 39 along with the SAFE investigator and the previous Equipment Operator of PM 39 moved to the bump post of track 18.

Image 1 (left) signal alert signage on the platform of NoMa-Gallaudet Station, (right) signal alert signage at CM B1 114+00.

At 07:19 hours, the Brentwood Interlocking Operator confirmed all operations had been restored at 07:10 hours.

No damage or injuries resulted from the event.

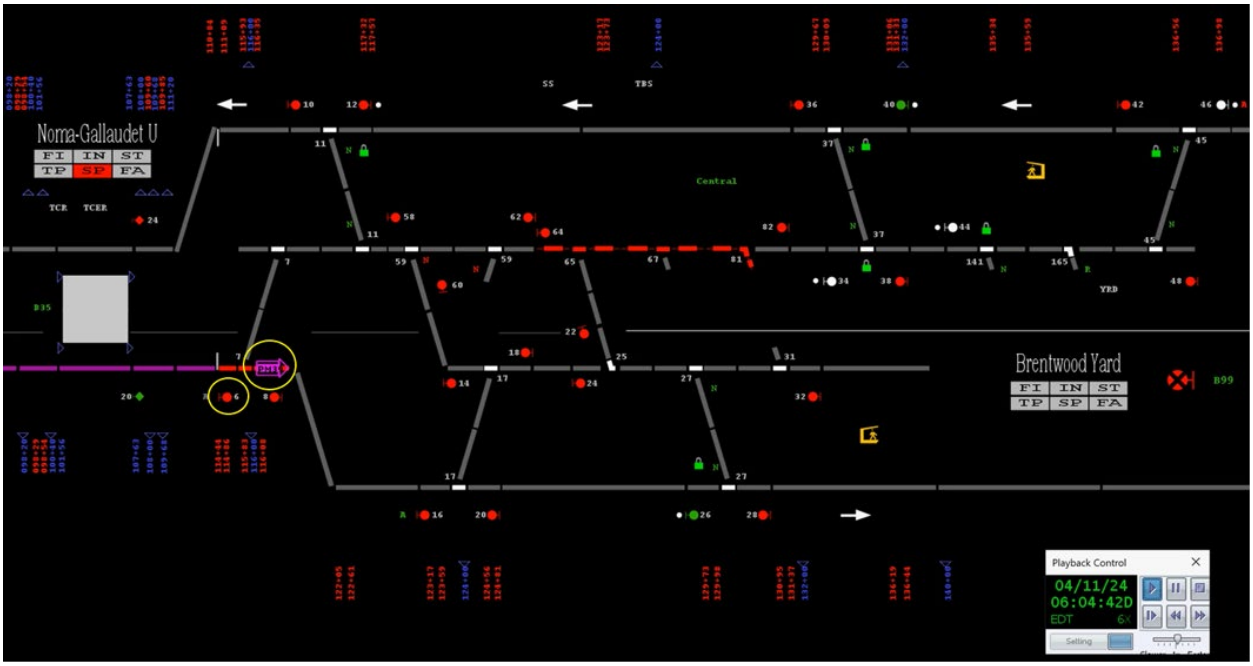


Figure 1 - Depicts PM 39 passing B99-06 signal red at 06:04 hours and continuing to a stop at B99-16.

Chronological Event Timeline

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

Time	Description
06:01:01 hours	PM 39: Reported clear Union Station track 1. Radio RTC: Acknowledged. [Radio/Ops 1]
06:02:04 hours	RTC OPS 1: Advised PM 39 three times an absolute block to Signal B99-06. Then repeat additional three times Signal 06. PM 39: Initially asked to repeat and then provided acknowledgement 100 % repeat back. [Radio/OPS 1]
06:03:20 hours	BW Yard 1: *The radio transmission is unintelligible*. [Radio/BW Yard 1]
06:03:59 hours	PM 39: Advised clear NoMa-Gallaudet Station track 1. Radio RTC: Acknowledged with repeat back. [Radio/Ops 1]
06:04:36 hours	PM 39 overran signal B99-06 red. [AIMS]
06:06:37 hours	Buttons RTC and Brentwood Interlocking Operator Tower identified PM 39 overran signal B99-06 red while on phone. [Phone/OPS 1]
06:06:46 hours	RTC OPS 1: Contacted PM 39 PM 39: Acknowledged. Advised holding at signal B99-16. RTC OPS 1: Advised that they were to stop at signal B99-06, not signal B99-16. Instructed to standby while they contact the Tower. PM 39: Advised that they were switching to the Tower radio ops. [Radio/OPS 1]
06:07:55 hours	Buttons RTC: Advised AOM of PM 39 event. AOM: Keep PM 39 in position. [Phone/OPS 1]
06:09:16 hours	RTC OPS 1: Announced single tracking. [Radio/OPS 1]
06:10:43 hours	SIO notified SDOC of the event. SAFE directed to respond. [Phone/SIO]
06:12:48 hours	SIO notified the Office of Safety Investigations (OSI) on call who responds to scene. [Phone/SIO]
06:14:24 hours	Rail 2 calls MOC and is advised MOC units enroute to scene. [Phone/Rail 2]
06:14:47 hours	BW Yard 1: Directed PM 39 to switch to OPS 1 Radio. PM39: Acknowledged and switched to OPS 1. [Radio/BW Yard 1] OPS 1: Acknowledged and advised PM 39 to standby. [Radio/OPS 1]
06:16:32 hours	Safety Information Officer: A voicemail notification was left for WMSC. Two other attempts were made later. [Phone/SIO]
06:18:16 hours 06:21:40 hours	RTC OPS 1: Directed PM 39 to complete a ground walk. PM 39 received directions on how to complete it. PM 39 given foul time and advised to relinquish when complete. PM 39: Relinquished foul time, on PM 39 reports no damage/issues. [Radio/OPS 1]
06:25:46 hours	ATC: Requested foul time for track switch inspection. RTC OPS 1: Granted. ATC: Reported good inspection switch 7, request manual test of switch and then request RTC exercise switch. Reports in working order. [Radio/OPS 1]
06:37:28 hours	PM 39: Relief Equipment Operator boarded PM 39 standing by. RTC OPS 1: Acknowledged. Radio/OPS 1

Time	Description
06:42:55 hours	SIO Desk advised by SDOC contact made and scene release-WMSC. [Phone/SIO]
06:49:26 hours	ATC: Advised switch is revenue ready and relinquishes foul time. RTC OPS 1: Acknowledged. [Radio/OPS 1]
06:58:06 hours	SAFE OSI: Requested foul time track 1 NoMa to end of roadway. RTC OPS 1: Granted and advised 3rd rail still energized. Asked OSI to photograph signal and land line RTC. [Radio/OPS 1]
07:06:15 hours	SAFE OSI relinquished foul time and aboard PM39. [Radio/OPS 1]
07:07:14 hours	RTC OPS 1: Advised PM 39 to switch to BW Yard 1 radio to prepare movement to BW storage. PM 39: Acknowledged and switching. [Radio/OPS 1]
07:08:20 hours	BW Yard 1: Granted PM39 (and SAFE) absolute block to north bump post 18 track and storage. PM 39: Acknowledged and begins movement. [Radio/BW Yard 1]
07:19:25 hours	BW Tower: Advised unknown party that all operations restored at 07:10 hours. [Phone/BW Contr]

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

Interview Findings

As part of the investigation launched into the event, the Office of Safety Investigations interviewed one (1) person. 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.

Equipment Operator -

- The Equipment Operator stated they were unexpectedly assigned to operate PM 39.
- The Equipment Operator was unfamiliar due to limited on the job training and having been operating for under a year. It was the operator's first time operating in that direction into Brentwood Yard.
- The Equipment Operator stated they did not have their map book with them since they had not anticipated operating that shift.
- The Equipment Operator also felt rushed to clear the track due to delay from previous event extending into revenue hours.

Weather

At the time of the incident, NOAA recorded the temperature at 64 ° F, with cloudy skies, winds of 11 mph, and 79% humidity. The weather was not a contributing factor in this incident (Weather source: NOAA – Location: [Washington, D.C.]).

Related Rules and Procedures

Metro Operating Rulebook

3.3 Signals Requiring a Stop
Rail vehicles shall not be operated past or closer than a point 10 feet in approach of an interlocking signal or lamp displaying a red aspect, a red flag, or a dark interlocking signal, except at a bumping

post or pocket track, or unless authorized by the Rail Traffic Controller or the Interlocking Operator and the move is consistent with customer safety.

Human Factors

Evidence of Fatigue

Equipment Operator

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 not available. The Equipment Operator reported feeling fully alert at the time of the incident. The Equipment Operator reported experiencing no symptoms of fatigue in the time leading up to the incident.

Fatigue Risk

Equipment Operator

SAFE evaluated incident data for fatigue risk factors. No significant risk was identified. The incident time of day did not suggest an increased risk of fatigue-related impairment. The Equipment Operator reported keeping a regular sleep schedule in the days leading up to the incident. The Equipment Operator worked the midnight shift in the days leading up to the incident. The Equipment Operator was awake for sixteen hours at the time of the incident. The Equipment Operator reported 5.5 hours of sleep in the 24 hours preceding the incident. The off-duty period was sixteen hours, providing an opportunity for 7-9 hours of sleep. This was more than the employee's usual workday sleep durations. The Equipment Operator reported no issues with sleep.

