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WMSC Commissioner Brief: W-0063 – Red Signal Overrun – Brentwood Yard entrance –September 11, 2020

Prepared for Washington Metrorail Safety Commission meeting on March 2, 2021

Safety event summary:

An Equipment Operator and Flagman moved a Prime Mover and a leading flatcar past a red signal (B99-06) at the entrance to the Brentwood Rail Yard at 4:07 a.m. on September 11, 2020, and the consist took an unintended route on mainline track rather than the intended path of entering Brentwood Yard. The Interlocking Operator had stated over the radio that the signal was lunar (the white indication that is roughly the equivalent of a green traffic light in the Metrorail system), and had granted permission to pass a different red signal (B99-64) as part of an absolute block to return to a yard storage track. However, B99-06 remained red, and the Interlocking Operator did not give permission to pass that red signal.

The investigation found that the lead set by the Interlocking Operator on the tower's interlocking board did not actually take effect because the ROCC had put an auxiliary call on the switch for a normal position for revenue service preventing the Interlocking Operator from controlling the switch. The Interlocking Operator was not aware of this "AUX call", which led to the red signal and the rail alignment remaining in the normal position along the mainline track. The ROCC had begun regularly using auxiliary calls after the July 7, 2020 Silver Spring Station derailment at ROCC management's verbal direction. ROCC management did not use WMATA-approved procedural revision processes to make this change, and did not make any official change to written procedures to reflect this that might have triggered additional review or coordination.

The Flagman gave a proceed signal to the Equipment Operator without properly reading the rail alignment. The switch remained in the normal position, keeping the vehicles on main Red Line tracks. The Equipment Operator stopped the unit approximately 200 feet after passing the signal.

The Rail Operations Control Center (ROCC) identified that the Prime Mover passed B99-06 while it was red and without the proper route and called the Interlocking Operator who stated that they believed the signal was lunar and that a proper route had been set.

The Interlocking Operator was incorrectly not removed from service in this event, despite having a clear possible role in this event at the time the event was reported.

The Flagman tested positive for a prohibited substance, suggesting recent or regular use, which may have played a role in the Flagman not properly reading the rail or signal.

Probable Cause:

The probable cause of this improper movement that led to a red signal overrun is a lack of comprehensive communication and training that allowed the ROCC's auxiliary call on the switch, preventing the Interlocking Operator from properly setting a route, and leading to the Interlocking Operator not successfully setting a route that was provided and confirmed over the radio. The Flagman's incorrect reading of the rail and the Flagman and Equipment Operator acting solely on the verbal communication from the Interlocking Operator without verifying the signal aspect led to this outcome of a red signal violation.

Corrective Actions:

Track and Structures (TRST) is improving On-the-Job Training (OJT) and ride checks.

The Infrastructure Renewal Program Group (IRPG) and Track and Structures (TRST) provided refresher training to the Equipment Operator and Flagman.

Rail Transportation is improving On-the-Job Training (OJT) and Interlocking Operator check processes.

The Interlocking Operator received refresher training.

TRST and RTRA developed a Lessons Learned with an emphasis on the movement of Roadway Maintenance Machines (RMM/Class II vehicles) when entering Brentwood Yard, communications and verification of signals, operations near red signals, and verification of rail alignment.

WMSC staff observations:

Complex communication – digital or verbal over radios – requires special attention. WMATA should consider reviewing the responsibilities, interactions and training of Interlocking Operators and ROCC controllers regarding switches at the entrances to rail yards to ensure there is clear understanding and clear procedures regarding these signals and switches.

ROCC's action to begin using auxiliary switch calls, which are not conveyed to Interlocking Operators in any way, essentially locked the switch in position in this case.

As identified in the ROCC Audit, which was published days before this event, ROCC management must not direct controllers to ignore written procedures and must ensure that any procedural changes are fully and properly evaluated and approved based on possible safety impacts. Metrorail has developed corrective action plans in response to the ROCC Audit findings that are intended to help address this.

WMATA could also consider whether any changes are required for yard communications to limit the number of signals and information provided in a single communication.

WMATA must comply with its drug and alcohol policy for post-event testing.

Staff recommendation: Adopt final report.

Washington Metro Area Transit Authority

Department of Safety and Environmental Management (SAFE)

FINAL REPORT OF INVESTIGATION A&I E20343

Date of Event:	9/11/2020
Type of Event:	Red Signal Overrun
Incident Time:	04:07 hrs.
Location:	Brentwood Yard, B99-06 Signal, Track 1
Time and How received by SAFE:	04:18 hrs. – SAFE On-Call Phone
WMSC Notification Time:	06:16 hrs.
Rail Vehicle:	Flatcar (F) 510-Prime Mover (PM) 38

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Abbreviations and Acronyms

AIMS	Advanced Information Management System
ARS	Audio Recording System
ATCM	Office of Automatic Train Control Maintenance
CTEM	Car Track Equipment Maintenance
CCTV	Closed-Circuit Television
CMNT	Office of Car Maintenance
COMM	Office of Communications Maintenance
EAP	Employee Assistance Program
E/O	Equipment Operator
F/M	Flagman
F	Flatcar
I/O	Interlocking Operator
IRPG	Infrastructure Renewal Program Group
MSRPH	Metrorail Safety Rules and Procedures Handbook
MOC	Maintenance Operations Control
NOAA	National Oceanic Atmospheric Administration
OJT	On-the-Job Training
PM	Prime Mover
ROCC	Rail Operations Control Center
RTRA	Office of Rail Transportation
SAFE	Department of Safety and Environmental Management
SOP	Standard Operating Procedure
TRST	Office of Track and Structures
WMATA	Washington Metropolitan Area Transit Authority

Executive Summary

On Friday, September 11, 2020, at approximately 04:07 hrs., on Red Line Track 1, a Track and Structures (TRST) Equipment Operator (E/O) operating Prime Mover 38 (PM38) pushing Flatcar (F) 510 overran B99-06 signal displaying red aspects while attempting to enter Brentwood Yard. Per the Audio Recording System (ARS), the Interlocking Operator (I/O) for Brentwood Yard stated, “you have a lunar at B99-06, an absolute block into Brentwood Yard, you have permission to pass B99-64 red and verify switch 65, 67 and 81 are clamped normal. Then you will pick up a lunar at B99-34 and continue to clear B99-176." PM38 E/O acknowledged and repeated back instructions before moving the unit. The Advanced Information Management System (AIMS) playback showed PM38 holding on Track 1 at the B99-06 signal displaying a red aspect. PM38 E/O then proceeded past the B99-06 signal displaying red signal aspects. (See AIMS Playback Illustrations 1 through 3.) The white color, also called lunar, of the Metrorail fixed signal aspect, which indicates "proceed," never transpired.

