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WMSC Commissioner Brief: W-0217 – Red Signal Overrun, Improper Movement – Smithsonian Station – December 6, 2022

Prepared for Washington Metrorail Safety Commission meeting on May 16, 2023

Safety event summary:

An Automatic Train Control Maintenance crew was conducting an interlocking inspection with local control of the Smithsonian Interlocking and associated signals. The Train Operator passed a red signal without the required authorization from the Rail Operations Control Center and continued on. Prior to the train berthing at the station then being moved past the red signal, the Radio Rail Traffic Controller had provided the Train Operator with a permissive block to the end of the Smithsonian Station platform and informed the Train Operator that the signal was red. The Train Operator, who Metrorail had placed into passenger service despite Metrorail not providing the Train Operator with the opportunity to complete Metrorail's required safety training program, continued to Federal Triangle Station, and then incorrectly reported that they were at Metro Center Station. The WMSC's subsequent investigation into the Train Operator's training records led to the WMSC identifying additional Train Operators who Metrorail had placed into passenger service despite not meeting Metrorail's training and certification requirements.

December 6 event

The Train Operator moved the train from the Smithsonian Station platform toward the red signal at approximately 6:52:20 p.m. The Radio Rail Traffic Controller requested at 6:52:56 p.m. and again at 6:53:30 p.m. that the Automatic Train Control Maintenance crew set a lunar (proceed) signal on both tracks. Based on the train speed, the train passed the red signal just after the Radio Rail Traffic Controller's first request to the ATC crew to set a lunar signal.

The Radio Rail Traffic Controller asked the Train Operator if the signal was lunar when they passed it. The Train Operator said it was red. The Train Operator and the Watchman/Lookout stated after the event that the Watchman/Lookout had given a "proceed" hand signal. Metrorail rules provide for this hand signal to be used to confirm that workers are prepared for a train to pass them. It is not a hand signal that overrides a red signal. The Watchman/Lookout understood that, in this case, the proceed hand signal should not have been provided if the signal was lunar. The Watchman/Lookout stated in an interview that they believed the signal had been lunar. Metrorail data show the signal was red. The Watchman/Lookout had acted in that role at times for approximately 2 months. They had flagged other trains through during this interlocking inspection.

The work crew did not report this near miss and red signal overrun. The work crew later stated that they had all reached a place of safety when the train passed, but were surprised by the train suddenly moving past the red signal without a route being set. Upon inspection, they identified that the switches had been aligned for this move and there was therefore no damage to the interlocking.

The Radio Rail Traffic Controller had made a blanket (not directed to a specific operator or requiring repeat back) announcement approximately 51 minutes prior to the train passing the red signal without permission, stating that personnel were working on the roadway.

Initially, the Radio Rail Traffic Controller instructed the Train Operator to continue after the red signal overrun, with passengers on board, to Metro Center Station, despite Metrorail policy requiring the train to be stopped and offloaded for inspection of any damage, and for this Train Operator to be replaced by a Rail Supervisor to assure the safety of any further movement and to provide an opportunity for timely post-event toxicology testing. The Train Operator acknowledged, but did not move the train. 1.5 minutes later, the Rail Traffic Controller instructed the Train Operator to offload the train at Federal Triangle Station. When the Controller followed up, the Train Operator responded (incorrectly) that they were at Metro Center Station and that the train was offloaded. The Controller said the train was showing as being at Federal Triangle, but the Train Operator repeated (incorrectly) that they were holding at Metro Center Station, Track 2. Metro Center Station is a transfer station with platforms on two levels, including the Blue, Orange, and Silver Line platform on the lower level. Federal Triangle is a single-level platform station.

After riders on the train were offloaded and the Train Operator was removed from service at Federal Triangle Station, the Radio Rail Traffic Controller directed the Rail Supervisor who had taken over train operation to move the train to Metro Center Station despite the ongoing investigation. Rail Operations Control Center management identified this improper movement and directed the Rail Supervisor to hold the train at Metro Center for the investigation.

Train Operator Training and Certification

Recordings and other data from this event along with the investigative interview demonstrate that the Train Operator did not understand the rules and procedures regarding red signals, and, as noted above regarding a lack of understanding of where they were in the system, was not effectively familiarized with the Metrorail territory to understand instructions from the Rail Operations Control Center. The Train Operator stated in an interview that they believed the block to the end of the platform at Smithsonian Station meant that they could proceed to the following station, but it did not. This type of block for a train in or approaching a station is required for the train operator to move the train to the end of the station platform to properly service the station if there are zero speed commands within the platform limits, which in this case the Rail Traffic Controller may have expected could occur due to the red signal ahead, leading to the Controller proactively providing the permissive block.

The WMSC's further investigation demonstrated that Metrorail had placed numerous operators into passenger service despite not providing those operators with the opportunity to complete Metrorail's train operator safety training program that Metrorail has developed to provide a level of assurance that train operators have the required information, level of understanding, and detailed experience necessary to ensure that they are prepared to successfully and safely operate the equipment in compliance with all procedures and checklists in both ideal conditions and emergencies or unusual conditions. Metrorail's actions to place operators into service who had not completed its training requirements are contrary to Metrorail's Public Transportation Agency Safety Plan and other written safety commitments. The WMSC identified that Metrorail had reduced hands on experience with trains in yards and had stopped providing any meaningful mainline "stick time", the time operating trains with a trained instructor, for train operator trainees during yard practical training, despite Metrorail's documented requirements to demonstrate the ability to successfully and safely operate a train with an instructor prior to progression to on-the-job training and regular passenger service operation. This specific Train Operator had only 9 minutes of mainline operation with a training instructor. Metrorail requires eight hours of such non-passenger operation with a training instructor.

Metrorail initially represented to the WMSC that its safety training requirements had changed, and the WMSC then provided Metrorail with an opportunity to provide documentation that such a change had occurred. Metrorail later acknowledged that its safety training requirements had not changed.

Training records indicate that the operator involved in this December 6, 2022 event had not met Metrorail's requirement to "demonstrate the ability to successfully and safely operate the equipment" during the training process. This included failures related to safety stops and switch clamping, numerous areas where they did not get training experience in a given area, and the only nine minutes of stick time listed immediately below the specification on a form that each student is required to have 8 hours during yard rotations. The records also showed that despite this being the sixth week of yard practical training, this was the first and only time the individual operated mainline. The records from the investigation of this event on the individual's first day of operation as a "certified" operator demonstrated improper communication, yet the records from the operator's certification that recorded a top-level grade of QL1 on communication, which did not match the operator's demonstrated competency when operating the train in passenger service on the day of this event. Metrorail certified the operator on November 29, 2022.

The WMSC identified and communicated these training and certification deficiencies to Metrorail during this investigation. This included follow ups providing the specific operational safety concerns regarding Metrorail not complying with its written train operator training and certification processes that are designed to provide for the safety of riders, workers, and others. Those Metrorail actions directly contradict, among other things, Metrorail's PTASP section 5.1.1 that states the training and certification policies for train operators will be carried out, including actual train operation with an instructor.

These new safety issues were in addition to other safety issues regarding uncertified train operators that the WMSC identified and communicated to Metrorail in 2021 and 2022 that Metrorail had begun to address.

Interim mitigations and ongoing reviews

WMSC investigators communicated this safety training issue to Metrorail when we identified it in December 2022.

The WMSC also reviewed information related to other safety events and conducted additional oversight activities, and communicated further with Metrorail in January 2023.

Metrorail was not following its documented safety training requirements.

Instead, Metrorail confirmed in January 2023 that it had been bypassing its safety training processes and assigning train operators directly to operate trains in passenger service with another train operator as a mentor. Metrorail's documented requirements state that this may occur only after the 8 hours of non-passenger operation with a training instructor.