Post-Incident Toxicology Testing

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

Findings

- The B99-06 signal is located on the left side of the tracks, which differs from the right side location of many signals.
- PM 39 was transported from McPherson Square Station to Brentwood Rail Yard.
- No damaged was observed to any switches or the track unit.
- There is a warning sign at the 8-car marker at NoMa-Gallaudet Station on track 1: “Brentwood Yard Signal B99-06 Ahead on Left.”
- At CM B1 114+00, on the right side of the running rails, is a warning sign “Brentwood Yard Signal B99-06 on Left” with an arrow pointing to the left.

Immediate Mitigation to Prevent Recurrence

- The Equipment Operator was removed from service for post-incident testing.
- The PM remained at Brentwood Rail Yard for a thorough damage inspection.
- Switch 7 was inspected for damage and exercised before being placed back in service.

Probable Cause Statement

The probable cause of the Red Signal Overrun event on April 11, 2024, at Brentwood Yard was the Equipment Operator’s lack of situational awareness and unfamiliarity with the Redline. The Equipment Operator failed to notice the signage located at the 8-car marker on the platform of NoMa-Gallaudet Station indicating signal B99-06 was on the left side when entering Brentwood Yard. This sign was meant to alert the operator that B99-06 was ahead on the left side of the track. Additionally, a second warning sign was located at Chain Marker B1 114+00, which was 60 feet before the signal and interlocking. This sign was also intended to alert operators that the B99-06 signal is on the left side of the track.

A contributing factor was the Equipment Operator’s failure to follow the instruction to stop no closer than 10 feet to signal B99-06 red.

Recommended Corrective Actions

Corrective Action Code	Description	Responsible Party	Estimated Completion Date
116080_SAFECAPS_RTRA_002	The Equipment Operator is to attend refresher training.	Safety Risk Coordinator, Office of Track and Structures	Completed

Appendices

Appendix A – Interview Summary and Written Statement (redacted)

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

Equipment Operator

The Equipment Operator has been a WMATA employee for less than one year. This position has been the only position held at WMATA. The Equipment Operator is RWP Level 2 certified, expiring 08/2024.

The Equipment Operator stated they were assigned to operate PM 39. The Equipment Operator was unfamiliar due to limited on-the-job training and having been operating for under a year. It was the operator's first time operating in that direction into Brentwood Yard.
The Equipment Operator stated they did not have their map book with them since they had not anticipated operating that shift. The Equipment Operator also felt rushed to clear the track due to delay from previous event extending into revenue hours.

The Equipment Operator stated they did not see a sign referencing the signal being on the left side. No mention was made by supervisor or RTC that the signal was on the left. A brief mention was made in training that a few signals were on the left.

The Equipment Operator stated they felt they were operating without their map book. The Equipment Operator stated they would be more prepared in the future to be able to operate with no or short notice.

Witness or Employee Statement Form
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
USE SEPARATE FORM FOR EACH PERSON

TO BE COMPLETED AND DISTRIBUTED WITHIN 24 HOURS

Page of

PERSONNEL INVOLVED (Use This Block For WMATA Employees and Contractors)

Name	Age	Employee # or MTPD Badge #
[redacted]	[redacted]	[redacted]

Phone Number	Job Title	Department	Division/Section
[redacted]	Operator	Track	

Last Day Worked (prior to)	Hours Worked (within last 24 hrs)	Overtime?
4-10-24	8	NO

INVOLVED PERSON OR WITNESS (Use This Block For Non-WMATA Involved Person or Witness)

Name	Phone Number	E-Mail

Address

INCIDENT

Date	Incident Time	Date/Time Reported	Location
4-11-24		4-11-24	B99-06

Incident ID# (From ROCC, BOCC, etc.)	Worksafe Incident #

What happened prior to the incident?
Work location, McPherson Sq. Previous Operator had an incident & I was tasked to operate PM back to yard.

Describe the incident
Over ran signal at B99-06. Block was to B99-06. Being unfamilar with Bravo line, signal location, I was unable to stop in time for signal. Was being rushed by central to get PM off main line for revenue

What happened after the incident?
Was held at B99-16 signal. A replacement operator was called & ATC was called to verify I did not split the switch.

Form Completed by: (Print Name) [redacted] Date 04-11-24

Signature [redacted]

50.689 10/09 Original: RISK Copy 1: Department Copy 2: SAFE Copy 3: Employee File Photocopy to Employee

Document 1 – RTRA Incident Report from Equipment Operator.

Appendix B – Metro Integrated Communication and Command Report (redacted)

Washington Metropolitan Area Transit Authority
Maintenance and Material Management System
ROC Approved Incident Report

Incident Number : 8747896 **SMS Number : SMS ID: 20240411#116090MX**

Red signal overrun Track Unit PM-39 Operator [redacted] at signal B99-06 signal red and No switches clamped for the move.

Date/Time 04/11/2024 06:04	**Station Location** B99: (BRENTWOOD YARD)	**Reported By**
Trouble Code RSIG RED SIGNAL OVERRUN	**Location Details**	**Notifications**
Responsibility Code TRK TRACK DEPT	**Direction** OUTBOUND	**Resolved By** [redacted]
Train ID 126	**Track Number** N/A	**Approved/Closed by**
Line RED	**Chain Markers**	**Org. OCC** ROCC

Delays in Minutes

Line Delay	Train Delay	Passenger Delay
22	22	22

Trips Modified

Partial	Late Dispatch	Rerouted	Not Dispatched	Offloads
0	0	0	0	0

Incident Chronology (Timeline)

Time	Add'l Pass. Delays	Add'l Trouble	Incident Level Code	Description
06:04	22	RSIG	C2	Red signal overrun Track Unit PM-39 Operator [redacted]) at signal B99-06 signal red and No switches clamped for the move.
06:15				PM-39 [redacted] was granted foul time to perform a ground walk around and update central. Revenue trains holding and single track operations initiated.
06:23				PM-39 [redacted] relinquished foul time and reported ground walk around was clear and no damage found.
06:26				ATC [redacted] arrived on the scene to assist and was granted foul time to inspect switch 7 for revenue service. Single track operartions continued.
06:30				Train 126 was holding Brookland station track two. Revenue trains inside the single tracking area between Noma-Gallaudet to Rhode Island Avenue stations via track two. Every other revenue train was offloaded and turned for service from Judiciary Square track one towards Shady Grove. Train 115 was the first train to offload and turn back.
06:50				ATC [redacted] relinquished foul time and reported switch 7 passed obstruction and exercise tests and safe for revenue service. PM-39 Supervisor [redacted] was granted permission to contact Brentwood yard tower at B99-16 signal for permission to enter the train yard.
06:52				Train 126 track two Brookland station was moving and continued in revenue service towards Shady Grove.
07:10				Single track operations concluded and Train 129 was he first train to continue normal track one Noma-Gallaudet towards Glenmont.

Document 2 – Depicts a redacted Metro Integrated Communication and Command Report.

Appendix C – CTEM and Maximo Report (redacted)

CTEM Post-derailment & Accident Damage Inspection Form

(1 Form per Unit)

DATE: 4-11-24 INSPECTOR: [redacted] UNIT #: PM39

INCIDENT #: INCIDENT LOCATION:

GUIDELINES:

- This form is to be used for all rail vehicles involved in derailments, accidents.
- This form is to function as a guide to assist in ensuring that all vehicles are inspected to ensure that they still meet standards for operation.
- Some reference to codes and standards may be required to complete this inspection form.
- All inspection items on this form are to be marked as:

✓ = Passed **X** = Failed **NA** = Not Applicable **UC** = Unable to Check

NOTE: Any items that have failed are to be documented in the "Inspection Fault Report" field included on this form.

Incident Information: *(NOTE: Use blank field under each question for additional information if answered Yes.)*		
Did the unit contact the 3rd rail? (If Yes, where was the contact on the unit?)	☐ Yes	☑ No
Did the unit contact infrastructure such as a wall or platform? (If Yes, what was contacted?) CEILING TILE / PANEL	☑ Yes	☐ No
Did the unit contact another unit? (If Yes, what unit and where was the contact on the unit?)	☐ Yes	☑ No

Truck Inspection:	
Roller bearings - no visual damage and in accordance with Rule 36	UC
Roller bearings - no unusual noises; hand spun or run-by test	UC
Bearing Adapters - within wear limits and in accordance with Rule 37	UC
Drive systems - no visual damage or leaks	✓
Side frames and bolsters - no visual damage and in accordance with Rule 47 & 48	✓
Ride control (- friction shoes & bearing adapters within limits and in accordance with Rule 46	✓
Springs - no damage, correctly seated and in accordance with Rule 50	✓
General - no visual damage, all components secured and in accordance with Rule 74	✓

NOTES: PM39 LOCATED TRACK 18 STORAGE AT B99 YARD -AT BUMP POST

Chassis Inspection:	
Chassis and sub-frames - no cracks, twists, other visual damage	✓
Center plates and side bearing - no visual damage and in accordance with Rule 60, 61, and 62	✓
Body & decking - no structural, cladding, or decking damage	✓
Loading - load is balanced and secure	NA
Coupler and draft arrangement - no visual damage and in accordance with Rule 16	✓
General - no visual damage, all components secured and in accordance with Rule 74	✓

NOTES: UNIT COUPLED TO FLAT # F538 — NO VISUAL DAMAGE

CMNT Form 50.993, Rev. 0.0 Page 1 of 2 February 01, 2018

Document 3 – CTEM post-incident Inspection Report also includes a reference to a previous event where PM 39 collided with a ceiling panel prior to the red signal overrun, page 1 of 2.