Additionally, for movement of Class II vehicles in the yard, the I/O was first to ensure that a complete, correct route was set by establishing an absolute block for the movement and give permission for the vehicle to move when appropriate in accordance with the Interlocking Operator Yard Procedure Manual (IOYPM), Office of Rail Transportation (RTRA). This action did not occur, and the route was never set to proceed per AIMS playback. Additionally, ARS revealed that the I/O received a call via phone from the Rail Operations Control Center (ROCC) Rail Traffic Controller (RTC) to advise the I/O that PM38 E/O never received their route and overran B99-06 signal. I/O responded, what signal, PM38 had a lunar, then stated, I thought they had a lunar at B99-06 signal.

According to interviews, the E/O and the Flagman (F/M) claimed to have received a lunar at B99-06 signal. The F/M stated being positioned outside of the F510 forward cab area and directed PM38 E/O to utilize a flashlight when conveying the signal. The E/O indicated that they noticed PM38 took an incorrect route onto mainline Track 1, instead of Brentwood Yard lead Track, and stopped the unit approximately 200 feet after passing B99-06 signal. By the F/M's admission, the F/M stated that before giving the E/O the proceed signal to enter Brentwood Yard, they believe they misread the proper rail alignment, contributing to PM38 taking the incorrect route. Automatic Train Control Maintenance (ATCM) personnel were dispatched to inspect the associated switch 7A/B, which was routed in the normal position and had no damage to the switch or its components.

The ROCC removed the E/O and F/M from service for post-incident toxicology testing. There were no injuries or damages reported as a result of this incident.

The probable cause of the red signal overrun incident on September 11, 2020, was the I/O not complying with the IOYPM, Office of Rail Transportation.

I/O did not execute their job responsibilities and duties outlined in the Metrorail Safety Rules and Procedures Handbook (MSRPH) Operating Rule (OR) and I/O Manual: The I/O was in violation of the following:

I/O Manual - The I/O sets signal and route alignment for all movement in the yard area and all movement to and from the Main Line and assures that all moves are made in compliance with the rules. (I/O did not set the lead for train movement properly).

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 I/O. All parties shall treat the situation as if the vehicle has derailed (SOP #9). Also, 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.

Upon analysis of data collected from systems of record and the results of interviews with staff, several procedure violations occurred in this incident. Upon report of entering Brentwood Yard, the E/O and F/M were not in compliance with the following MSRPH rules and procedures below:

OR 3.67 – Rail vehicles shall not be operated past or closer than a point of ten (10) feet in the approach of any interlocking signal or lamp displaying a red aspect. A red flag, or a dark interlocking signal, unless authorized by ROCC or the I/O and the move is consistent with customer safety as specified in Rule 3.1

SOP # 15 Section 15.4.3 – Rail Vehicle Operators and vehicle Flag persons are responsible for compliance with the ROCC or Rail Supervisors' verbal instructions and limits regardless of wayside signal aspects or speed readouts and are responsible for checking rail alignment when given permission to pass any signal set to stop.

Several communication breakdowns, non-adherence to written procedures, and processes within the MSRPH were identified as contributing factors in this event.

As a result of this investigation, SAFE makes the following recommendations:

To TRST, enhance On-the-Job Training (OJT) and ride check process and provide the E/O and F/M with refresher training on performance requirements to identify opportunities for improvements.

To RTRA, enhance OJT and the I/O check process and to provide the I/O with refresher training on performance requirements to identify opportunities for improvements.

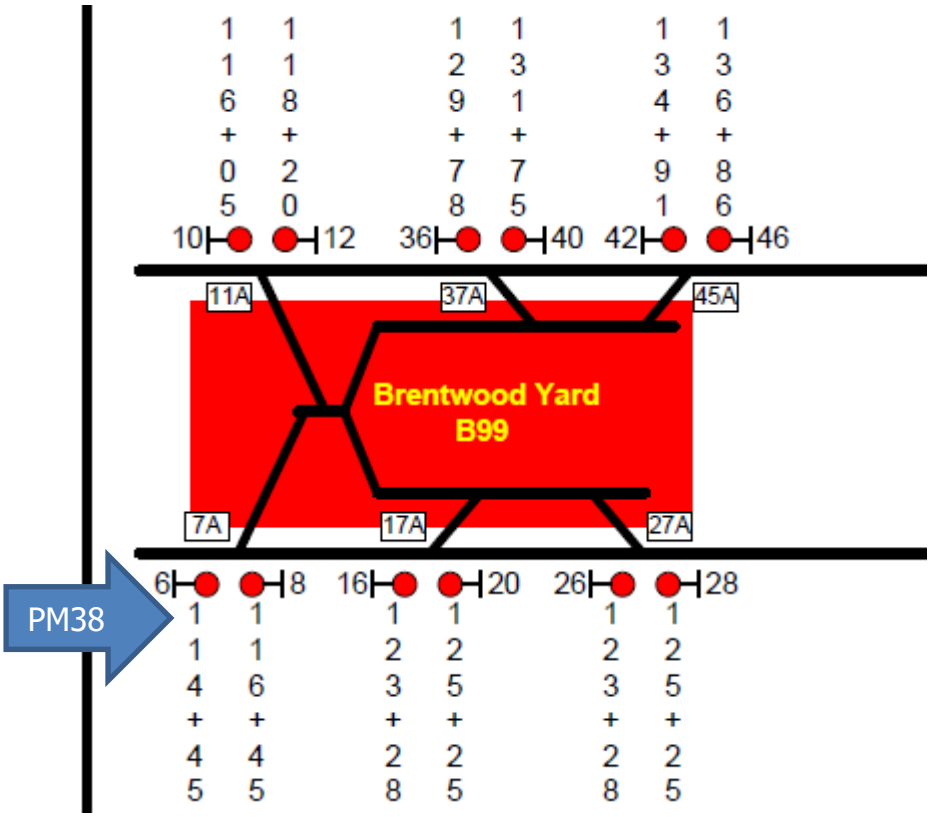
The I/O was referred to training and received refresher training on specific MSRPH rules and procedures violated to understand duties and responsibilities when an incident of this nature transpires.