Metrorail also confirmed in documents and information provided after the WMSC identified this safety issue that this has continued to be its safety requirement, and that Metrorail has not made any changes to this requirement.

Metrorail identified 54 train operators who were placed into passenger service without meeting Metrorail's train operator training requirements from January 2022 to January 2023. Metrorail also stated it had been preparing to progress 9 other train operator trainees to passenger service without meeting those requirements.

A train operator involved in the December 31, 2022 station overrun of Dunn Loring Station, who had been certified for the first time on October 17, 2022, stated that they did not operate a train on mainline in yard practical training. The training deficiencies are not the only cause of these events, however, they are demonstrations of the impact on the overall safety of the system.

Despite safety commitments made by Metrorail in spring 2022 after the WMSC identified that Metrorail was using uncertified train operators, and despite commitments in Metrorail's corrective action plan to address Finding 5 of the Rail Operations Audit, Metrorail was not consistently making trains available for the necessary training.

The WMSC communicated the safety concerns to Metrorail.

The investigation into the December 6, 2022 red signal overrun also demonstrates another example of Metrorail's insufficient physical characteristics and territory familiarization activities for train operators and other personnel that has created the risk of serious injury or death, as the WMSC identified in the Rail Operations Audit issued in 2022 and required Metrorail to develop and implement a corrective action plan to address. The train operator did not know where they were in the system. This is in addition to events such as W-0128 on July 16, 2021 when a train operator did not know Franconia-Springfield Station was the end of the line, leading to improper movement into a tail track, and investigation W-0093 involving a train operator who improperly moved into a single-tracking area, creating the risk of a head-on collision between passenger trains.

Similar issues regarding system familiarization have contributed to fatal accidents elsewhere, such as the fatal Amtrak Train 501 derailment in DuPont, Washington on December 18, 2017. The NTSB found that the probable cause of the derailment included inadequate training for the engineer on the territory (RAR-19/01). Metrorail must act with urgency to address this known hazard.

It is imperative to the safety of the public and Metrorail workers that Metrorail provide all necessary safety training and ensure that operators and other personnel are properly certified in accordance with Metrorail safety procedures prior to putting those personnel in charge of the safety of passengers, workers and first responders.

The WMSC has reviewed additional Metrorail training and certification records since this event.

These reviews have identified concerns related to certification activities, including concerns that some individuals who failed when given the opportunity to demonstrate the ability to successfully and safely carry out safety procedures, or who were not even required to demonstrate the ability to carry out the required safety procedures, may have been certified, contrary to Metrorail procedure. The WMSC is continuing to gather and review information on this issue.

Other identified safety issues

During the response to this event, there were several attempts by the Radio Rail Traffic Controller to contact the Roadway Worker In-Charge with no response.

Based on investigative interviews, ATC crew members were communicating among themselves on a "talk around" radio channel, rather than a Metrorail operational radio channel that is used by the Rail Operations Control Center and train operators (which leads to heavy communications traffic on that operational channel). The ATC crew reported regularly using a "talk around" channel for the Roadway Worker In-Charge to direct another member of the crew in the Train

Control Room to set a lunar (proceed) signal once the work crew was clear of the roadway. Metrorail does not record "talk around" radio communications, so the use of such a channel reduces the opportunity for continuous safety improvement. The use of these "talk around" channels also means the Roadway Worker In-Charge (RWIC) may have their radio tuned to a channel other than the one being used to communicate operational, safety, and emergency information to and from train operators, other on-track personnel, and the Rail Operations Control Center.

The crew began its interlocking inspection at approximately 4:52 p.m. and was continuing this work at the time of this event.

Probable Cause:

The probable cause of this event was Metrorail's failure to meet its train operator training and other safety promotion requirements, safety assurance requirements, and safety risk management commitments of its Public Transportation Agency Safety Plan.

Corrective Actions:

As interim mitigations, Metrorail reminded train operators of red signal and station overrun rules and prevention measures and reminded Rail Operations Control Center personnel about investigation procedure requirements to hold equipment in place.

Metrorail developed a lessons learned communication for ATC Maintenance personnel regarding the need for effective communication among work crew members and proper Exclusive Track Occupancy – Local Signal Control procedures.

Metrorail is adjusting procedures for Exclusive Track Occupancy – Local Signal Control.

Metrorail provided trainee Train Operators who had not completed Metrorail's training requirements yet were still placed into passenger service with operational instruction from training instructors.

Examples of other related open CAPs

- C-0181: Elements of Metrorail have a culture that accepts noncompliance with written operational rules, instructions, and manuals. (Expected completion date October 2024)
- C-0182: Metrorail does not effectively identify, track, communicate, and address operational hazards as required by its Agency Safety Plan. (Expected completion date August 2024)
- C-0183: 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. (Original expected completion date October 2024)
- C-0188: Metrorail does not have documented criteria to determine student proficiency in practical demonstrations of safety critical operational tasks. (Expected completion date May 2023)
- C-0189: Metrorail does not ensure personnel serving as on-the-job training instructors, including those personnel described as line platform instructors (LPIs), are effective and have specific training and direction on what to teach and how to assess their assigned students. (Expected completion date July 2025)

- C-0191: Some RTRA QA/QC audits contain conclusions that do not match actual conditions. RTRA''s QA/QC procedures do not include complete work instructions for all audits or specific instructions for removing personnel from service. (Expected completion date August 2023)

WMSC staff observations:

The WMSC acted quickly to communicate to Metrorail that Metrorail was not meeting its safety training requirements. After initially stating those requirements had changed, Metrorail later acknowledged that the requirements had not changed, and provided the training and instruction to more than 50 operators who had not received it.

For clarity, this lack of training is based on Metrorail's current requirements, and does not account for the open corrective action plans (CAPs) that document Metrorail's commitments to address WMSC findings including Rail Operations Audit (issued April 2022) Finding 3 by further improving training and training requirements to provide for the safety of riders, workers and first responders.

As noted above, the WMSC has continued to investigate Metrorail's training and certification practices in the months since this event occurred.

These reviews have identified concerns related to certification activities. The WMSC is continuing to gather and review information on this issue.

The interview with the Train Operator in this event, and interactions with other Metrorail personnel, demonstrate that trainees are not getting practice or experience operating in situations such as passing red signals with permission or other movements or communication that, while not normal operating conditions, occur on a somewhat regular basis. It is also important that trainees get experience in even less common situations so that they are prepared to properly respond in the event of an emergency. The importance of this training and experience at Metrorail has been identified in other investigations, such as National Transportation Safety Board investigation RAR 16/01.

Metrorail could consider revising policies and procedures, including Roadway Worker Protection procedures such as the Exclusive Track Occupancy procedure updated in early November 2022, to specify how and when "talk around" channels are or are not acceptable for radio communications. Metrorail could also consider methods such as using other available radio channels to provide for shared situational awareness to improve safety and to provide for the recording of all communications to ensure the opportunity for continuous safety improvement.