CTEM Post-derailment & Accident Damage Inspection Form

Wheel Inspection:	
Wheels - Discoloration, cracks, spalling, and signs of movement	UC
Gauging - Back to back measurement and in accordance with Rule 43	UC
Gauging - Flanges & tread, and in accordance with Rule 41	UC
General - no visual damage	✓

NOTES:
UNIT STORED ON LIVE (HOT) RAIL — NO VISUAL DAMAGE

Brake Inspection:	
Brake rigging & cylinders - no visual damage or apparent leaks	UC
Brake hoses & trunk lines - no visual damage or apparent leaks	✓
Brake piping, valving and cocks - - no visual damage or apparent leaks	✓
Brake operation - passes functional test	✓
Friction shoes - greater than 3/8" and accordance with Rule 12	✓
Rolling brake test - unit stop as designed without locking up wheels	UC
Hand brake - - no visual damage and applies as designed	✓
General - no visual damage, all components secured and in accordance with Rule 74	✓

NOTES:
UNIT PASSED STANDING BRAKE TEST — BOTH SERVICE AND PARKING

Miscellaneous Equipment Inspection:	
Horn - operational BOTH AIR AND ELECTRIC	✓
Lighting - operates as designed	✓
Radio - perform radio check, operates as designed	✓
Propulsion and braking controls - all controls operate as designed	✓
Cameras - clear picture, operates as designed	✓
Emergency equipment - Interlocks emergency valves, E-stops, etc., operate as designed	✓
Locks & restraints - mechanical locks and restraints are in place and operate as designed	✓

NOTES:

Inspection Fault Report:

PAINT SCUFFING — ONLY PHYSICAL DAMAGE — UNIT SEEMS TO OPERATE WITH NO ISSUES.

Can unit be returned to service? [redacted] ☑ Yes ☐ No

Inspector's Signature: [redacted]

CMNT Form 50.993, Rev. 0.0 Page 2 of 2 February 01, 2018

Document 4 – CTEM post-incident Inspection Report page 2 of 2.

Actuals Details

Labor | Materials | Services/Repair Orders | Tools

Labor — 1 - 2 of 2

Task	Craft	Regular Hours	Line Cost	Warranty?	Component	Component Position	Reason for Repair	Work Accomplished
10	5476	4:00	196.0080	N	000-400		151	15
10	5491	4:00	151.7092	N	000-400		151	15

Labor

Task: 10

Labor: E021292 [redacted]

Craft: 5491 The Mechanic Car Track Equipment Maintenance (CTEM) perform

Component: 000-400 CTEM-CAR TRACK EQUIPMENT (NON-REVENUE VEHICL

Component Position:

Reason for Repair: 151 INSPECTION

Work Accomplished: 15 INSPECTED

Part Failure:

Asset: MPM39 PM39, PRIME MOVER, HARSCO, 354C, S/N 6100771, 4

Memo: SEE NOTES

Document 5 – CTEM post-incident Inspection Report.

Page 1 of 1
MX76PROD

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

Work Order #: 18532775
Type: IN

Status: INPRG
04/11/2024 08:22

Work Description: Signal overrun
Job Plan Description:

Work Information

Asset: MPM39	PM39, PRIMEMOVER, HARSCO, 354C, S/N 6100771, 4	Owning Office: CTEM		Parent:	
Asset Tag: MPM39		Maintenance Office: CTEM-ALEX-HVYR		Create Date:	04/11/2024 08:18
Asset S/N: 6100771		Labor Group: CTEM-NCAR-HVY		Actual Start:	04/11/2024 08:22
Location: 1213	C99, ALEXANDRIA YARD	Crew:		Actual Comp:	
Work Location: 1743	B99, BRENTWOOD YARD, STORAGE AREA	Lead:		Item:	CTEM49200006
Failure Class: CTEM001	GENERAL	GL Account: WMATA-02-33380-50499070-041-**********-****-OPR**			
Problem Code: 2907	SAFETY INSPECTION	Supervisor: E007403		Target Start:	
Requested By:		Requestor Phone: 301/955-5279		Target Comp:	
				Scheduled Start:	
Create-Mileage: 0.0		Complete-Mileage: 0.0			

Task IDs

Task ID	
10	Signal overrun

Inspect in ltatb99yard - brake test - lights -all safety items - no abnormalities at this time

Component: 000-400 CTEM-CAR TRACK EQUIPMENT (NON-REVENUE VEHICLES) | Work Accomp: INSPECTED | Reason: INSPECTION | Status: INPRG | 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]	04/11/2024	04/11/2024	10:00	14:00	N	04:00	00:00	$196.01
10	[redacted]	04/11/2024	04/11/2024	10:00	14:00	N	04:00	00:00	$151.71
						Total Actual Hour/Labor:	08:00	00:00	$347.72

Failure Reporting

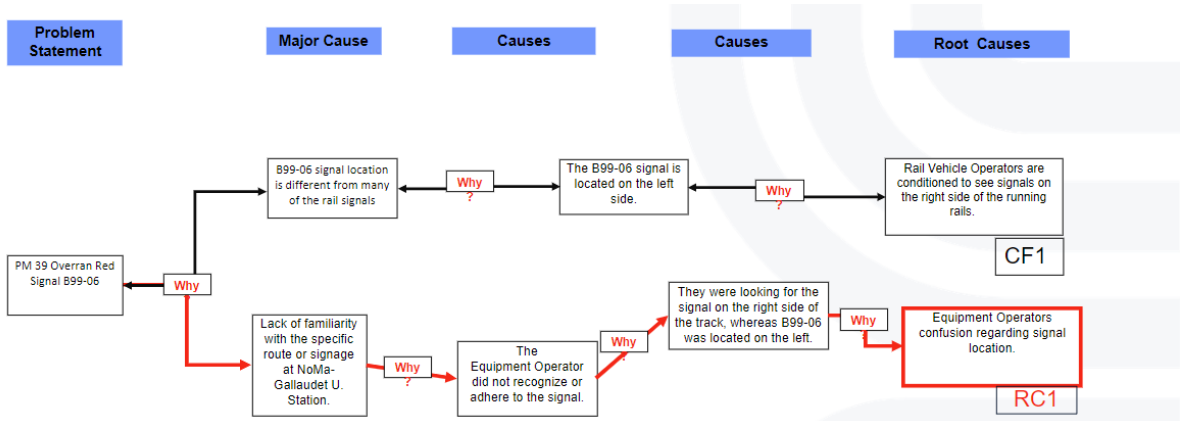
Cause	Remedy	Supervisor	Remark Date
		E007403 Wolard, Steven W	

Remarks:

WT_plust_woprint.rptdesign 06/2/2024 11:17

Document 6 – Work Order Inspection of PM 39.

Appendix D – Why-Tree Analysis



Root Cause Analysis

7

E24287 – Red Signal Overrun – B99-06

Table 1 - Root Cause Analysis

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

FINAL REPORT OF INVESTIGATION A&I E24312

Date of Event:	April 19, 2024
Type of Event:	O-8: Red Signal Overrun
Incident Time:	22:05 hours
Location:	Anacostia Station, track 2 - Signal F06-08
Time and How received by SAFE:	22:11 hours, Mission Assurance Coordinator (MAC)
WMSC Notification Time:	22:49 hours
Responding Safety Officers:	WMATA: Office of Safety Investigations (OSI) WMSC: Other:
Rail Vehicle:	Train ID 528 (L7678-7679x7511-7510x7386-7387x7519-7518T)
Injuries:	None
Damage:	None
Emergency Responders:	None
SMS I/A Number	20240420#116295MX

Anacostia Station – Red Signal Overrun

April 19, 2024

Table of Contents

Abbreviations and Acronyms

ARS	Audio Recording System
ATCM	Automatic Train Control Maintenance
CAP	Corrective Action Plan
CCTV	Closed-Circuit Television
CMOR	Chief Mechanical Officer
MAC	Mission Assurance Coordinator
MOC	Maintenance Operations Control
MICC	Metro Integrated Command and Communication Center
MOR	Metrorail Operating Rulebook
NOAA	National Oceanic and Atmospheric Administration
OM	Operations Manager
OSI	Office of Safety Investigations
RTC	Rail Traffic Controller
RTRA	Office of Rail Transportation
SAFE	Department of Safety
SDOC	Safety Director On Call
SMS	Safety Measurement System
SPOTS	System Performance Ontime Summary
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 Friday, April 19, 2024, at 22:05 hours, Train ID 528 (L7678-7679x7511-7510x7386-7387x7519-7518T) located at Anacostia Station on track 2 passed signal F06-08 displaying a red aspect.

Prior to the event, at 22:03 hours, the Radio Rail Traffic Controller (RTC) granted Train ID 528 a permissive block to berth the train on the platform at Anacostia Station on track 2, advised the Train Operator that signal F06-08 was red, and instructed the Train Operator to standby. The Train Operator acknowledged, repeated the instruction, and then entered the Stop and Proceed method to move the train.

At 22:05 hours, Train ID 528 passed signal F06-08 red.

At 22:06 hours, the Radio RTC contacted the Train Operator and inquired if the train had passed signal F06-08 red. The Train Operator confirmed passing signal F06-08 red.

The Button RTC notified the Operations Manager (OM), and Communications Section. Metro 1 notified Maintenance Operations Center (MOC), and Bus 1 to establish a bus bridge. Communications notified the Metro Transit Police Department (MTPD). The Mission Assurance Coordinator (MAC) contacted the Safety Director On Call (SDOC) and the Safety On-Call personnel.