TRST and RTRA have developed a Lessons Learned with an emphasis on the movement of Class II vehicles when entering Brentwood Yard, operating past or closer than a point of ten (10) feet in the approach of any interlocking signal or lamp displaying a red aspect and checking rail alignment when given permission to pass any signal set to stop.

TRST has removed the F/M from service due to non-compliance with the Drug and Alcohol policy. TRST has offered this employee an opportunity to enroll in the Employee Assistance Program (EAP).

Incident Site
Brentwood Yard, B99-06 Signal, Track 1

Field Sketch/Schematics



Purpose and Scope

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

Investigation Process and Methods

Upon receiving notification that a Class 2 Vehicle overran B99-06 signal on Track 1 on September 11, 2020, SAFE conducted a cross-functional investigation into the incident. SAFE team members worked with relevant WMATA subject matter experts to review facts and data associated with the incident.

Investigative Methods

The investigative methodologies included the following:

- Physical Site Assessment
- Formal Interviews – SAFE interviewed two (2) Individuals as part of this investigation. Interviews included persons present during and after the incident, those directly involved in the response process. SAFE interviewed the following individuals:
    - E/O
    - F/M

- Documentation Review – Collection of relevant work history information and process documentation contained in Metro systems of record. These records include:
    - Employee Training Procedures & Records
    - Certifications
    - The 30-Day work history review
    - MSRPH
    - National Oceanic Atmospheric Administration (NOAA)
    - Interlocking Operator Yard Procedures Manual Review
    - Office of Car Maintenance (CMNT) inspection data review
    - ATCM inspection data review
    - Office of Communications Maintenance (COMM) review of radio communication data review

- System Data Recording Review – Collection of information contained in Metro Data Recording Systems. This data includes:
    - ARS playback [Radio and Phone Communications]
    - AIMS

Investigation

On Friday, September 11, 2020, at approximately 04:07 hrs., on Red Line Track 1, the E/O operating TRST PM38 pushing F510 overran B99-06 signal display a red aspect while attempting to enter Brentwood Yard. Per ARS, the I/O for Brentwood Yard stated, you have a lunar at B99-06, an absolute block into Brentwood Yard. As PM38 E/O proceeded to pass the signal, taking a right hand facing point turnout pass B99-06 signal displaying a red signal aspect. The AIMS playback revealed PM38 E/O accepted the wrong lead and proceeded to overrun a red signal. After the incident, a ROCC RTC reported the incident to the I/O via phone and asked, did PM38 E/O contact you? Because it looked like PM38 overran the B99-06 signal displaying a red aspect. The I/O responded they had a lunar. The I/O then said I thought they had a lunar at B99-06 signal. After the red signal overrun, ATC personnel responded to the scene to conduct an inspection; they did not find any damage to switch 7A/B.

Based on a review of RTRA's Lessons Learned, it was revealed that the ROCC had an AUX call on B99-06, which prevented the lead from being set by the I/O. The I/O permitted the E/O to enter the Brentwood Yard before they verified a complete route and lunar was set. Under the IOYPM, RTRA, the I/O must establish and confirm a complete route for the move to be made and monitor the movement until it is completed, which did not occur.

After the incident, it was not known that the Brentwood Yard I/O had made an error by telling the E/O that they had a lunar at B99-06 and an absolute block into Brentwood Yard before ensuring that a correct route was set. As a result, the I/O was not taken out of service for Post Incident Testing.

Chronological Timeline of Events

A review of ARS [Radio and Phone] revealed the following:

Time	Description
03:59:19 hrs.	(Ops 1) PM38 notified ROCC RTC that they are standing by at B02-04 signal. RTC acknowledged and responded that you have a lunar at B02-04 signal, check correct rail alignment, and have an absolute block to B99-06.
04:04:18 hrs.	(Ops 1) PM38 notified the ROCC RTC that they were standing by at B99-06 signal and will notify them when clear of the mainline. The Radio RTC acknowledged their transmission.
04:05:01 hrs.	(Yard Ops) PM38 notified Brentwood Tower I/O and advised they are currently holding at B99-06 signal, and the destination is to clear B99-176. I/O responded, confirm.
04:06:45 hrs.	(Yard Ops) Brentwood Tower I/O advised, you have a lunar at B99-06, an absolute block into Brentwood Yard; you have permission to pass B99-64 red and verify switch 65, 67, and 81 are clamped normal. Then you will pick up a lunar at B99-04 and continue on to clear B99-176. PM38 acknowledged and repeated back instructions. I/O responded, confirm.
04:08:56 hrs.	(Yard Ops) I/O attempted to contact PM38 by transmitting over the radio, “the unit closest to the yard.” PM38 responded (unintelligible). I/O then transmitted, “they put a call on the switch (meaning to have the switch clamped in the normal position), standby they might let you go back.”
04:09:23 hrs.	(Ambient Mic in the Brentwood Tower) ROCC RTC contacted the I/O and asked, did PM38 contact you? Because it looked like PM38 overran the B99-06 signal displaying a red aspect. The I/O responded I thought they had a lunar at B99-06 signal.
04:09:15 hrs.	(Ops 1) ROCC RTC attempted to contact PM38 several times on Ops 1 with no response from PM38.
04:11:19 hrs.	(Yard Ops) I/O contacted PM38 and asked them to contact the ROCC.
04:12:51 hrs.	(Phone Call) ROCC RTC notified the ROCC Assistant Superintendent via phone and advised PM38 was given an absolute block to B99-06 to contact the tower. However, it looks like PM38 overran the B99-06 signal. ROCC Assistant Superintendent stated did you speak with the tower and the I/O advised they thought PM38 had a lunar. ROCC Assistant Superintendent asked if there was a call on the switch. ROCC RTC reported it was a call on the switch already from revenue, and PM38 had a red. ROCC Assistant Superintendent asked if the switch