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

FINAL REPORT OF INVESTIGATION A&I E22793

Date of Event:	December 6, 2022
Type of Event:	Red Signal Overrun
Incident Time:	18:52 hours
Location:	Smithsonian Station, track 2 – Signal D02-08
Time and How received by SAFE:	19:03 hours, Mission Assurance Coordinator (MAC)
WMSC Notification Time:	19:21 hours
Responding Safety Officers:	Office of Safety Investigations (OSI)
Rail Vehicle:	Train ID 607 L3163-3162x3101-3100x3034-3035T
Injuries:	None
Damage:	None
SMS I/A Incident Number:	20221206#104683MX

Smithsonian Station – Red Signal Overrun

December 6, 2022

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Abbreviations and Acronyms

AIMS	Advanced Information Management System
ARS	Audio Recording System
ATCM	Office of Automatic Train Control Maintenance
CAP	Corrective Action Plan
CCTV	Closed-Circuit Television
CMOR	Office of the Chief Mechanical
COMR	Office of Radio Communications
ETO-LSC	Exclusive Track Occupancy – Local Signal Control
IIT	Incident Investigation Team
MSRPH	Metrorail Safety Rules and Procedures Handbook
NOAA	National Oceanic and Atmospheric Administration
RTC	Rail Traffic Controller
RTRA	Office of Rail Transportation
ROCC	Rail Operations Control Center
RWIC	Roadway Worker in Charge
SAFE	Department of Safety
SMS	Safety Measurement System
TCR	Train Control Room
VMS	Vehicle Monitoring System
WMATA	Washington Metropolitan Area Transit Authority
WMSC	Washington Metrorail Safety Commission

Executive Summary

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

On Tuesday, December 6, 2022, at 18:52 hours, a work crew from the Office of Automatic Train Control Maintenance (ATCM) was conducting an interlocking inspection outside Smithsonian Station on Track 2 under Exclusive Track Occupancy – Local Signal Control (ETO-LSC) Protection. While performing the inspection, the Roadway Worker in Charge (RWIC) received a request from the Rail Operations Control Center (ROCC) Radio Rail Traffic Controller (RTC) to set a lunar signal for Train ID 607. ATCM personnel cleared the roadway upon observing Train ID 607 (L3163-3162x3101-3100x3034-3035T) from Smithsonian Station and prepared to set a lunar signal to allow the train to pass. After departing Smithsonian Station, Train ID 607 passed D02-08 signal, with a red aspect, before ATCM was able to change the signal to lunar. Train ID 607 continued through the interlocking, stopping at Federal Triangle Station, before being instructed to hold their position.

Prior to the event, at 18:51 hours, the Radio RTC gave Train ID 607 a permissive block to the 8-car marker at Smithsonian Station and then advised the Train Operator that D02-08 signal was red. The Train Operator acknowledged the instruction using 100% repeat back.

At 18:52 hours, the Radio RTC requested that the ATCM Roadway Worker in Charge (RWIC) set a lunar signal on tracks 1 & 2. The Radio RTC made a second request at 18:53 hours. ATCM reported that all trains had lunar signals about the same time as the Red Signal Alarm was received in the Advanced Information Management System (AIMS). The Radio RTC advised ATCM that a lunar was not showing on track 1 and began holding trains at the platforms.

At 18:54 hours, the Radio RTC inquired if Train ID 607 observed D02-08 signal as lunar when they passed it. The Train Operator stated that the signal was red when they passed. Following the event, during interviews and in their written statement, the Train Operator reported that they were given a hand signal to proceed passed Signal D02-08. The ATCM Watchman also stated that they gave a proceed signal to the Train Operator during their interview. All personnel were cleared to a place of safety at the time the train passed signal D02-08. There was no Near Miss event.

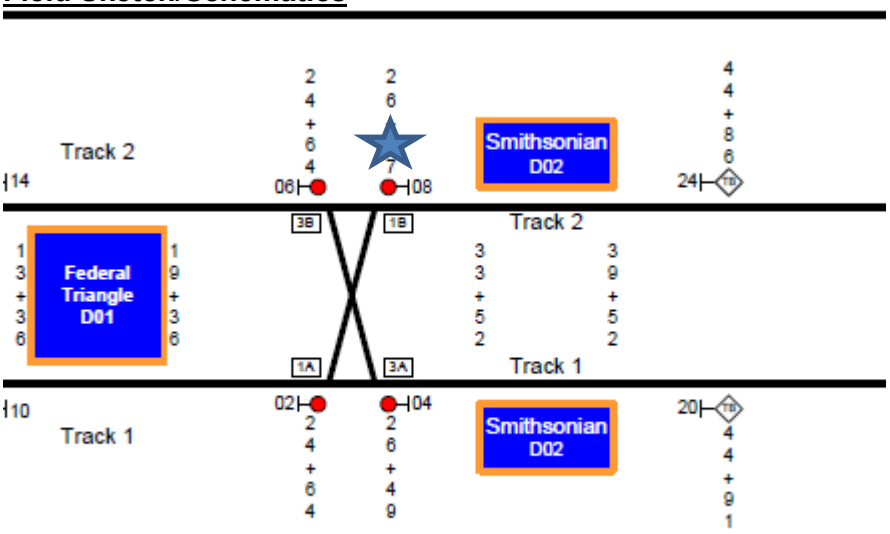
The Office of Rail Transportation (RTRA) removed the Train Operator from service for post-incident testing. The Event Scene Release was granted by the Washington Metrorail Safety Commission (WMSC) at 19:21 hours.

The probable cause of the Red Signal Overrun event on December 6, 2022, was a combination of human factors errors that resulted in the Train Operator believing they had permission to pass a red signal. Contributing factors to the event included a misapplication of instructions by Train Operator and ineffective RWP rules related to Exclusive Track Occupancy – Local Signal Control.

Incident Site

Smithsonian Station, Track 2 – Signal D02-08

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:

- Site Assessment through field response, video, and documents review.
- Formal Interviews – SAFE interviewed four individuals as part of this investigation. Interviews included persons present at, during, and after the incident, those directly involved in the response process, and representatives from the Washington Metrorail Safety Commission (WMSC). SAFE interviewed the following individuals:
    - Train Operator
    - ATCM RWIC
    - ATCM Watchman
    - Buttons RTC
- Documentation Review – Collection of relevant work history information and process documentation contained in WMATA systems of record. These records include:
    - Metrorail Safety Rules and Procedures Handbook (MSRPH)
    - National Oceanic and Atmospheric Administration (NOAA)
    - Employee Training Procedures & Records
    - Employee 30-Day work history review

- System Data Recording Review – Collection of information contained in WMATA Data Recording Systems. This data includes:
    - Audio Recording System (ARS) playback, including OPS 2 Radio
    - Advanced Information Management System (AIMS)

Investigation

On Tuesday, December 6, 2022, at 18:52 hours, an ATCM work crew was conducting an interlocking inspection near Smithsonian Station on Track 2, under ETO-LSC protection. The work crew began their work with permission of the ROCC at 16:52 hours and flagged multiple trains through the area without incident prior to this event. There was a Watchman positioned at the entering end of the interlocking, approximately 50 feet away. The RWIC ordered the crew to clear the roadway after observing Train ID 607 (L3163-3162x3101-3100x3034-3035T) at Smithsonian Station to prepare a lunar signal to allow the train to pass. However, Train ID 607 passed signal D02-08 with a red aspect before ATCM could set a lunar signal.

The Audio Recording System (ARS) playback revealed that, at 18:51 hours, the ROCC Radio RTC gave Train ID 607 a permissive block to the 8-car marker at Smithsonian Station and advised the Train Operator that D02-08 signal was red. The Train Operator acknowledged the instruction using 100% repeat back. To allow trains to pass throught he work zone, the RWIC reported that they would clear personnel from the roadway and then communicate by radio to another crew member in the Train Control Room (TCR), who would then set a lunar signal. The work crew was communicating on a Talkaround channel, which is not recorded because it transmits from radio to radio only.