Train service was suspended between Navy Yard Station and Congress Heights Station.

At 22:13 hours, the Train Operator advised the Radio RTC that two to three cars were remaining on the platform. The Radio RTC instructed the Train Operator to walk the customers through the train onto the platform and verify the train was clear of all passengers.

The first Safety Investigator arrived at 22:41 hours, and initiated the initial investigation. At 22:50 hours, Automatic Train Control Maintenance (ATCM) personnel arrived at Anacostia Station. At 23:05 hours, the ATCM personnel inspected and verified that Train ID 528 did pass switch 1B and did not pass switch 3B, and there was no damage to switch 1B. Train ID 528 was returned to the platform at Anacostia Station.

At 23:35 hours, the Radio RTC dispatched Train ID 528 (728) to Branch Avenue Station. At 23:54 hours, Train ID 528 (728) was stored at Branch Avenue Yard.

The Train Operator passed their certification exam in December 2023 on their second attempt. A review of the certification records, conducted as part of a WMSC Order, revealed that the Train Operator completed their certification with one discrepancy in the practical testing. The Operator was given two scenarios from Group B (troubleshooting) and did not receive a Group A (Circuit Breaker) scenario. This Train Operator is not included as part of the non-compliant certification group requiring recertification, according to the Office of Rail Transportation.

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

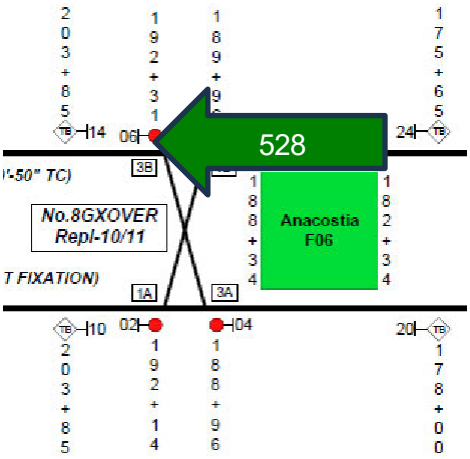
In accordance with the Office of the Chief Mechanical Officer (CMOR) Incident Investigation Team (IIT) Operations Administrative Policy (OAP) 102.06, the Metro Integrated Command and Communications Center (MICC) promptly initiated the removal of Train ID 528 from revenue service for post-incident investigative measures. This action adhered to the Rail Vehicle Event Investigation Policy, ensuring a comprehensive examination of the incident.

The probable cause of the Red Signal Overrun event on April 19, 2024, at Anacostia Station was the lack of situational awareness by the Train Operator, and the Train Operator's failure to follow the instructions given by the Radio RTC. A contributing factor was the Stop and Proceed method was still active, which allowed the train to move with speed commands displayed on the console; this inadequate safeguard is a contributing factor to this incident occurring.

Incident Site

Anacostia Station, track 2 – Signal F06-08

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 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:
    - Train Operator (Train ID 528)

- Documentation Review – Collection of relevant work history information and process documentation contained in WMATA systems of record. These records include:

- Train Operator Training Records
- Train Operator Certifications
- Train Operator 30-Day work history review
- Train Operator Written Statement
- Metrorail Operating Rulebook (MOR)
- National Oceanic and Atmospheric Administration (NOAA)
- Metro Integrated Command and Control (MICC) Incident Report Maximo Data

- System Data Recording Review – Collection of information contained in Metro Data Recording Systems. This data includes:
  - Audio Recording System (ARS) playback [Radio and Landline Communications]
  - The Office of Chief Mechanical Officer (CMOR) Incident Investigation Team (IIT) Vehicle Monitoring and Diagnostic System (VMDS)
  - Closed-Circuit Television (CCTV)

Investigation

On Friday, April 19, 2024, at 22:05 hours, Train ID 528 (L7678-7679x7511-7510x7386-7387x7519-7518T) located at Anacostia Station on track 2 passed signal F06-08 displaying a red aspect.

Prior to the event, and earlier in the day at 09:17 hours, the Radio RTC announced a down track circuit at Naylor Road Station on track 2 causing a red signal. The Radio RTC instructed the Train Operators to make announcements to the customers and advise of delays towards Branch Avenue Station. At 09:28 hours, a Rail Supervisor clamped switches 1B and 3B in normal position for train movement. At 09:29 hours, trains began passing red signals at Naylor Road Station on track 2, including the train operator involved in the red signal overrun incident until the system closed.

The System Performance On-Time Summary (SPOTS) revealed that at 21:29 hours, Train ID 528 departed Greenbelt Station on track 2 with the destination of Branch Avenue Station.

The Audio Recording System (ARS) revealed that at 22:03 hours, the Radio RTC granted Train ID 528 a permissive block to the 8-car marker at Anacostia Station on track 2, advised the Train Operator that signal F06-08 was red, and instructed the Train Operator to standby. The reason the Train Operator on Train ID 528 was given those instructions was because the Event Train ID 551, was instructed to clear the interlocking and reverse ends at Anacostia Station on track 2 and was holding at signal F06-06. This action prevented Train ID 528 in approach to the Anacostia Station platform on track 2 from receiving a lunar at signal F06-08. The Train Operator acknowledged, repeated the instruction, and then entered the Stop and Proceed[1] method to move the train. At 22:04 hours, Train ID 528 arrived at Anacostia Station. Train ID 528 serviced the Anacostia Station platform on track 2, departed the station, and passed signal F06-08 displaying a red aspect. During this time, Train ID 551 was departing Anacostia Station on track 1, traveling in the direction of Navy Yard Station

[1] *Stop and Proceed mode enables Train Operators to take a point of power in the absence of speed commands, with the ATP System enforcing a maximum speed of up to 15 MPH. If speed commands are lost on the mainline, and the consist comes to a stop with the ADU displaying the code number, the Operator must contact MICC to obtain either a Permissive or Absolute block before pressing the corresponding number on the ADU Touchpad to enter Stop and Proceed Mode.*

The Train Operator was able to move the train because the Stop and Proceed method was still active and speed commands were displayed on the console. However, the Train Operator did not verify that signal F06-08 was lunar.

At 10:05 hours, a visual alarm indicating a red signal overrun occurred at signal F06-06 was displayed on the AIMS.

At 22:06 hours, the Radio RTC attempted to contact the Train Operator via radio to ascertain the train location. The Train Operator advised the Radio RTC that they were at Anacostia Station. The Radio RTC inquired if the train had passed signal F06-08 red. The Train Operator confirmed passing signal F06-08 red.

The Button RTC notified the OM and Communications Section. Metro 1 notified MOC, and Bus 1 to establish a bus bridge. Communications notified the MTPD. The MAC contacted the SDOC and Safety On-Call personnel.

Train service was suspended between Navy Yard Station and Congress Heights Station.

At 22:13 hours, the Train Operator advised the Radio RTC that there were two to three cars that remained on the platform. The Radio RTC instructed the Train Operator to walk the customers through the train onto the platform and verify the train was clear of all passengers.

At 22:50 hours, ATCM personnel arrived at Anacostia Station. At 23:05 hours, the ATCM personnel inspected and verified that Train ID 528 did pass switch 1B and did not pass switch 3B, and there was no damage to switch 1B. Train ID 528 was returned to the platform at Anacostia Station.

At 23:35 hours, Radio RTC dispatched Train ID 528 (728) to Branch Avenue Station. At 23:54 hours, Train ID 528 (728) was stored at Branch Avenue Yard.

During the informal interview, the Train Operator stated that they received a permissive block to Anacostia Station and that they entered the stop-and-proceed method. The Train Operator stated that they forgot the instructions from the RTC to standby, were rushing, and did not notice that the signal was red.

The Train Operator is a WMATA employee with 9 months of service and 4 months of experience as a Train Operator. The Train Operator holds a Roadway Worker Protection (RWP) Level 2 certification that expires in December 2024.

The Train Operator's initial certification was conducted on December 5, 2023, when they failed the practical portion of the certification. On December 11, 2023, the Train Operator passed the Train Operator Certification on the second attempt. This Train Operator is not included as part of the non-compliant certification group requiring recertification per the Office of Rail Transportation.