	was clamped, and the ROCC RTC responded, "the 7 switch is not clamped."
04:13:50 hrs.	(Ops 1) PM38 responded to the ROCC copy loud and clear. RTC asked PM38, what is your current location? PM38 responded I am currently holding at B99-08. Radio RTC acknowledged and asked if PM48 had a lunar at B99-06. RTC then asked PM38 to hold secure and standby. PM38 acknowledged.
04:15:15 hrs.	(Phone) an unidentified WMATA employee notified the ROCC Assistant Superintendent via phone and advised PM38 told them that they are holding outside the B99-08 signal. ROCC Assistant Superintendent advised telling PM38 to hold.
04:15:22 hrs.	(Ops 1) RTC contacted PM38 and told them to "continue to hold their location and asked, is your unit holding secure, over?" PM38 acknowledged and advised, my unit is holding secure. Radio RTC acknowledged and advised to standby for further instructions.
04:18:11 hrs.	(Phone) ROCC Assistant Superintendent notified SAFE and reported PM38 overran B99-06 signal displaying a red aspect.
04:18:55 hrs.	(Phone) an unidentified WMATA employee notified the Maintenance Operation Control (MOC) Assistant Superintendent via phone and reported PM38 overran B99-06 signal displaying a red aspect. MOC Assistant Superintendent asked the unidentified WMATA employee to get ATC to the incident scene to inspect the switch.
04:19:05 hrs.	(Phone) The unidentified WMATA employee notified the ROCC Assistant Superintendent via phone and advised the tower stated she had a Lunar and asked if they can watch the AIMS playback even though the WMATA employee received an overrun alarm.
04:23:55 hrs.	(Phone) ROCC Assistant Superintendent notified ROCC Director and reported PM38 was getting ready to enter Brentwood Yard from the mainline and overran the B99-06 signal displaying a red aspect. ROCC Assistant Superintendent advised before entering Brentwood Yard; the operator is supposed to contact the tower at B99-06 signal location to get permission to enter the yard because the tower would have to set it and reported the I/O did not set it and PM38 went straight through the signal. Reportedly the I/O knew the operator was coming into the yard. ATC is in route to inspect the switch for any damages
04:24:48 hrs.	(Ops 1) Radio RTC contacted PM38 and requested a landline. PM38 acknowledged.
04:34:17 hrs.	(Yard Ops) ATC contacted Brentwood Tower I/O via radio and requested permission to enter the roadway to go to inspect switch 7. I/O granted ATC permission to enter the roadway; trains are moving in all directions, the third rail is hot and energized, and make sure you have proper PPE. ATC acknowledged.

04:40:25 hrs.	(Phone) The unidentified WMATA employee notified the ROCC Assistant Superintendent, and the ROCC Assistant Superintendent advised ATC reported no damage to the switch.
04:41:25 hrs.	(Phone) ROCC Assistant Superintendent notified the I/O and asked if they spoke with PM38. I/O stated, yes. I don't know why they moved; PM38 had a red signal.
04:41:25 hrs.	(Phone) ROCC Assistant Superintendent notified the ROCC Director and advised ATC "reported no damage to the switch, and ATC cleared the roadway." Reportedly, there will be no impact to revenue service.
04:56:00 hrs.	(Yard Ops) I/O contacted PM60 and asked once you get into the Brentwood Yard, can you report to B99-06 and move PM38. PM60 acknowledged.
05:21:25 hrs.	(Yard Ops) Relief Operator on PM38 contacted the I/O and requested a lead from B99-06.
05:22:47 hrs.	(Yard Ops) I/O contacted PM38 and advised they have a lunar at B99-06; you have an absolute block to enter Brentwood Yard, you have a block up to B99-64, which will be red, but you have permission to pass B99-64. Verify switch 65, 67, and 81 are clamp normal for a straight-through move. Pick up lunar at B99-34; then, you have an absolute block to clear B99-48. Verify all lunars and correct rail alignment. PM38 acknowledged and repeated back.

Advanced Information Management System (AIMS)

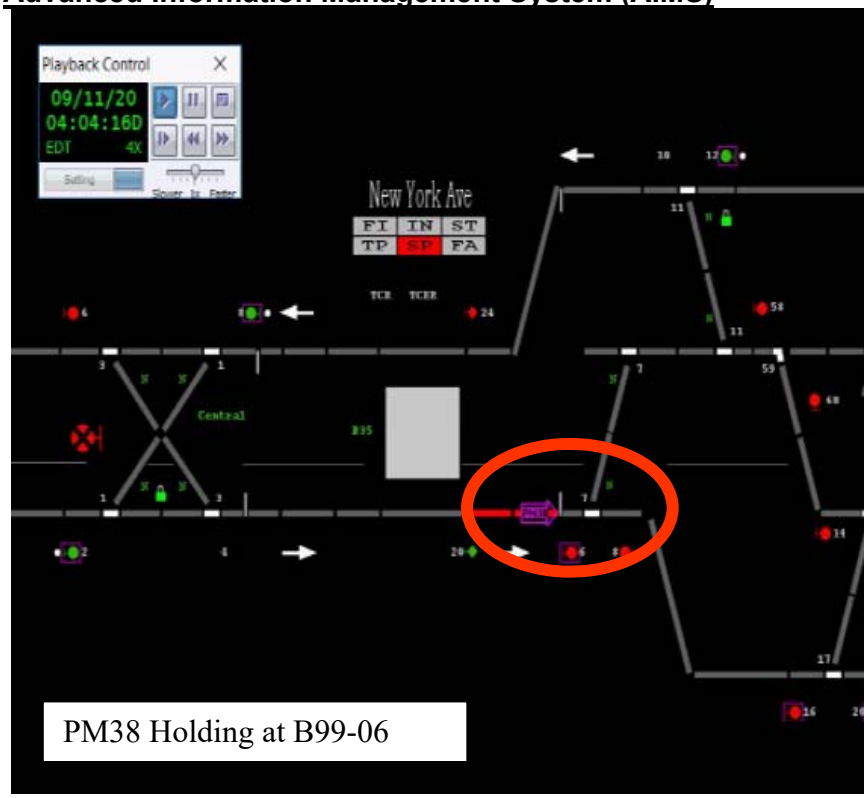


Illustration 1 – PM38 holding on Track 1 at B99-06 signal displaying a red aspect.