At 18:52:20 hours, Train ID 607 cleared Smithsonian Station, in the direction of the D02-08 signal without communicating with the Radio RTC. At 18:52:56 hours, the Radio RTC requested that the RWIC set a lunar signal on tracks 1 & 2. The Track Access Guide indicates that the distance from the end of the platform at Smithsonian Station (D2 34+00) to the interlocking (D2 28+00) is 600 feet. Analysis of the Vehicle Monitoring System (VMS) data by the Office of the Chief Mechanical Officer (CMOR) indicated that the train reached speeds of up to 10 miles per hour in approach to the interlocking. At a constant speed of 10 mph, the train would take 41 seconds to reach the interlocking from the end of the platform.

ROCS SPOTS REPORT

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

Current date/time: Mon Dec 19 09:27:12 2022

Select Platform: D02-2 and/or Select ID: Leave blank to remove criteria

Select Date: Dec 6 2022 Select Times (0-24HRS): From 18:00 To 20:00

Generate Report

ID	Platform	length	dcode	Right door open	Right door close	dwell	Left door open	Left door close	dwell	Head Arrived	Tail cleared	Headway (door open to door open) door open to door open
460	D02-2	6	21	18:01:26	18:01:55	29				18:00:52	18:03:19	-
604	D02-2	6	68	18:04:24	18:04:47	23				18:03:52	18:05:12	2:58
403	D02-2	8	16	18:07:14	18:07:32	18				18:06:39	18:08:21	2:50
907	D02-2	8	23	18:10:40	18:11:10	30				18:10:04	18:11:34	3:26
451	D02-2	0	21							18:13:15	18:15:16	-
605	D02-2	6	68	18:16:40	18:17:05	25				18:15:49	18:17:31	6:00
403	D02-2	6	16	18:22:22	18:22:40	18				18:21:52	18:23:11	5:42
908	D02-2	8	23	18:26:08	18:27:15	67				18:25:26	18:27:44	3:46
452	D02-2	6	21	18:30:35	18:32:09	94				18:29:59	18:32:30	4:27
606	D02-2	0	68							18:32:54	18:34:58	-
404	D02-2	6	16	18:39:17	18:40:41	84				18:38:49	18:41:06	8:42
909	D02-2	8	23	18:45:48	18:46:14	26				18:45:13	18:46:42	6:31
453	D02-2	6	21	18:49:07	18:49:46	39				18:48:20	18:50:12	3:19
607	D02-2	6	68	18:52:17	18:52:38	21				18:51:44	18:53:20	3:10
405	D02-2	6	16	18:54:28	19:48:08	3220				18:53:53	20:04:32	2:11

Table 1 – Spots Report depicting Train ID 607 located at Smithsonian Station.

The Radio RTC made a second request for a lunar signal at 18:53:30 hours. Five seconds later, the RWIC responded that all trains had lunar signals. The Radio RTC then advised the RWIC that a lunar was not showing on track 1 and began holding trains at the platforms. Train ID 607 then passed D02-08 signal red without stopping per the VMS data.

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18:53:26.161  12/06/22   Glenmont            TRAIN 111 TURNBACK ON TRACK B11-B2-719
18:53:26.161  12/06/22   Glenmont            TRAIN 111 TWC DESTINATION CODE 12 ACCEPTED FROM FIELD
18:53:32.794  12/06/22   Pentagon City       C08 Interlocking Control CURRENT STATE = Central
18:54:02.138  12/06/22   Smithsonian         TRAIN 607  OVERRAN SIGNAL D02-8 WHICH WAS RED SINCE 1
18:54:02.138  12/06/22   Pentagon City       C08 Interlocking Control CURRENT STATE = Central
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Figure 1 - AIMS Event Log indicating Red Signal Alarm at D02-08

At 18:54 hours, the Radio RTC inquired if Train ID 607 observed D02-08 signal was lunar when they passed it. The Train Operator confirmed the signal was red when they passed. Following the event, during interviews and in their written statement, the Train Operator reported that they were given a hand signal to proceed through Signal D02-08 and the ATCM Watchman confirmed that they gave a proceed signal to the Train Operator during their interview. All personnel were cleared to a place of safety at the time the train passed signal D02-08. No Near Miss event was reported.

After arriving and holding at Federal Triangle Station at 18:54 hours, the Train Operator was relieved of duty by a responding Rail Supervisor. While the event was under investigation, the Radio RTC instructed the Rail Supervisor to continue in non-revenue service. This resulted in the Rail Supervisor proceeding to Metro Center Station. Once at Metro Center Station, ROCC management observed that the train was moved and held it in place until investigative activities were completed. The Radio RTC was subsequently removed from service for this action.

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

METRORAIL SAFETY RULES AND PROCEDURES HANDBOOK

D Line Track 2					
D Line Track 2	Station	Station	Chain Marker	Chain Marker	Notes
Metro Center Station	D-01	C-01	C003+00	D003+00	
Clear View	D-01	C-01	003+00	013+00	
Federal Triangle Station	D-01	D-01	013+00	019+00	
Restricted View: Curve	D-02	D-01	019+00	024+00	
Restricted View: Interlocking	D-02	D-01	024+00	028+00	
Restricted View: Curve	D-02	D-01	028+00	034+00	
Smithsonian Station	D-02	D-02	034+00	040+00	
Restricted View: Curve	D-03	D-02	040+00	060+00	

Table 2 - Track Access Guide showing chain markers of event area.

Chronological Event Timeline

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

Time	Description
16:52:23 hours	ATCM: Entered the roadway to complete interlocking inspection near Smithsonian Station. [Radio]
18:02:25 hours	Radio RTC: made a blanket announcement that ATC personnel are working in the interlocking at Smithsonian Station. [Radio]
18:51:51 hours	Radio RTC: gave Train ID 607 a Permissive Block to the 8-car maker at Smithsonian Station, then advised the Train Operator that D02-08 was red. The Train Operator acknowledged, with 100% repeat back. [Radio]
18:52:56 hours	Radio RTC: requested the ATCM RWIC set lunar signals on tracks 1 & 2. The RWIC acknowledged. [Radio]
18:53:20 hours	Train ID 607 cleared Smithsonian Station. [Spots]
18:53:30 hours	Radio RTC: requested ATCM RWIC to set lunar signals on tracks 1 & 2 and second time. [Radio]
18:53:35 hours	The RWIC acknowledged the request and advised that trains had lunar signals.
18:53:44 hours	Radio RTC: advised the RWIC that a lunar was not showing on track one and began holding trains. Train ID 410 on track one at Metro Center was instructed to hold on the platform. The Train Operator acknowledged. [Radio]
18:54:24 hours	Train ID 458 Train Operator: advised that they had a lunar with speed commands. [Radio]
18:54:37 hours	Radio RTC: requested a response from Train ID 607, located at Federal Triangle. [Radio]
18:54:54 hours	Radio RTC: inquired if Train ID 607 observed a lunar at D02-08 signal. Train Operator: responded, “negative.” The Radio RTC instructed Train ID 607 to hold on the platform. [Radio]
18:57:05 hours	Radio RTC: instructed a Rail Supervisor to respond to Federal Triangle Station. [Radio]
18:58:01 hours	Radio RTC: instructed Train ID 607 to continue to Metro Center Station. The Train Operator acknowledged. [Radio]*