Chronological Event Timeline

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

Time	Description
09:17:37 hours	Radio RTC: Announced a down track circuit at Naylor Road Station on track 2 causing a red signal. Instructed the Train Operators to make

Time	Description
	announcements to the customers and advise of delays towards Branch Avenue Station. [Radio Ops 3]
09:27:02 hours	Rail Supervisor: Advised switch 1B was clamped in a normal position. [Radio Ops 3]
09:28:52 hours	Rail Supervisor: Advised switch 3B was clamped in a normal position. [Radio Ops 3]
09:29:54 hours	Radio RTC: Instructed Train ID 516 to pass F09-08 red. [Radio Ops 3]
21:29:25 hours	Train ID 528 departed Greenbelt Station. [Spots]
22:03:43 hours	Radio RTC: Granted Train ID 528 a permissive block to Anacostia Station on track 1. Advised that signal F06-08 was red, and standby. Train ID 528: Acknowledged. [Radio Ops 3]
22:04:08 hours	Train ID 528 arrived at Anacostia Station. [Spots]
22:05:42 hours	Train ID 528 passed F06-08 red. [AIMS]
22:06:11 hours	Radio RTC: Attempted to contact Train ID 528. Train ID 528: Acknowledged. Radio RTC: Requested the train location. Train ID 528: Responded Anacostia. Radio RTC: Inquired if the train was on the platform. Train ID 528: Responded Affirmative. [Radio Ops 3]
22:06:54 hours	Radio RTC: Instructed Train ID 552 approaching Anacostia Station to stop the train. [Radio Ops 3]
22:07:12 hours	Button RTC: Notified to Operations Manager. [Phone Rail 1]
22:07:13 hours	Metro 1: Notified MOC. [Phone Rail 1]
22:07:25 hours	Radio RTC: Attempted to contact Train ID 528. Train ID 528: Acknowledged. Radio RTC: Inquired if the train passed signal F06-08 red. Train ID 528: Responded repeat. Radio RTC: Requested a radio check from Train ID 528. Train ID 528: Acknowledged. Radio RTC: Inquired if the train passed signal F06-08 red. Train ID 528: No Response. [Radio Ops 3]
22:08:39 hours	Radio RTC: Inquired if the train passed signal F06-08 red. Train ID 528: Responded Affirm. [Radio Ops 3]
22:09:22 hours	Button RTC: Notified the Communications Section. [Phone Yel/Grn]
22:09:37 hours	Metro 1: Requested a bus bridge between Naylor Road and Congress Heights Station. [Phone Rail 1]
22:09:42 hours	Button RTC: Notified the AOM. [Phone Yel/Grn]
22:10:33 hours	MAC: Notified SDOC. [Phone MAC]
22:11:56 hours	MAC: Dispatched SAFE On-Call personnel. [Phone MAC]
22:12:34 hours	Communications: Notified MTPD. [Phone SOCC]
22:12:49 hours	Radio RTC: Inquired if any cars were on the platform. Train ID 528: Responded two or three cars on the platform. Radio RTC: Instructed to key down and key the customers off the train. Train ID 528: Acknowledged. [Radio Ops 3]
22:18:25 hours	MAC: Contacted the WMSC. (ESR 22:19 hours) [Phone MAC]
22:20:35 hours	Radio RTC: Announced that train service was suspended between Navy Yard and Southern Avenue Stations. [Radio Ops 3]

Time	Description
22:40:00 hours	SAFE OSI arrived at Anacostia Station. [CCTV]
22:48:00 hours	Incident Command Established [Radio, Ops 3]
22:50:00 hours	ATC arrived at Anacostia Station [CCTV]
22:53:00 hours	Field Assistant Superintendent: Reported that they observed that Train ID 528 did pass switch 1B and did not pass switch 3B. [Radio, Ops 3]
23:05:00 hours	ATC inspected and verified there was no damage to switch 1B. [Radio, Ops 3]
23:06:00 hours	Train ID 528 was moved back to Anacostia platform track 2. [CCTV]
23:35:05 hours	Radio RTC: Dispatched Train ID 528 (728) to Branch Avenue Station. [Radio, Ops 3]
23:54:27 hours	Train ID 528 (728) arrived at Branch Ave Yard. [Radio, BA Yard 2]

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

Automated Information Management System (AIMS)

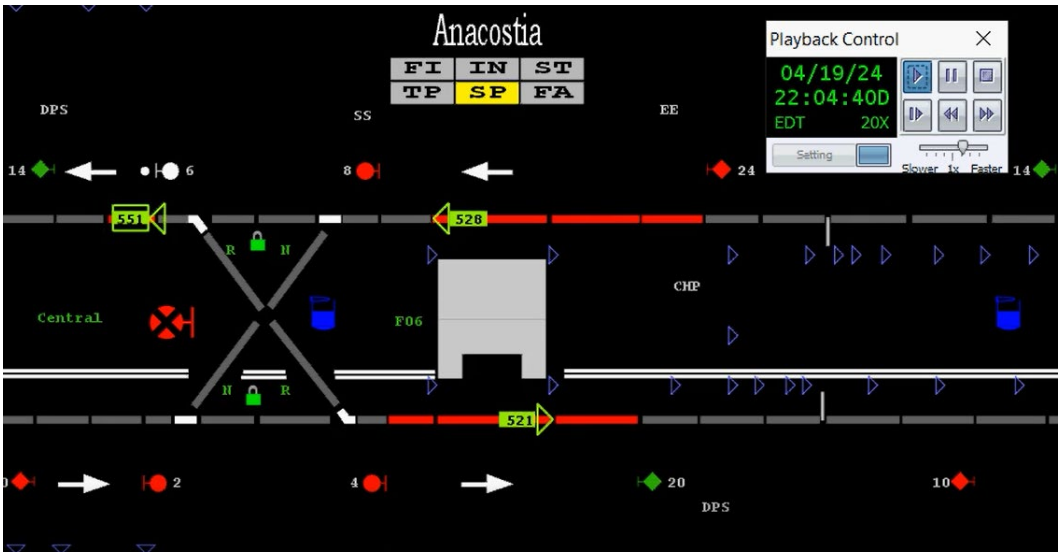


Image 1 – AIMS depicts the event Train ID 551 crossing over from track 2 to track 1 at signal F06-06 at 22:04 hours.

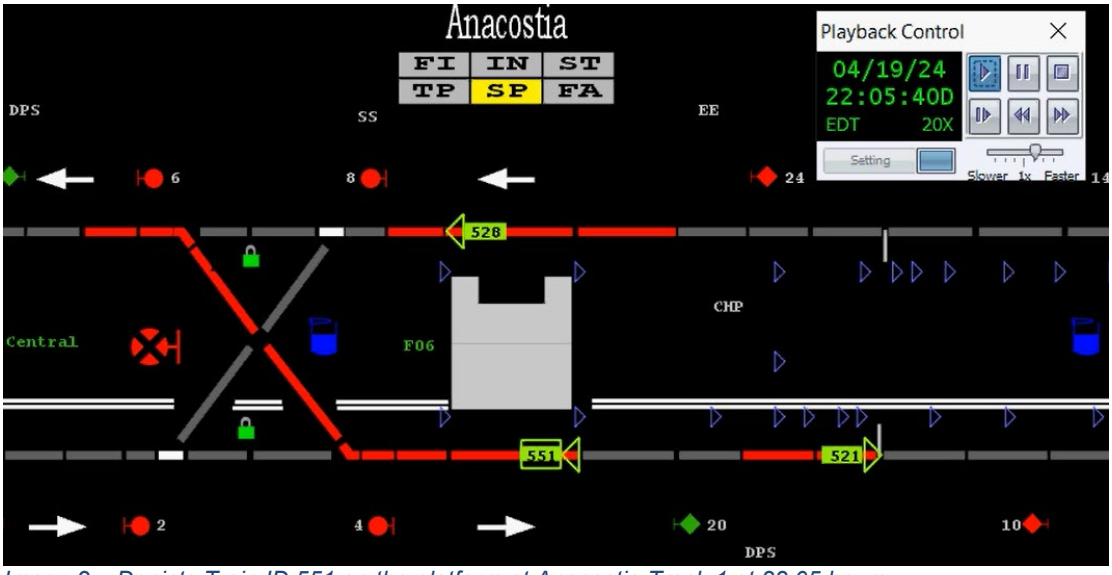


Image 2 – Depicts Train ID 551 on the platform at Anacostia Track 1 at 22:05 hours.

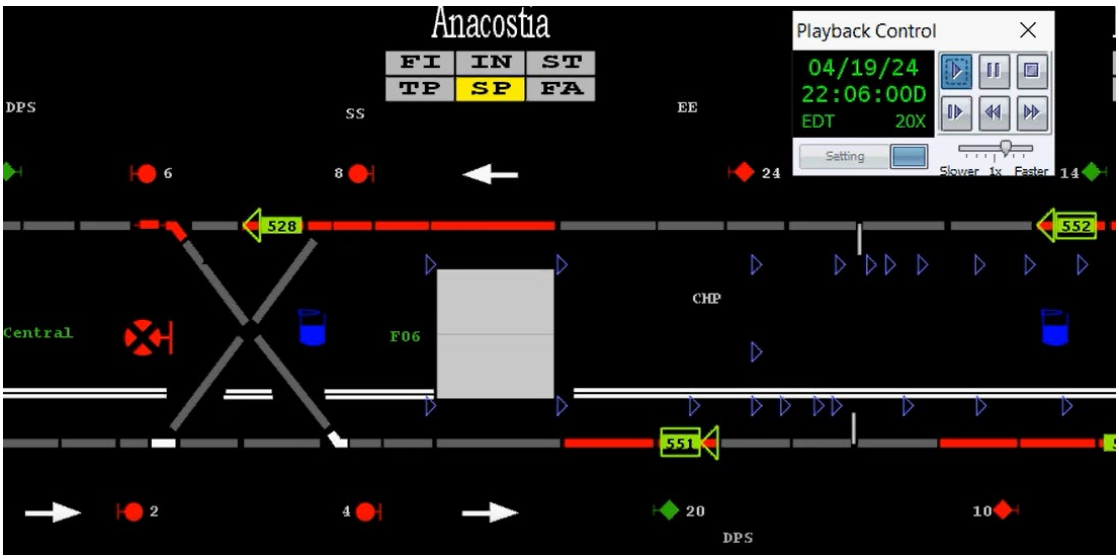


Image 3 – Depicts Train ID 528 passing signal F06-08 red at 22:06 hours.

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

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

Based on the video and data, Train ID 528, entered Anacostia Station, track #2, in the direction of Congress Heights Station (F07). Lead car 7678 ER data confirmed prior to overrun that signal F06-08 was red. Train ID 528 lost speed commands and came to a complete stop 385 feet within the platform limits at this time, Stop and Proceed Mode was initiated. The train properly berthed at the 8-car marker and serviced the station.