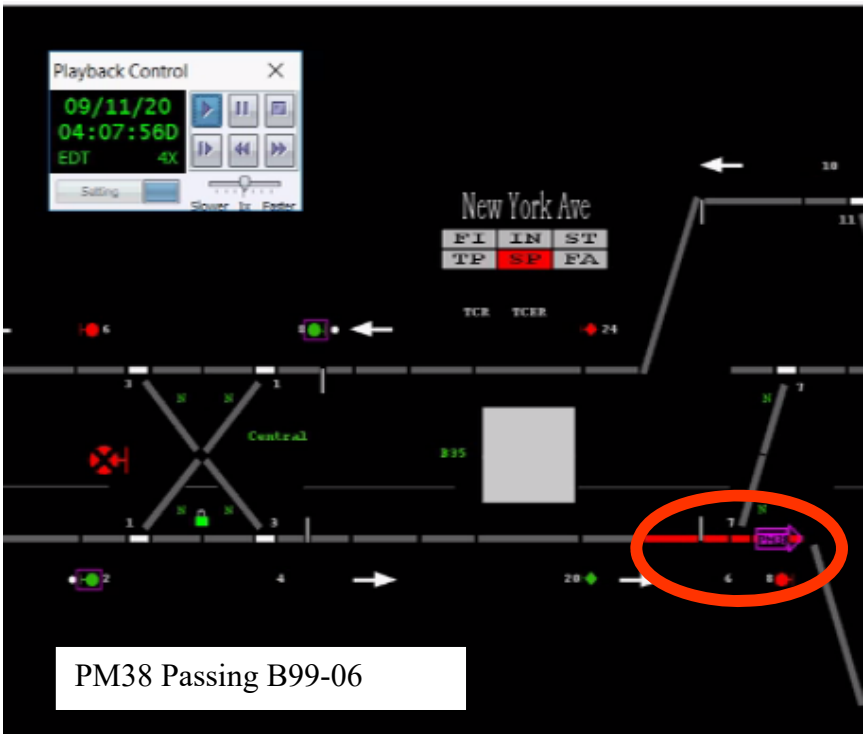


Illustration 2 – PM38 proceeded past the B99-06 signal displaying a red signal aspect.

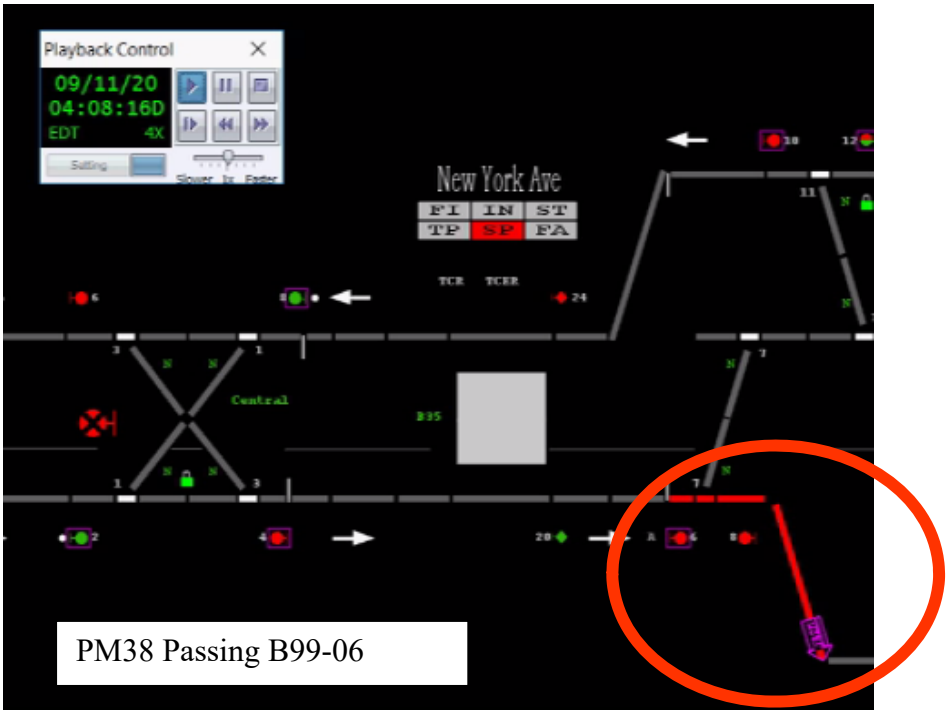


Illustration 3 – PM38 proceeded past the B99-06 signal displaying red signal aspects.

Photo 1 – PM38

Photo 2 – F510

Photo 3 - B99-06 signal displaying a “red” aspect


Photo 4 – There were no anomalies found to switch 7A/B.

Automatic Train Control Maintenance

ATCM performed an inspection and verified that there was no damage to any switches or ATCM components.

Communication Maintenance

COMM performed a comprehensive radio operational test at Brentwood Yard. The test was found to be normal.

NOTE: After reviewing the Audio Recording System playback, there did not appear to be any communication deficiencies over the radio.

Office of Car Maintenance (CMNT) Car Track Equipment Maintenance (CTEM)

- Car Track Equipment Maintenance (CTEM) personnel performed a post-incident inspection of the affected F510-PM38 and found no anomalies.

Interview and Written Statement Findings

Based on the investigation launched into the Red Signal Overrun violation at Brentwood Yard, B99-06 signal, Track 1, SAFE conducted two (2) investigative interviews and received one (1) written statement from the third person involved due to them being on leave. The following key findings associated with this event identified are as follows:

The I/O indicated in a written statement on September 11, 2020, at approximately 04:15 hrs. PM38 contacted Brentwood Yard Tower requesting permission to enter the yard by way of the B99-06 signal. I/O instructed PM38 E/O to standby for a lead into Brentwood Yard. I/O then went to the interlocking board to set a lead. I/O contacted E/O and asked if they had passed the signal and E/O replied, "Yes."