Time	Description
	**Note: The Train did not depart Federal Triangle Station until 19:07 hours*
18:58:44 hours	Radio RTC: instructed a Rail Supervisor to exit the train at Metro Center Station and stand by track 2. The Rail Supervisor acknowledged. [Radio]
18:59:36 hours	Radio RTC: instructed Train ID 607 to offload the train at Federal Triangle Station. The Radio RTC instructed a Rail Supervisor to exit the train at Federal Triangle Station. [Radio]
19:00:02 hours	Radio RTC: instructed the RWIC to set a lunar on track 1 and clear the roadway. The RWIC acknowledged. [Radio]
19:00:51 hours	Radio RTC: inquired if Train ID 607 was offloaded. Train Operator: responded that they were located at Metro Center Station and the train was offloaded. Radio RTC: advised that the train was showing located at Federal Triangle. [Radio]
19:01:17 hours	Train Operator: repeated that the train was holding at Metro Center Station, track 2. [Radio]
19:01:25 hours	The RWIC advised that they needed an additional 15 minutes to throw the switches. The Radio RTC acknowledged. [Radio]
19:01:38 hours	Train Operator: reported they were at Federal Triangle Station. Radio RTC: instructed the Train Operator to verify that the train was clear of customers. [Radio]
19:03:20 hours	Radio RTC: announced delays between Federal Triangle and Smithsonian. [Radio]
19:05:57 hours	Train Operator: confirmed that the train was clear of customers. [Radio]
19:06:05 hours	Rail Supervisor: confirmed they were on scene at the lead car. Radio RTC: instructed the Rail Supervisor to take over operations of the train and continue non-revenue. Rail Supervisor: acknowledged. [Radio]
19:07:16 hours	Radio RTC: attempted to contact the RWIC. No response. [Radio]
19:07:35 hours	Radio RTC: attempted to contact the RWIC. No response. [Radio]
19:08:56 hours	Radio RTC: attempted to contact the RWIC. No response [Radio]
19:10:00 hours	Radio RTC: advised the RWIC that trains needed to single track utilizing track 1. The RWIC acknowledged. [Radio]
19:10:58 hours	Radio RTC: announced all trains on Ops 2 to hold at their locations. [Radio]
19:16:53 hours	The RWIC advised that the interlocking was set for single tracking. [Radio]
19:17:15 hours	The RWIC requested a train pick up at D02-04 signal. [Radio]
19:18:19 hours	Radio RTC: announced all trains on Ops 2 to hold on the platform. [Radio]
19:22:52 hours	The RWIC confirmed with the Radio RTC that switched 1B and 3B are set for a crossover move. [Radio]
19:35:51 hours	Radio RTC: advised the RWIC they have permission to take pictures of D02-1B and 3B. [Radio]
19:37:39 hours	Radio RTC: announced that the interlocking at Smithsonian Station was out of service and trains would be turning back. [Radio]
19:50:58 hours	Safety Investigator arrived on the scene at Metro Center with Train ID 607 [Radio]
19:53:15 hours	Radio RTC: advised the RWIC that they had permission to walk to the platform under foul time. The RWIC acknowledged. [Radio]
19:56:59 hours	Safety Investigator: released the hold on Train ID 607.

Time	Description
	The Radio RTC acknowledged. [Radio]
19:57:36 hours	The RWIC confirmed they were clear of the roadway. The Radio RTC acknowledged. [Radio]
20:00:09 hours	Radio RTC: announced to all trains that trains will single track by way of track 1 from Smithsonian Station to McPherson Square Station. [Radio]
20:01:47 hours	Radio RTC: announced to all trains that signal tracking was canceled between Smithsonian Station and McPherson Square Station [Radio]
20:07:27 hours	Radio RTC: announced to all trains are servicing stations under normal service. [Radio]

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

Automated Information Management System (AIMS)

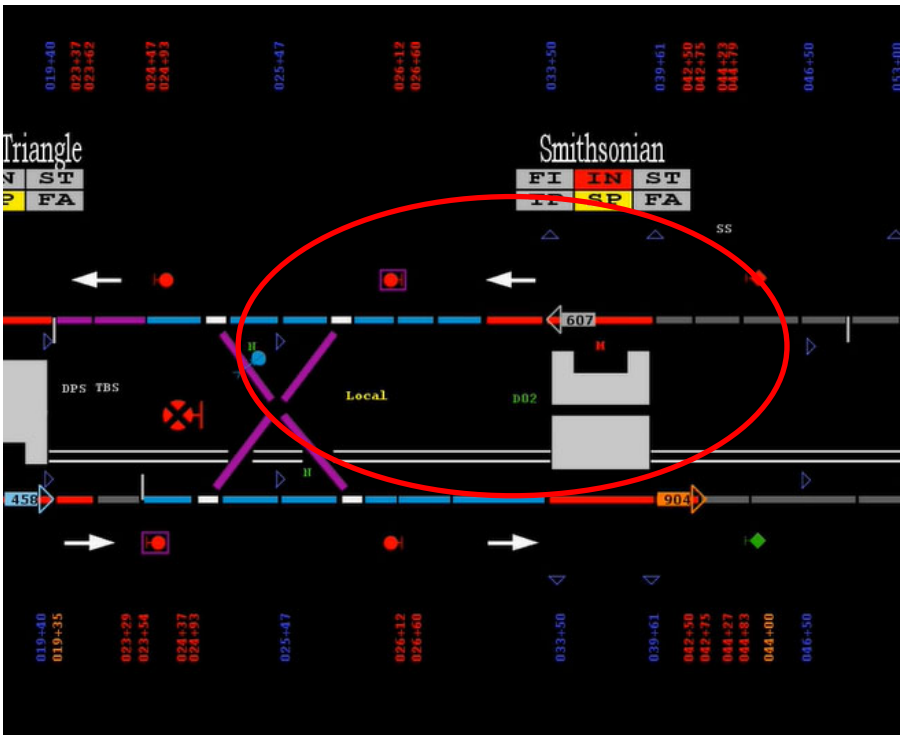


Figure 2 – Train ID 607 on the platform at Smithsonian and D02-08 signal is red.

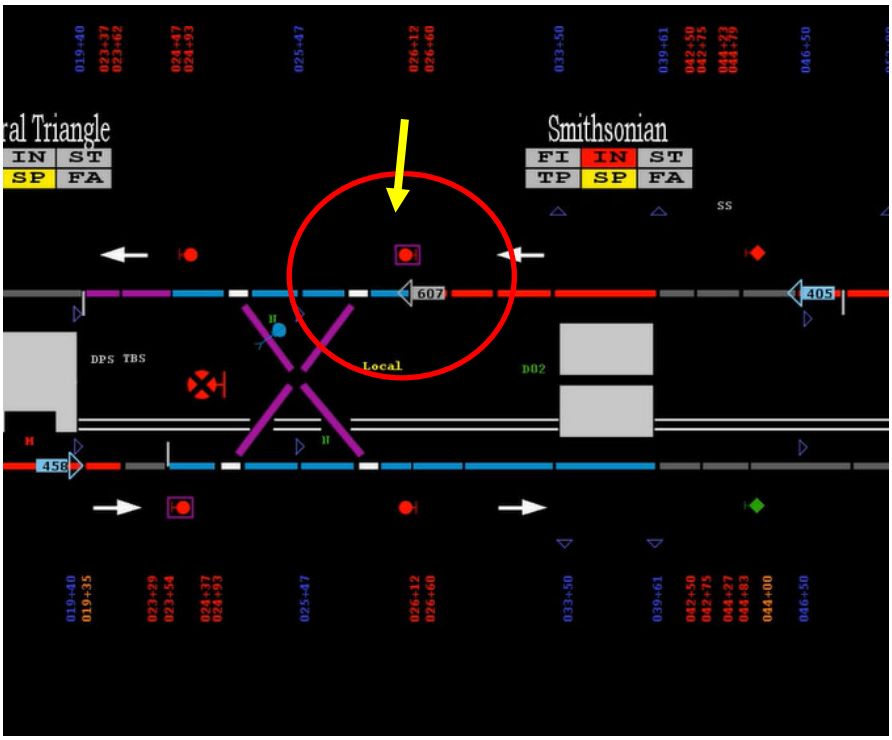


Figure 3 – Train ID 607 passing D02-08 signal red

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

Adopted from CMOR IIT report:

CMOR-IIT analyzed the data from the cars involved in this incident. "Based on the available data, there was no mechanical failure that could have contributed to the reported incident. Train ID 607 departed Smithsonian Station track 2 in the inbound direction and overran Signal D2-08 (red at the time, based on AIM Playback) at speeds not greater than 10 mph. There was no attempt to slow/stop the train before, during or after overrunning D2-08. Train ID 607 continued to Federal Triangle at speeds no greater than 19 mph. Train ID 607 then stopped at service Federal Triangle. See timeline of events and data analysis below."