The train departed Anacostia Station while in the Stop and Proceed Mode. Once the train's speed reached 15.6 MPH, 92 feet before signal F06-08 stop and proceed mode was terminated.

The train passes signal F06-08 red at a speed of 12.9 MPH with the Master Controller in "B5" position, coming to a complete stop 48 feet beyond the signal F06-08. The emergency brake was not initiated. There were no faults with the train that contributed to the cause of this incident, the train performed as designed.

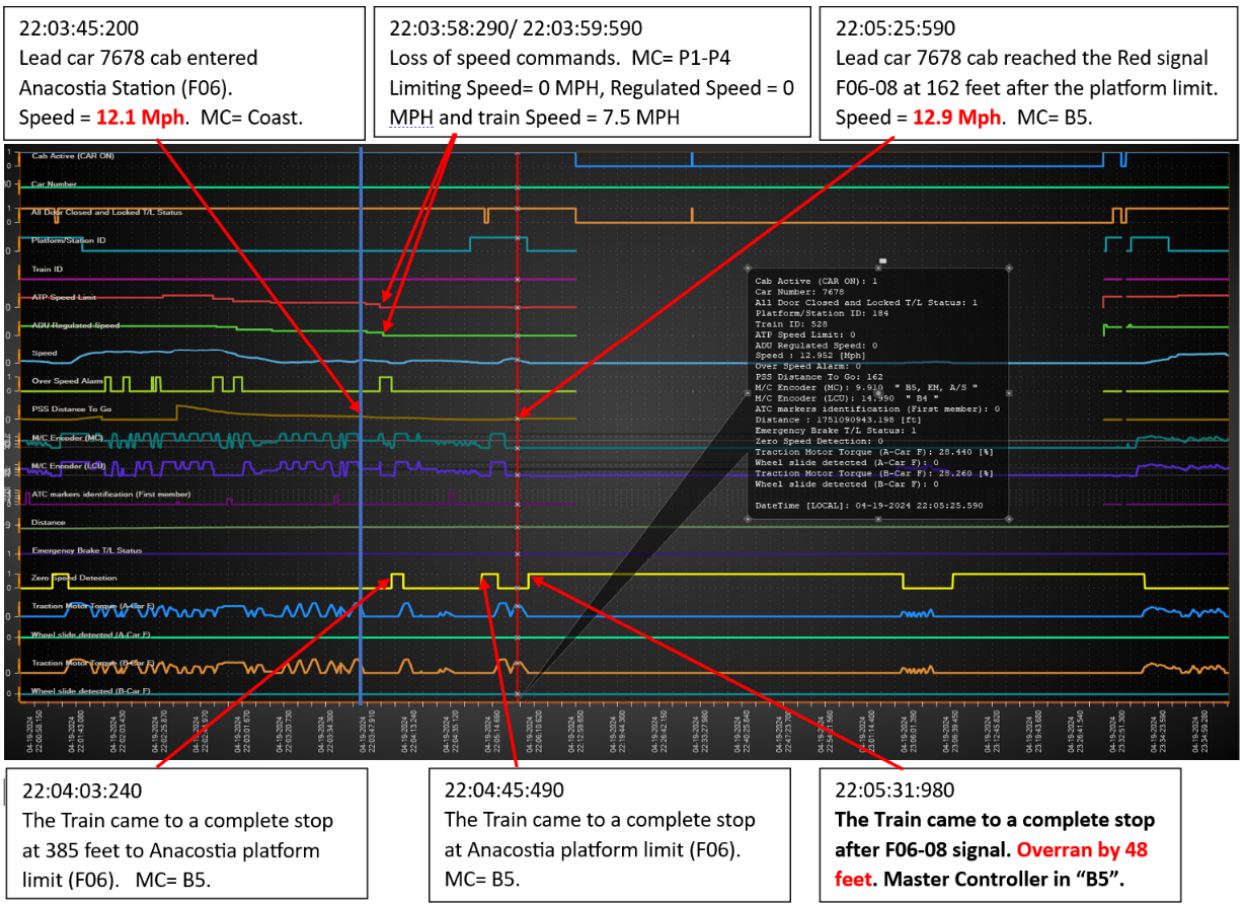
See below timeline of events:

Time	Description of Events	Master Controller	Train Speed	Regulated Speed	Limiting Speed	Distance to Signal F06-08
22:03:45:200	Train ID 528, entered Anacostia station (F06), track #2 at a speed of 12.1 MPH, with the Master Controller in the "Coast" position, Limiting and Regulated speed limits set to 22 MPH respectfully.	***Coast***	***12.1 MPH***	***22 MPH***	***22 MPH***	***762 feet.***
22:03:46:300	The speed limit decreased to 15 MPH while train's speed remained at 12.1 MPH.	***Coast***	***12.1 MPH***	***22 MPH***	***15 MPH***	***743 feet.***

Time	Description of Events	Master Controller	Train Speed	Regulated Speed	Limiting Speed	Distance to Signal F06-08
22:03:47:320	The Regulated speed decreased to 15 MPH while train's speed was 11.4 MPH.	***Coast***	***11.4 MPH***	***15 MPH***	***15 MPH***	***726 feet.***
22:03:58:290	The speed limit dropped to 0 MPH while train's speed was 7.8 MPH. Overspeed Alarm activated.	***P5***	***7.8 MPH***	***15 MPH***	***0 MPH***	***575 feet.***
22:03:59:590	Train lost speeds commands. The Regulated speed dropped to 0 MPH while train's speed was 7.5 MPH.	***P1-P4***	***7.5 MPH***	***0 MPH***	***0 MPH***	***562 feet.***
22:04:02:900	Overspeed Alarm silence with the Master Controller moved to "B5" position.	***B5***	***0.1 MPH***	***0 MPH***	***0 MPH***	***547 feet.***
22:04:03:240	Train came to a complete stop. Master Controller in "B5".	***B5***	***0 MPH***	***0 MPH***	***0 MPH***	***547 feet.***
22:04:06:800	**Stop and Proceed Mode was initiated**	***B5***	***0 MPH***	***0 MPH***	***1 MPH***	***547 feet.***
22:04:08:390	The Master Controller was placed in "P5" Power mode and the train started to move toward Anacostia's platform limit.	***P5***	***<1 MPH***	***0 MPH***	***1 MPH***	***547 feet.***
22:04:17:690	The train reached the center of the Anacostia platform.	***P1-P4***	***9.7 MPH***	***0 MPH***	***1 MPH***	***462 feet.***
22:04:45:490	**The train came to a complete stop, 1 foot short to the Anacostia's 8-car marker.**	***B5***	***0 MPH***	***0 MPH***	***1 MPH***	***163 feet.***
22:04:54:200	Left doors were opened and station was serviced.	***B5***	***0 MPH***	***0 MPH***	***1 MPH***	***163 feet.***
22:05:10:780	Left doors were closed and locked.	***B5***	***0 MPH***	***0 MPH***	***1 MPH***	***163 feet.***
22:05:14:310	The Master Controller was placed in "P5" Power mode and the train started to move toward F06-08 signal.	***P5***	***<1 MPH***	***0 MPH***	***1 MPH***	***163 feet.***
22:05:21:580	Stop and Proceed mode de-activated with the train's speed over 15 MPH.	***B5***	***15.6 MPH***	***0 MPH***	***0 MPH***	***92 feet.***
22:05:25:590	**The train reached the F06-08 signal. Master Controller in "B5".**	***B5***	***12.9 MPH***	***0 MPH***	***0 MPH***	***0 feet.***
22:05:31:980	**The Train came to a complete stop after F06-08 signal. Overran by 48 feet. Master Controller in "B5".**	***B5***	***0 MPH***	***0 MPH***	***0 MPH***	*-48 feet.*

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

Drafted By: SAFE 702 – 06/13/2024
Reviewed By: SAFE 707 - 06/13/2024
Approved By: SAFE 707 – 06/18/2024



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

The Office of System Maintenance, Office of Radio Communication (CMOR) conducted a comprehensive radio check on both tracks at Anacostia Station. All radio checks were loud and clear.

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

RTRA determined the Train Operator would receive discipline in accordance with the Disciplinary Administrative Program (DAP), and complete Re-Instruction Training with Rail Quality Control Training (ROQT).

Interview Findings
As part of the investigation launched into the event, SAFE interviewed one person. The interview 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 Written Statement

"Overran red signal track 2 Anacostia. Upon entering Anacostia there was a red signal for the train ahead to clear the interlocking. Central gave me permission to properly berth to the 8-car marker using stop and proceed. I serviced the station, closed the doors, then continued on. After realizing the signal was still red, I stopped but had already cleared the signal. I used stop and

proceed to properly berth. My train was stopped in the middle of the platform. After servicing, I was already still in stop and proceed. I didn't have to press it again. 5-10 MPH through red signal."

Weather

On April 19, 2024, at the time of the incident, NOAA recorded the temperature as 53°F, with clear skies, winds 6mph, and 60% humidity. Weather was not a contributing factor in this incident (Weather source: NOAA) – Washington, DC

Related Rules and Procedures

Metrorail Operating Rulebook (MOR)

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

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

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

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

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

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

Human Factors

<u>Fatigue</u>

Signs and Symptoms of Fatigue
We 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 Train Operator reported feeling fully alert and slightly sluggish at the time of the incident.