ROCC RTC contacted the I/O via landline to instruct PM38 E/O to contact the ROCC on Ops 1. The E/O stated once PM38 arrived at the B99-06 signal, they switched over from Ops 1 to Yard Ops. The E/O indicated they requested a block to enter the yard. The I/O responded you have a lunar at B99-06, an absolute block into Brentwood Yard; you have permission to pass B99-64 red and verify switch 65, 67, and 81 are clamped normal. Then you will pick up a lunar at B99-34 and continue to clear B99-176.

E/O acknowledged. E/O claimed since receiving a block to enter the yard and seeing the lunar; they proceeded after the F/M hit the horn and waved the flashlight conveying signal to proceed. F/M indicated that they were at B99-06 to enter the yard and heard over the radio that PM38 E/O had an absolute block into the yard and proceeded with caution. F/M stated that they gave the E/O a proceed signal via radio, flashlight, and handheld radio. F/M said that they misread the rail alignment, so the unit took the wrong route. The F/M indicated that they saw a "lunar" signal on the B99-06 signal before telling the E/O to proceed. The F/M stated that they were positioned outside the unit F510 forward cab area when they directed PM38 E/O to proceed.

Findings

- No video recording available on the unit.
- No Closed-Circuit Television (CCTV) video was available at B99-06 signal incident location.
- At the time of the incident, it was not known that the Brentwood Yard I/O had made an error and was not removed from service for post-incident toxicology testing by RTRA. SAFE requested to interview the I/O; however, the I/O was unavailable due to being on vacation. RTRA Management contacted the I/O and retrieved a written statement as evidence gathered during the investigation.
- I/O did not provide proper radio communications (instructions) to Track Unit PM38. Additionally, I/O did not verify a proper lead was set, and a LUNAR aspect was present for PM38 to enter Brentwood Yard.
- The F/M stated that before giving the E/O the proceed signal to enter Brentwood Yard, they believe they misread the proper rail alignment, contributing to PM38 taking the incorrect route.
- The E/O and the F/M claimed to see a lunar displayed on the B99-06 signal before proceeding. However, AIMS playback indicates that PM38 E/O proceeded past the B99-06 signal displaying a red aspect. This is not in compliance with OR 3.67 – Rail vehicles shall not be operated past or closer than a point of ten (10) feet in the approach of any interlocking signal or lamp displaying a red aspect. A red flag, or a dark interlocking signal, unless authorized by ROCC or the Interlocking Operator, and the move is consistent with customer safety as specified in Rule 3.1.
- ARS revealed that the I/O stated to PM38 E/O that they had a lunar at the B99-06 signal, an absolute block into Brentwood Yard. The I/O was to first to ensure that a complete, correct route was set, establishing an absolute block for the movement and giving the vehicle permission to move when appropriate per the I/O Manual. This action did not occur, and the route was never set to proceed per AIMS playback. This action is not in compliance with IOYPM.

Weather

At the time of the incident, NOAA recorded the temperature as 75°F with low clouds and 93% humidity. SAFE has concluded that weather was not a contributing factor in this incident (Weather source: National Oceanic Atmospheric Administration – Location: Washington, DC.)

Human Factors

Fatigue

Based on SAFE's interview question related to Fatigue Factors and review of the E/O and F/M's 30-day work history, SAFE determined, the employees' hours of service were in accordance with WMATA's *Fatigue Risk Management Policy 10.6* and *Hours of Service Limitations for Prevention of Fatigue Policy 10.7*

Post-Incident Toxicology Testing

Equipment Operator (E/O)

After reviewing the E/O employee post-incident testing results, SAFE determined that the E/O involved was in compliance with the Drug and Alcohol Policy and Testing Program 7.7. 3/5, therefore, being under the influence of a controlled substance has been excluded as a contributing factor.

Flag Man (F/M)

After reviewing the F/M employee post-incident toxicology testing results, OHAW determined that the F/M was not in compliance with the Drug and Alcohol Testing Program 7.7. 3/5, therefore, being under the influence of a controlled substance may have contributed to the Red Signal Overrun.

Probable Cause Statement

The probable cause of this improper movement that led to a red signal overrun is a lack of comprehensive communication and training that allowed the ROCC's auxiliary call on the switch, preventing the Interlocking Operator from properly setting a route, and leading to the Interlocking Operator not successfully setting a route that was provided and confirmed over the radio. The Flagman's incorrect reading of the rail and the Flagman and Equipment Operator acting solely on the verbal communication from the Interlocking Operator without verifying the signal aspect led to this outcome of a red signal violation.

I/O did not execute their job responsibilities and duties outlined in the MSRPH, OR and I/O Manual: The I/O was not in compliance with the following:

I/O Manual - The I/O sets signal and route alignment for all movement in the yard area and all movement to and from the Main Line and assures that all moves are made in compliance with the rules. (I/O did not set the lead for train movement properly).

Additionally, the E/O and F/M were not in compliance with the following MSRPH rules and procedures below:

OR 3.67 – Rail vehicles shall not be operated past or closer than a point of ten (10) feet in the approach of any interlocking signal or lamp displaying a red aspect. A red flag, or a dark interlocking signal, unless authorized by ROCC or the I/O and the move is consistent with customer safety as specified in Rule 3.1

SOP #15 Section 15.4.3 – Rail Vehicle Operators and Vehicle Flag Persons are responsible for compliance with the ROCC or Rail Supervisors' verbal instructions and limits regardless of wayside signal aspects or speed readouts and are responsible for checking rail alignment when given permission to pass any signal set to stop.

Recommendations

To TRST, enhance OJT and ride check process and provide the E/O and F/M with refresher training on performance requirements to identify opportunities for improvements.

To RTRA, enhance OJT and the I/O check process and to provide the I/O with refresher training on performance requirements to identify opportunities for improvements.

The I/O was referred to training and received refresher training on specific MSRPH rules and procedures violated to understand duties and responsibilities when an incident of this nature transpires.

TRST and RTRA have developed a Lessons Learned with an emphasis on the movement of Class II vehicles when entering Brentwood Yard, operating past or closer than a point of ten (10) feet in the approach of any interlocking signal or lamp displaying a red aspect and checking rail alignment when given permission to pass any signal set to stop.

Appendices

Appendix A - Interview Summaries

Interview Details

E/O

The E/O is a WMATA employee with seventeen (17) years of service and eight (8) years of experience as an "AA" equipment operator.