Note: The IIT team was unable to verify the presence of speed commands throughout the event due to a lack of relevant data within the VMS.

Sequence of Events: *Note: The time used in this report is the VMS time and is off by about 4-5 minutes compared to AIM.*

TIME	SEQUENCE OF EVENTS	MC Position	Train Speed (mph)
18:48:20	Master Controller was placed on P5. Train 607 started traveling towards Federal Triangle.	P5	1
18:49:08	Master Controller was placed on P1. Train 607 was traveling at 10 mph and overran signal D02-08	P1	10
18:49:09	Master Controller was placed on Coast. Train 607 was traveling at 10 mph and continued towards Federal Triangle Station after it overran D02-08	Coast	10

18:50:11 hours	Train 607 stopped at and serviced Federal Triangle Station.	B3	0

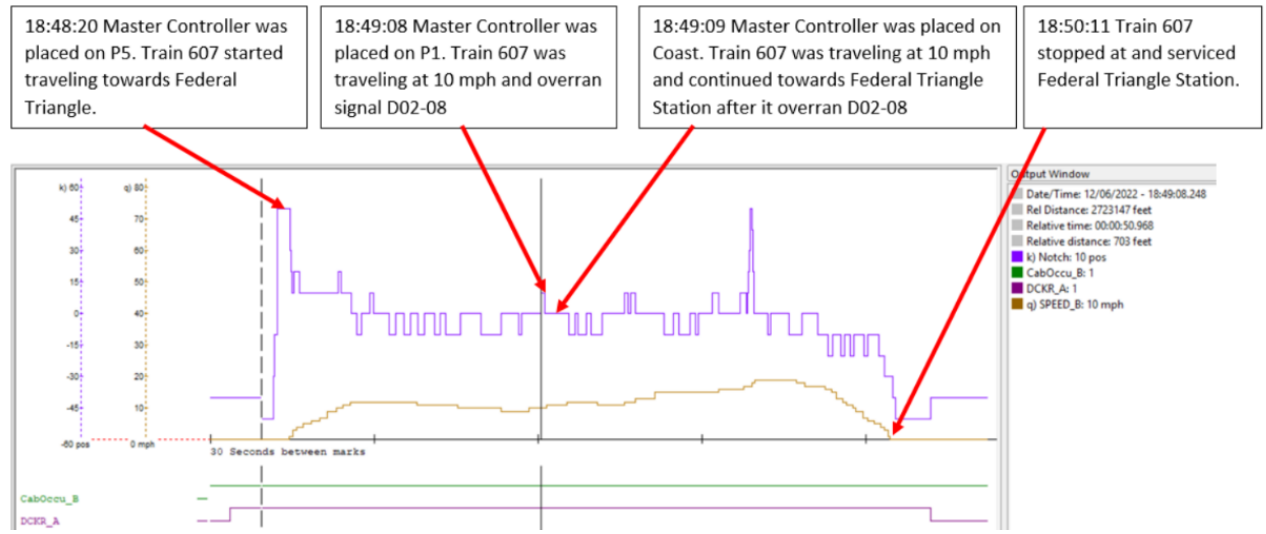


Figure 4 – E/R Data

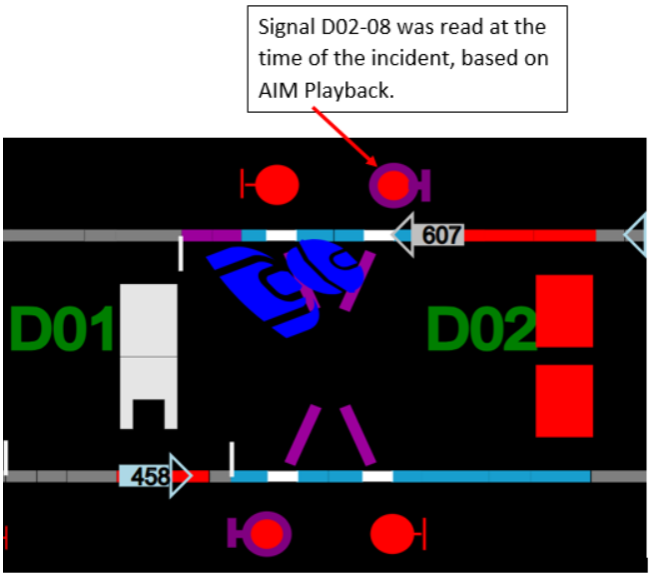


Figure 5 – Signal D02-08 Red as Train ID 607 passed

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

The Office of Radio Communications (COMR) conducted a comprehensive radio transmit and receive operational check between Metro Center and Smithsonian Stations, track 1 & 2 and found no deficiencies.

Office of Automatic Train Control Maintenance (ATCM)

Personnel statements were reviewed and indicated the crew was standing in a place of safety when the train began moving from Smithsonian Station. The RWIC stated that they were in the process of setting lunar signals for the train but had not done so when the train arrived at their

location and passed the D02-08 signal. The Watchman's written statement indicated that the signal aspect was red when the train began approaching their location. The RTC then contacted the RWIC and advised them to clear the track. This was completed after completing an inspection and restoration of the interlocking to service and photographs of the switches were captured.

Office of Rail Transportation (RTRA)

The RTRA Supervisor's report stated that the Train Operator reported being given permission to the eight-car marker at Federal Triangle Station before departing Smithsonian Station. When approaching the signal, they were flagged by ATCM personnel to proceed through the interlocking and continued to the next station where they were asked if they passed a red signal.

The second RTRA Supervisor's report indicated that they were instructed to take over operations of Train ID 607 at Federal Triangle in non-revenue status. They reported that they had speed commands and moved in non-revenue status per their instructions to Metro Center. At Metro Center they were instructed to hold that location and await the arrival of SAFE personnel.

Interview Findings

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

RTRA

Train Operator

- The Train Operator acknowledged and provided 100% repeat back of instructions that they had a permissive block to the eight-car marker, D02-08 was red, and ATCM was working in the interlocking ahead.
- The Train Operator believed the permissive block was to the eight-car marker of Federal Triangle Station.
- The Train Operator stated that D02-08 signal was red when the train passed.
- The Train Operator stated the Watchman gave them a proceed hand signal as the train approached the D02-08 signal.
- The Train Operator stated during training they only spoke about passing red signals and did not practice passing red signals.
- The train had speed commands entering Smithsonian Station and up to the eight-car marker.

ATCM

RWIC

- RWIC saw the train on the platform and cleared the crew from the roadway onto the catwalk.
- RWIC observed the train approaching the crew and D02-08 signal red at a slow speed not stopping.
- RWIC contacted the Local Control Panel (LCP) Operator to confirm if a lunar was given to the train. LCP reported no lunar was given to the train.
- This interlocking inspection was their first and only inspection of the day.

Watchman

- RWIC cleared everyone from the roadway once the train was on the platform at Smithsonian Station.
- They were 50 feet ahead of the work crew but close enough to hear verbal commands from the RWIC.
- They were not sure of the exact location (chain marker). However, they were in front of D02-08 signal and able to see it.
- The Watchman stated that D02-08 was lunar when they gave the train a proceed hand signal.
- They typically communicate via the Talk Around channel or verbally due to them being near the RWIC (50ft).