Fatigue Risk

SAFE evaluated incident data for fatigue risk factors. Risk factors for fatigue were present. The incident time of day did not suggest an increased risk of fatigue-related impairment. The Train

Operator reported no variation in the sleep schedule in the days leading up to the incident. The Train Operator performed night work in the days leading up to the incident. The Train Operator was awake for ten hours and fifty minutes at the time of the incident. The Train Operator reported six hours of sleep in the 24 hours preceding the incident. The off-duty period was sixteen hours and eleven minutes, which provided an opportunity for 7-9 hours of sleep. This was less than the employee's usual workday sleep durations. The Train Operator 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 RTC advised the Train Operator that signal F06-08 was red.
- The Train Operator reported entering the stop and proceed method prior to stopping at the 8-car marker.
- The Train Operator failed to verify a lunar signal at F06-08 after servicing Anacostia Station.

Immediate Mitigation to Prevent Recurrence

- Service was suspended between Navy Yard Station and Congress Heights Station.
- ATCM assessed the interlocking switches.
- The Train Operator was removed from service.

Probable Cause Statement

The probable cause of the Red Signal Overrun event on April 19, 2024, at Anacostia Station was the lack of situational awareness by the Train Operator, and the Train Operator's failure to follow the instructions given by the Radio RTC. A contributing factor was the Stop and Proceed method was still active, which allowed the train to move with speed commands displayed on the console; this inadequate safeguard is a contributing factor to this incident occurring.

Recommended Corrective Actions

Corrective Action Code	Description	Responsible Party	Estimated Completion Date
116295MX_SAFE CAPS_RTRA_001	The Train Operator to complete Re-Instruction Training with ROQT.	RTRA_SRC	Completed

Appendices

Appendix A – Interview Summary

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

Train Operator

The Train Operator is a WMATA employee with 9 months of service and experience as a Train Operator. The Train Operator holds a Roadway Worker Protection (RWP) Level 2 certification that expires in August 2024.

During the formal interview, the Train Operator stated that trains were single tracking the whole day on track 2 but not until Naylor Road, due to a down signal. Trains were going over clamped switches. The Train Operator stated everything was fine towards the end of the evening.

The Train Operator stated an event train had to clear the interlocking before their train arrived at the platform. The Train Operator stated that in approach Anacostia Station on track 2 their train lost speed commands in the middle of the platform. The MICC gave them a Permissive Block to the 8-car marker.

The Train Operator stated after arriving to Anacostia Station on track 2, they serviced the station and waited for a lock out, since the switch had the correct rail alignment, they just didn't have a lunar signal.

The Train Operator stated they serviced the station and continued on. After continuing through the signal, the overspeed alarm went off, making them realize the train was still in Stop and Proceed from when they were given the Permissive Block, and then the train came to a complete stop.

The Train Operator stated the MICC contacted them immediately after the incident happened. The RTC instructed them to stand by. The Train Operator stated once the train stopped, they realized they had three cars still on the platform.

The Train Operator stated the RTC sent a Station Manager to assist with offloading the customers from the three cars that were still on the platform. They keyed the train down, walked back and began keying the remaining customers off the train.

Appendix B – Scene Photographs

Figure 1 – Incident train partially on platform

Figure 2 – Incident train 2 cars in the tunnel

Figure 3 – View of Train ID 528 after the train was repositioned.

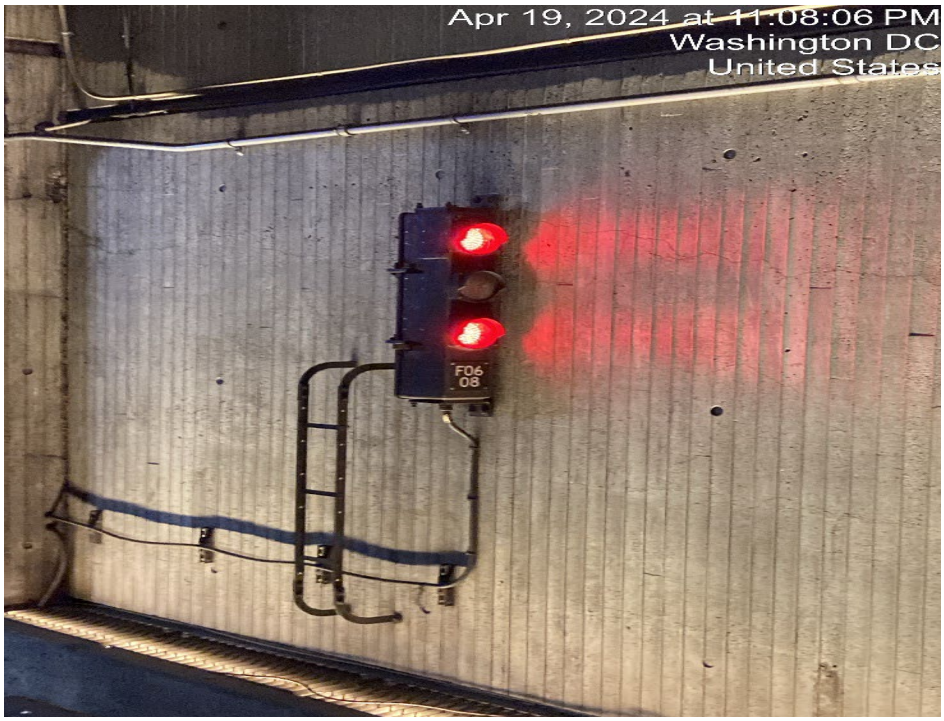


Figure 4 – F06-08 signal red

Figure 5- Switch 1B in normal position. (no damage)

Figure 6 – Train ID 528 secured on track 2, Anacostia.

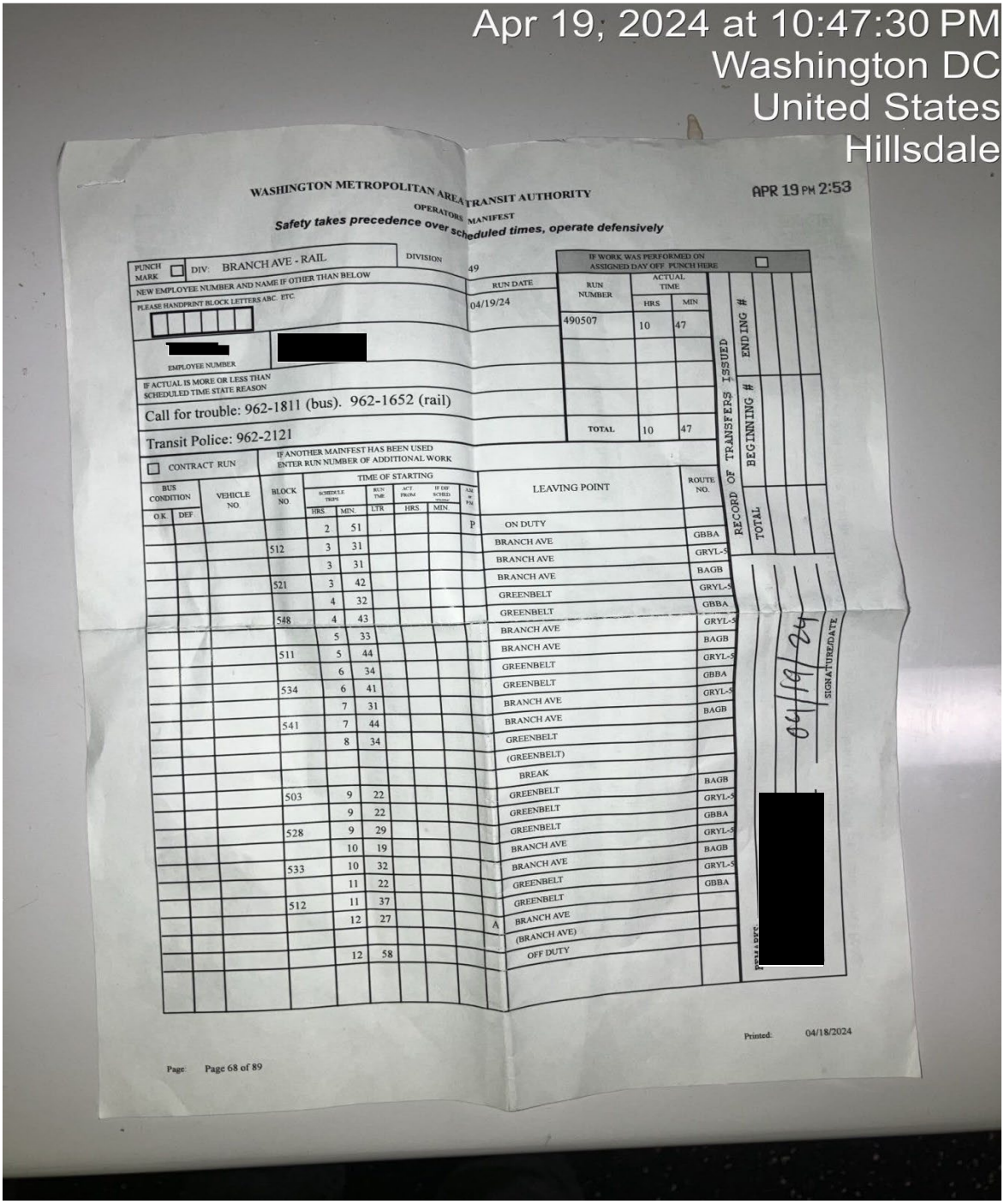
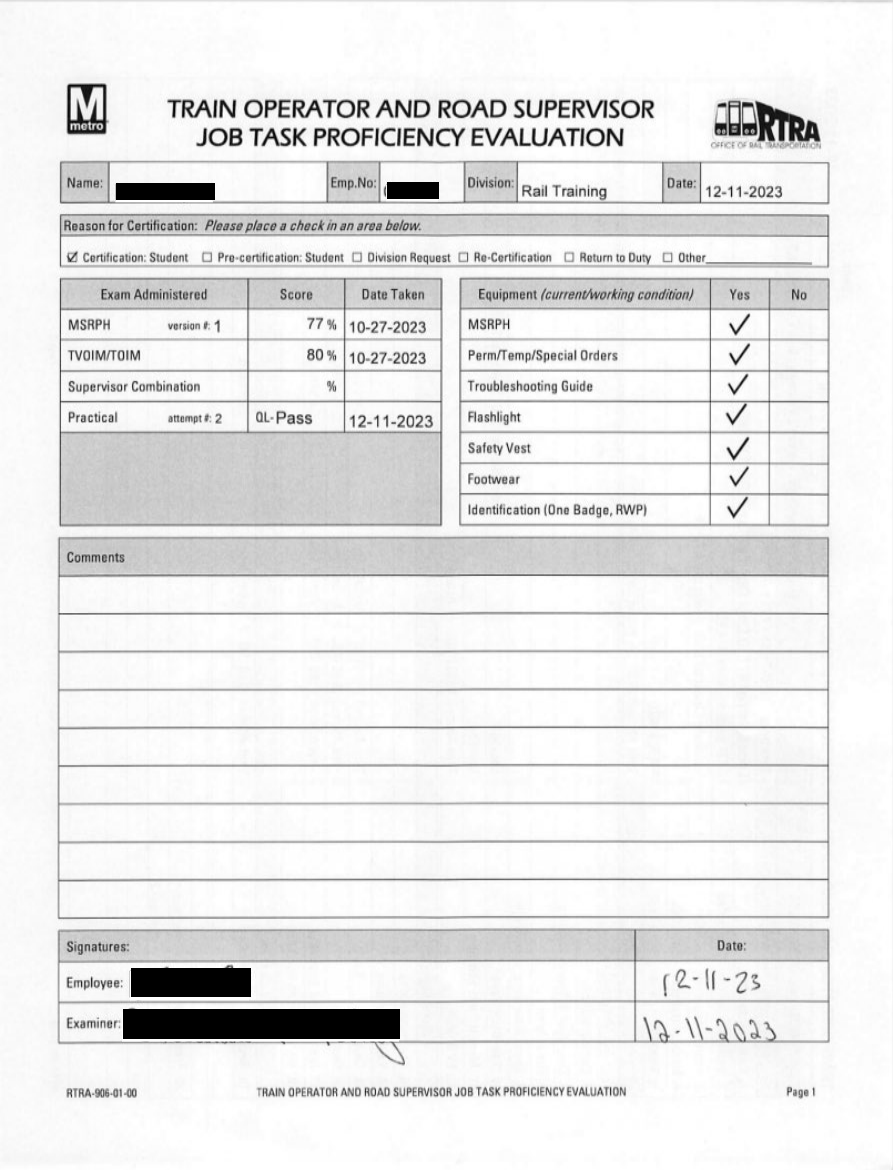