The E/O stated that ROCC gave PM38 an absolute block from Union Station to the B99-06 signal. Once PM38 arrived at the B99-06 signal, they switched over from Ops1 to Yard Ops. The E/O indicated they requested a block to enter the yard. The I/O responded you have a lunar at B99-06, an absolute block into Brentwood Yard; you have permission to pass B99-64 red and verify switch 65, 67, and 81 are clamped normal. Then you will pick up a lunar at B99-34 and continue to clear B99-176. E/O acknowledged and repeated back instructions before moving the unit. E/O claimed since receiving a block to enter the yard and seeing the lunar; they proceeded after the F/M hit the horn and waved the flashlight conveying signal to proceed. E/O advised communication was established with the F/M via horn and flashlight. E/O indicated that they believed the unit took the wrong route, and the rail alignment was not set up for the yard lead. The E/O then stopped the unit. The I/O told the E/O to stop, but the E/O had already stopped. E/O stated the F/M should have checked for rail alignment before giving the E/O a proceed signal.

F/M

The F/M is a WMATA employee with eight (8) years of service and two (2) years of experience as a F/M.

F/M stated that a pre-trip inspection was performed on PM38 with no anomalies reported. F/M indicated that they were at B99-06 to enter the yard and heard over the radio that PM38 E/O had an absolute block into the yard and proceeded with caution. That's when the incident happened. F/M stated that they gave the E/O a proceed signal via radio, flashlight, and handheld radio. F/M said that they misread the rail alignment, so the unit took the wrong route. The F/M indicated that they saw a "lunar" signal on the B99-06 signal before telling the E/O to proceed. The F/M stated that they were positioned outside the unit F510 forward cab area when they directed PM38 E/O to proceed.

Written Statement

I/O

The I/O is a WMATA employee with eight (8) years of service and was certified as an I/O on January 21, 2020.

The I/O stated in a written statement on September 11, 2020, at approximately 04:15 hrs. PM38 contacted Brentwood Yard Tower requesting permission to enter the yard by way

of the B99-06 signal. I/O instructed PM38 E/O to standby for a lead into Brentwood Yard. I/O then went to the interlocking board to set a lead. I/O contacted E/O and asked if they had passed the signal and E/O replied, "Yes." ROCC RTC contacted the I/O via landline to instruct PM38 E/O to contact the ROCC on Ops 1.

Office of Rail Transportation

OFFICE OF RAIL TRANSPORTATION

Looking back, to effectively move forward

Lessons Learned

September 11, 2020
Number: 2020-006

Brentwood Division (B99) Red Signal Overrun

INCIDENT SUMMARY

On Friday, September 11, 2020, at approximately 4:06am, Track Unit PM38 overran a RED signal at B99-06 signal. Prior to the RED signal overrun, the Interlocking Operator gave Track Unit PM38 permission to enter Brentwood Yard with a lunar at B99-06 signal. Track Unit PM38 repeated his instructions from the Interlocking Operator and proceeded to move past B99-06 signal which was still RED.

ROOT CAUSE

During the time of the September 11th incident, the Interlocking Operator set a lead for Track Unit PM38 to enter Brentwood Yard from B99-06 signal. After setting the lead on the tower's interlocking board, the Interlocking Operator gave instructions to Track Unit PM38 to enter Brentwood Yard by stating "You have a lunar Bravo 99-06, you have an absolute block into Brentwood yard. You have permission to pass Bravo 99-64 RED. You will verify switch 65-67-81 clamped normal. Pick up a lunar at Bravo 99-34 continue to clear Bravo 99-176". "The Interlocking Operator failed to verify that the lead was correctly set and a lunar signal was established at B99-06 signal before giving Track Unit PM38 his instructions. ROCC had an AUX call on B99-06 signal which prevented the lead to be set by the Interlocking Operator. Track Unit PM38 repeated the Interlocking Operator's instructions but failed to verify a lunar at B99-06 signal before moving past B99-06 signal RED with his unit. There were no reported injuries and/ or damages to equipment.

RULES VIOLATED

MSRPH 1.79 Employees 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 be repeated by the receiver so the transmitter can confirm the message was received completely and by the intended receiver.

MSRPH 3.67: Rail vehicles shall not be operated past or closer than a point 10 feet in approach of an interlocking signal or lamp displaying a red aspect, a red flag, or a dark interlocking signal, except at a bump post or entering a pocket track, or unless authorized by ROCC or the Interlocking Operator and the move is consistent with customer safety as specified in Rule 3.1.

MSRPH OR 3.70 When there is a conflict between any groups of conflicting signals (fixed, cab, speed readouts, flagging, portable), operators shall be governed by the most restrictive indication, and shall immediately inform ROCC of the conflict.

MSRPH GR 1.46 Employee 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

INTERLOCKING OPERATOR'S MANUAL:
The Interlocking Operator shall set and verify a complete route for the move to be made and monitor the move until it is completed.