ROCC

Buttons RTC

- Buttons RTC stated the Radio RTC gave trains permissive blocks to the eight-car marker as the trains entered the station platforms.
- The AIMS alarm sounded notifying them that a train passed a red signal.
- Blanket announcements were made notifying train operators of ATCM's presence in the interlocking. They could not recall the announcement intervals.

Radio RTC

- The Radio RTC was unavailable to interview following this event. They took personal leave after the event and resigned from employment with WMATA on January 6, 2023.
- Their hire date with WMATA was March 3, 2022.

Weather

On December 6, 2022, at the time of the incident, NOAA recorded the temperature as 52°F, with partly cloudy skies. This event occurred within a tunneled section of the rail system. Weather was not a contributing factor in this incident (Weather source: NOAA – Location: Washington, DC.)

Related Rules and Procedures

MSRPH – Section 3 General Rule 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 – Section 3 Operating Rule (OR) 3.67 Rail vehicles shall not be operated passed 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 – Section 3 OR 3.75 When flagging as prescribed in these rules is not in effect, and an operator observes a person giving a "proceed" hand signal in conflict with an interlocking signal displaying a red aspect, the operator shall not pass the signal but shall stop the train and contact ROCC for instructions. The signal shall not be passed until the operator has determined that the

person giving the "proceed" signal is authorized to do so and that the move is consistent with customer safety as specified in Rule 3.1.

MSRPH – Section 5 OR 5.13.7.2 Establishing ETO Limits Each end of the ETO limits must be defined by one of the following physical features: a. Clearly identifiable Chain Marker Location b. A fixed signal that displays an aspect indicating “Stop.” c. Station, or other physical characteristic location. d. Track barricade or flagman at a designated location.

Human Factors

Training and Employment History

- The Train Operator was hired by WMATA in July 2022 as a Train Operator.
- The Train Operator received approximately 20 minutes of non-revenue mainline instruction with a Rail Operations Quality Training (ROQT) Instructor during their Yard Performance Training (YPT) cycle. They completed the minimum total of 38 hours of mainline instruction primarily under the supervision of a Train Operator Line Platform Instructor (LPI).
    - Student Train Operators are required to receive eight hours of non-revenue mainline non-revenue instruction during YPT with an ROQT Instructor.
- The Train Operator certified at a QL-2 rating on their first attempt on November 29, 2022.
- The Radio RTC was hired by WMATA in March 2022 as a Rail Traffic Controller.

Fatigue

Train Operator

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

Fatigue Risk

Train Operator

We evaluated incident data for fatigue risk factors. Risk factors for fatigue were not present. The incident time of day did not suggest an increased risk of fatigue-related impairment. The Train Operator reported some variation in the sleep schedule in the days leading up to the incident. The Train Operator worked evening shift in the days leading up to the incident. The employee was awake for 8 hours at the time of the incident. The Train Operator reported 12.5 hours of sleep in the 24 hours preceding the incident. The off-duty period was 16 hours which provides an opportunity for 7-9 hours of sleep. This was 4.5 hours more than the employee's usual workday sleep durations. The employee reported no issues with sleep. The employee worked evening shift in the days leading up to the incident.

Post-Incident Toxicology Testing

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

Findings

- AIMS data indicated that Signal D02-08 was red when Train ID 607 passed it. The Train Operator affirmed they passed D02-08 when it was red.
- The Train Operator misunderstood the permissive block received from the Radio RTC and believed it was to Federal Triangle's eight car marker.
- The Watchman indicated that they gave a proceed hand signal to the Train Operator as they approached the signal.
- The ATCM crew was aware of Train ID 607's proximity and had ample time to reset the interlocking and clear to a place of safety prior to its arrival at the signal.
- The incident train was moved from Federal Triangle to Metro Center Station prior to receipt of the Event Scene Release under instruction from the Radio RTC.

Immediate Mitigation to Prevent Recurrence

- RTRA circulated briefings with all supervisors to brief all train operators on red signals and station overruns and prevention measures.
- During its roll call briefings, ROCC reminded RTC personnel of the requirement to hold equipment in place until an Event Scene Release is obtained.

Probable Cause Statement

The probable cause of the Red Signal Overrun event on December 6, 2022, was a combination of human factors errors that resulted in the Train Operator believing they had permission to pass a red signal. Contributing factors to the event included a misapplication of instructions by Train Operator and ineffective RWP rules related to Exclusive Track Occupancy.

Recommended Corrective Actions

Corrective Action Code	Description	Responsible Party	Estimated Completion Date
104683_SAFECAPS_ATCM_001	ATCM to develop a Lessons Learned highlighting the need for effective communications among work crew members and proper ETO-LSC procedures.	ATCM	Completed
104683_SAFECAPS_SAFE_001	Rail Safety Standards Committee to implement enhanced procedures for ETO-LSC operations, contained under draft Permanent Order T-22-21 "Local Control."	RSSC	05/31/2023
104683_SAFECAPS_ROQT_001	Return all Train Operators who failed to receive eight hours of instruction during Yard Practical Training to ROQT Instructors to attain the remainder of their YPT training hours.	ROQT	Completed

Appendices

Appendix A – Interview Summaries

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

RTRA

Train Operator

The Train Operator is a WMATA employee with five months of experience and 2 weeks of experience as a Train Operator. On the day of the event, the Train Operator was completing their first solo day of operation. The Train Operator holds a Roadway Worker Protection Level 2 certification that expires in August 2023. The Train Operator successfully completed Train Operators Certification on November 29, 2022, at a Quality Level – 2.

The Train Operator stated they were fully alert when the red signal overrun occurred.

The Train Operator stated they were properly berthed at the 8-car maker of Smithsonian Station and that the train kept speed commands entering Smithsonian Station up to the eight-car marker. The Train Operator stated while they were servicing the station, the Radio RTC gave them a permissive block to the 8-car marker and mentioned the signal ahead was red with ATCM working in the interlocking. The Train Operator stated after servicing Smithsonian Station they thought the permissive block was to the next station's (Federal Triangle) 8-car marker because they had already serviced Smithsonian Station. The Train Operator stated they were given a proceed hand signal by ATCM and continued to Federal Triangle Station.

The Train Operator stated while servicing Federal Triangle Station the Radio RTC inquired if they passed a red signal. The Train Operator stated to the Radio RTC that they were given a block to the 8-car marker and did not specify which 8-car marker. The Train Operator stated the RTC never replied back until they were removed from service.

The Train Operator stated they spoke about passing red signals during training and did not practice passing red signals.

ATCM

RWIC

The RWIC stated they were working on switch 3B, located near signal D02-06, which is the exit switch point, when the Local Control Panel Operator notified them of a train on the platform of Smithsonian Station via radio. The RWIC stated the crew cleared the switches and stood by on the catwalk. The RWIC stated they saw a train moving at a slow speed towards them. The RWIC stated they contacted the Watchman/Lookout to verify if they gave the train a signal and confirmed no signal was given. The RWIC stated they contacted the Local Control Panel Operator to verify if they gave the train a signal (lunar) and confirmed no signal was given.

Watchman

The Watchman is a WMATA employee with two months of experience with ATCM and 2 months experience as a Watchman. The Watchman holds a Roadway Worker Protection Level 2 certification that expires November 2023.

The Watchman stated that following the safety briefing with the RWIC, the work zone was set up for an interlocking inspection. The Watchman stated they were positioned 50 feet from the work crew. The Watchman stated they noticed a train approached they and came to a stop just before the signal. The Watchman stated once the Train Operator was given a lunar, the Watchman gave the Train Operator the proceed hand signal. The Watchman stated after the train cleared the work crew's area, they continued to work.