Image 4 – Train Operators Manifest

Appendix D – Train Operator's Certification



TRAIN OPERATOR AND ROAD SUPERVISOR
JOB TASK PROFICIENCY EVALUATION

Name: [redacted]	Emp.No: [redacted]	Division: Rail Training	Date: 12-11-2023

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

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

Exam Administered	Score	Date Taken
MSRPH version #: 1	77 %	10-27-2023
TVOIM/TOIM	80 %	10-27-2023
Supervisor Combination	%	
Practical attempt #: 2	QL-Pass	12-11-2023

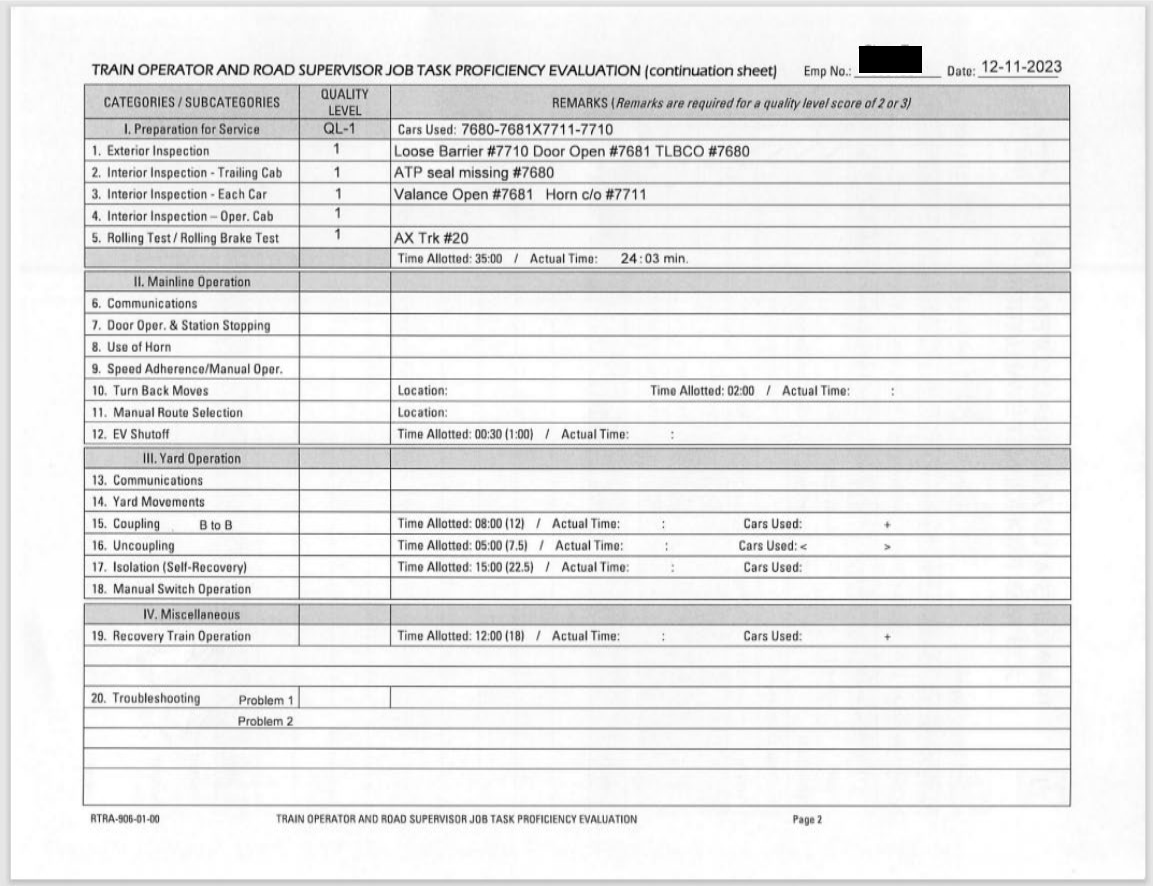
Equipment *(current/working condition)*	Yes	No
MSRPH	✓	
Perm/Temp/Special Orders	✓	
Troubleshooting Guide	✓	
Flashlight	✓	
Safety Vest	✓	
Footwear	✓	
Identification (One Badge, RWP)	✓	

Comments

Signatures:	Date:
Employee: [redacted]	12-11-23
Examiner: [redacted]	12-11-2023

RTRA-906-01-00 TRAIN OPERATOR AND ROAD SUPERVISOR JOB TASK PROFICIENCY EVALUATION Page 1

Image 5 – Train Operators Certification Evaluation



TRAIN OPERATOR AND ROAD SUPERVISOR JOB TASK PROFICIENCY EVALUATION (continuation sheet) Emp No.: [redacted] Date: 12-11-2023

CATEGORIES / SUBCATEGORIES	QUALITY LEVEL	REMARKS (*Remarks are required for a quality level score of 2 or 3*)
I. Preparation for Service	QL-1	Cars Used: 7680-7681X7711-7710
1. Exterior Inspection	1	Loose Barrier #7710 Door Open #7681 TLBCO #7680
2. Interior Inspection - Trailing Cab	1	ATP seal missing #7680
3. Interior Inspection - Each Car	1	Valance Open #7681 Horn c/o #7711
4. Interior Inspection – Oper. Cab	1	
5. Rolling Test / Rolling Brake Test	1	AX Trk #20
		Time Allotted: 35:00 / Actual Time: 24 : 03 min.
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 (1:00) / Actual Time: :
III. Yard Operation		
13. Communications		
14. Yard Movements		
15. Coupling B to B		Time Allotted: 08:00 (12) / Actual Time: : Cars Used: +
16. Uncoupling		Time Allotted: 05:00 (7.5) / Actual Time: : Cars Used: < >
17. Isolation (Self-Recovery)		Time Allotted: 15:00 (22.5) / Actual Time: : Cars Used:
18. Manual Switch Operation		
IV. Miscellaneous		
19. Recovery Train Operation		Time Allotted: 12:00 (18) / Actual Time: : Cars Used: +
20. Troubleshooting Problem 1		
Problem 2		

RTRA-906-01-00 TRAIN OPERATOR AND ROAD SUPERVISOR JOB TASK PROFICIENCY EVALUATION Page 2

Image 6 – Train Operators Certification Evaluation

Appendix X – Why-Tree Analysis