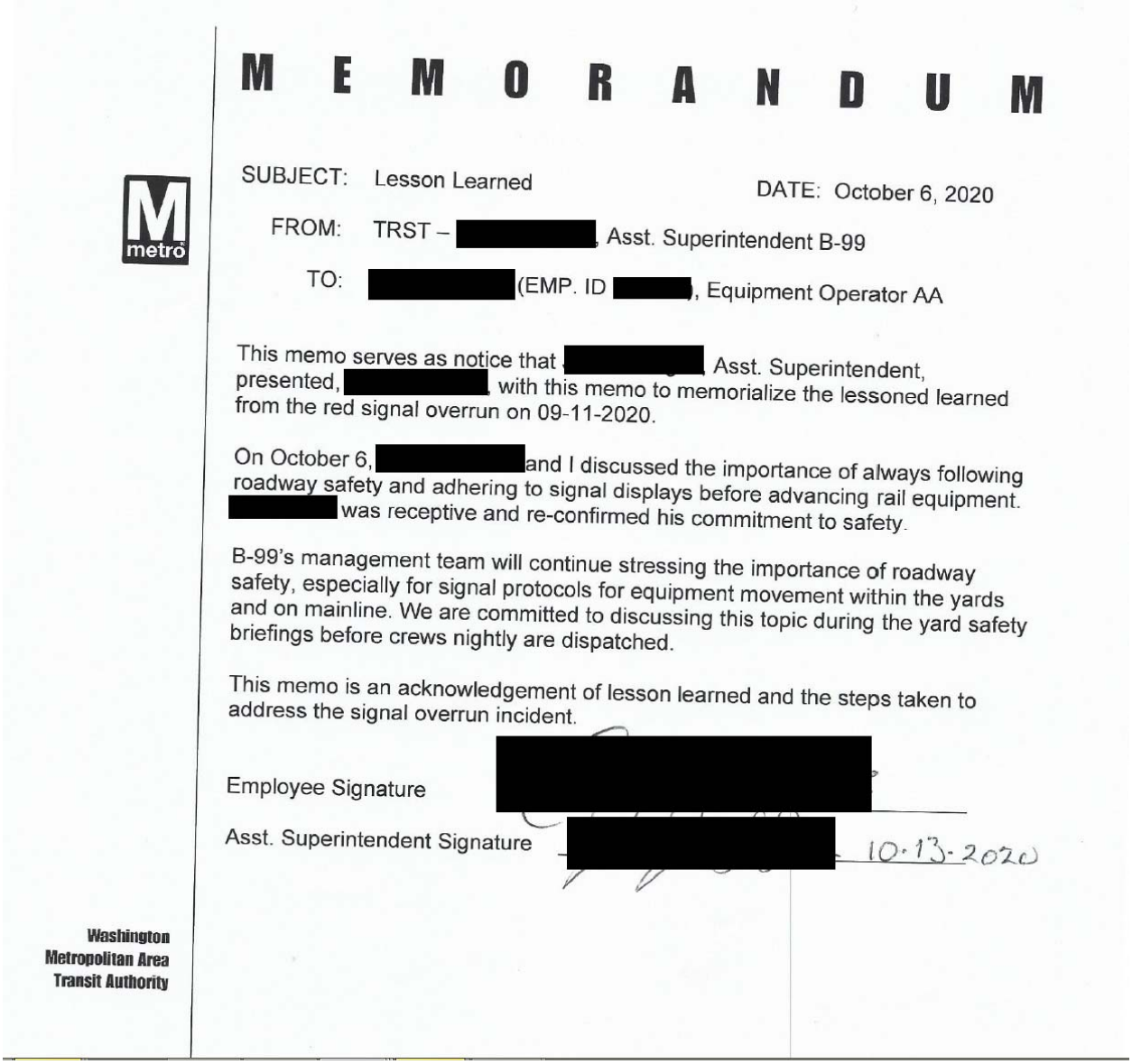
What happened…	*What should have happened…*
The Interlocking Operator gave permission to a Rail Vehicle Operator (Track Unit) to enter the yard before verifying a complete route and lunar signal was set.	Interlocking Operators must set and verify a complete route for the move to be made and monitor the move until it is completed.
The Operator of the track unit failed to verify a lunar signal and correct rail alignment before moving their rail vehicle.	Operators must verify their lunar signal and correct rail alignment before moving their trains/ rail vehicle

Attachment 1 – RTRA Lessons Learned Notice Number 2020-006 1 of 2

RECOMMENDATIONS

- ✓ Communications- Interlocking Operators instructions to move rail vehicles should only be made after setting and verifying a complete route for the move to be made. This is key to prevent incidents from occurring
- ✓ Rail vehicles shall not be operated past or closer than 10 feet in approach of an interlocking signal or lamp displaying a red aspect, a red flag, or a dark interlocking signal, unless authorized by ROCC or the Interlocking Operator and the move is consistent with customer safety as specified in Rule 3.1
- ✓ Emphasize that all operational personnel abide by Operating Rule 3.6 when operating rail vehicles.
- ✓ Ensure that all operational personnel comply with all Operating Rules, especially Cardinal Operating Rules.
- ✓ Always follow Rules/Procedures outlined in WMATA's MSRPH and Interlocking Operator Manual.

Attachment 2 – RTRA Lessons Learned Notice Number 2020-006 2 of 2



M E M O R A N D U M

SUBJECT: Lesson Learned

DATE: October 6, 2020

FROM: TRST – [redacted], Asst. Superintendent B-99

TO: [redacted] (EMP. ID [redacted]), Equipment Operator AA

This memo serves as notice that [redacted], Asst. Superintendent, presented, [redacted], with this memo to memorialize the lessoned learned from the red signal overrun on 09-11-2020.

On October 6, [redacted] and I discussed the importance of always following roadway safety and adhering to signal displays before advancing rail equipment. [redacted] was receptive and re-confirmed his commitment to safety.

B-99's management team will continue stressing the importance of roadway safety, especially for signal protocols for equipment movement within the yards and on mainline. We are committed to discussing this topic during the yard safety briefings before crews nightly are dispatched.

This memo is an acknowledgement of lesson learned and the steps taken to address the signal overrun incident.

Employee Signature [redacted]

Asst. Superintendent Signature [redacted] 10-13-2020

Washington Metropolitan Area Transit Authority

Attachment 1 – TRST Lessons Learned Notice 1 of 2

M E M O R A N D U M

SUBJECT: Lesson Learned DATE: October 6, 2020

FROM: TRST – [redacted], Asst. Superintendent B-99

TO: [redacted] ([redacted]), Track Repairer D

This memo serves as notice that [redacted], Asst. Superintendent, presented, [redacted], with this memo to memorialize the lessoned learned from the red signal overrun on 09-11-2020.

On October 6, [redacted] and I discussed the importance of always following roadway safety and adhering to signal displays before advancing rail equipment. [redacted] was receptive and re-confirmed his commitment to safety. I then presented [redacted] with the memo that detailed the results of the investigation from the Safety Dept. and corresponding disciplinary actions.

B-99's management team will continue stressing the importance of roadway safety, especially for signal protocols for equipment movement within the yards and on mainline. We are committed to discussing this topic during the yard safety briefings before crews nightly are dispatched.

This memo is an acknowledgement of lesson learned and the steps taken to address the signal overrun incident.

Employee Signature _____

Asst. Superintendent Signature _____

Washington Metropolitan Area Transit Authority

Attachment 1 – TRST Lessons Learned Notice 2 of 2