The Watchman stated they were positioned in front of D02-08 signal, and it was red upon the train arriving. The Watchman stated they did not give the train a proceed signal until the signal was lunar and the RWIC notified the crew, via the talk around channel, that the train could proceed*.

**Note: AIMS data analysis confirmed that the D02-08 signal did not change aspect to lunar for the duration of this event.*

ROCC

Radio RTC – Adopted from the ROCC Incident Report. The Radio RTC went out on sick leave and then resigned their position following this event. This prevented a formal interview from being conducted.

The Rail Traffic Controller (RTC) was a WMATA employee with 9 months of experience as an RTC. The RTC held a Roadway Worker Protection (RWP) level 2 certification.

The ROCC incident report stated the Radio RTC provided Train ID 607 a permissive block to properly berth the train at the 8-car marker at Smithsonian Station, track 2 and to be advised D02-08 signal was red. Train ID 607 provided 100% repeat back of the permissive block. The Radio RTC requested lunars from ATC on tracks 1 & 2 at Smithsonian Station.

The AIMS displayed Train ID 607 overran D02-08 signal. An RTRA supervisor was dispatched to the scene for assistance. Train ID 607 operator confirmed they had overrun D02-08 signal red and stated the train was properly berthed on the platform at Federal Triangle Station. The Train Operator was instructed to offload the train and an additional RTRA Supervisor was dispatched to the scene for assistance.

The RTRA Supervisor was instructed to move the incident train in non-revenue service to L'Enfant Plaza Station. The RTRA Supervisor was instructed to re-block the Trian ID to 707 and hold at Metro Center for SAFE. Safety personnel responded to Metro Center and inspected the train. After inspection of the train, it was transported to West Falls Church yard.

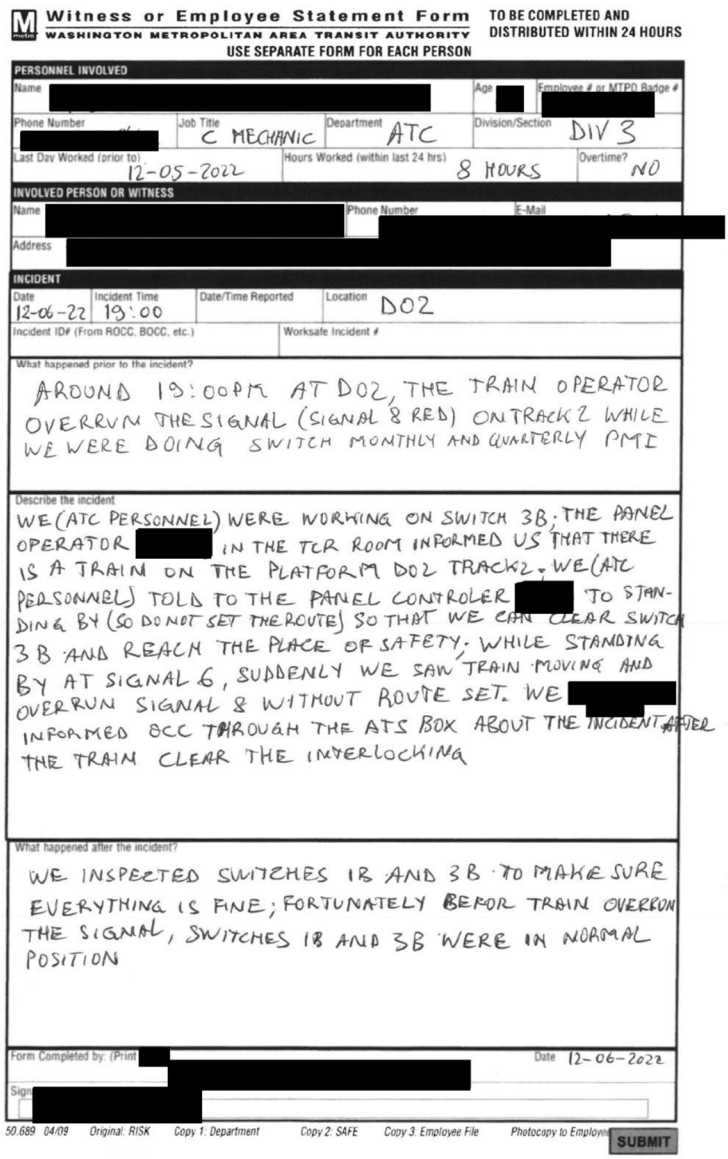
The Train Operator was removed from service pending a post incident investigation.

Buttons RTC

The Rail Traffic Controller (RTC) is a WMATA employee with 18 years of experience and 6.5 years of experience as an RTC. The RTC held previous positions with WMATA such as Bus Operator, Train Operator, Rail Supervisor and Bus Operations Manager. The RTC holds a Roadway Worker Protection Level 2 certification that expires January 2023. The RTC successfully completed Rail Traffic Controller certification in May 2022.

The Buttons RTC stated they were working the Buttons position on the Ops 2 desk when ATCM was conducting an interlocking inspection under ETO-LSC protection. The Buttons RTC stated that ATCM was giving lunar signals to trains on both tracks. The Buttons RTC stated because ATCM was manipulating the signals intermittently causing the signals to go red, that trains approaching the platform or station would occasionally lose speed commands. The Buttons RTC stated that the Radio RTC would give the trains permissive blocks to the station platform's 8-car marker and instruct to stand by for lunar signal & speed commands.

The Buttons RTC stated an AIMS alarm summary showed the train passed the signal red. The Buttons RTC stated they took appropriate actions following the alarm.



Witness or Employee Statement Form
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
TO BE COMPLETED AND DISTRIBUTED WITHIN 24 HOURS
USE SEPARATE FORM FOR EACH PERSON

PERSONNEL INVOLVED

Name [redacted] | Age [redacted] | Employee # or MTPD Badge # [redacted]
Phone Number [redacted] | Job Title C MECHANIC | Department ATC | Division/Section DIV 3
Last Day Worked (prior to) 12-05-2022 | Hours Worked (within last 24 hrs) 8 HOURS | Overtime? NO

INVOLVED PERSON OR WITNESS

Name [redacted] | Phone Number [redacted] | E-Mail
Address [redacted]

INCIDENT

Date 12-06-22 | Incident Time 19:00 | Date/Time Reported | Location D02
Incident ID# (From ROCC, BOCC, etc.) | Worksafe Incident #

What happened prior to the incident?

AROUND 19:00PM AT D02, THE TRAIN OPERATOR OVERRUN THE SIGNAL (SIGNAL 8 RED) ON TRACK 2 WHILE WE WERE DOING SWITCH MONTHLY AND QUARTERLY PMI

Describe the incident

WE (ATC PERSONNEL) WERE WORKING ON SWITCH 3B; THE PANEL OPERATOR [redacted] IN THE TCR ROOM INFORMED US THAT THERE IS A TRAIN ON THE PLATFORM D02 TRACK 2. WE (ATC PERSONNEL) TOLD TO THE PANEL CONTROLER [redacted] TO STANDING BY (SO DO NOT SET THE ROUTE) SO THAT WE CAN CLEAR SWITCH 3B AND REACH THE PLACE OF SAFETY; WHILE STANDING BY AT SIGNAL 6, SUDDENLY WE SAW TRAIN MOVING AND OVERRUN SIGNAL 8 WITHOUT ROUTE SET. WE [redacted] INFORMED OCC THROUGH THE ATS BOX ABOUT THE INCIDENT AFTER THE TRAIN CLEAR THE INTERLOCKING

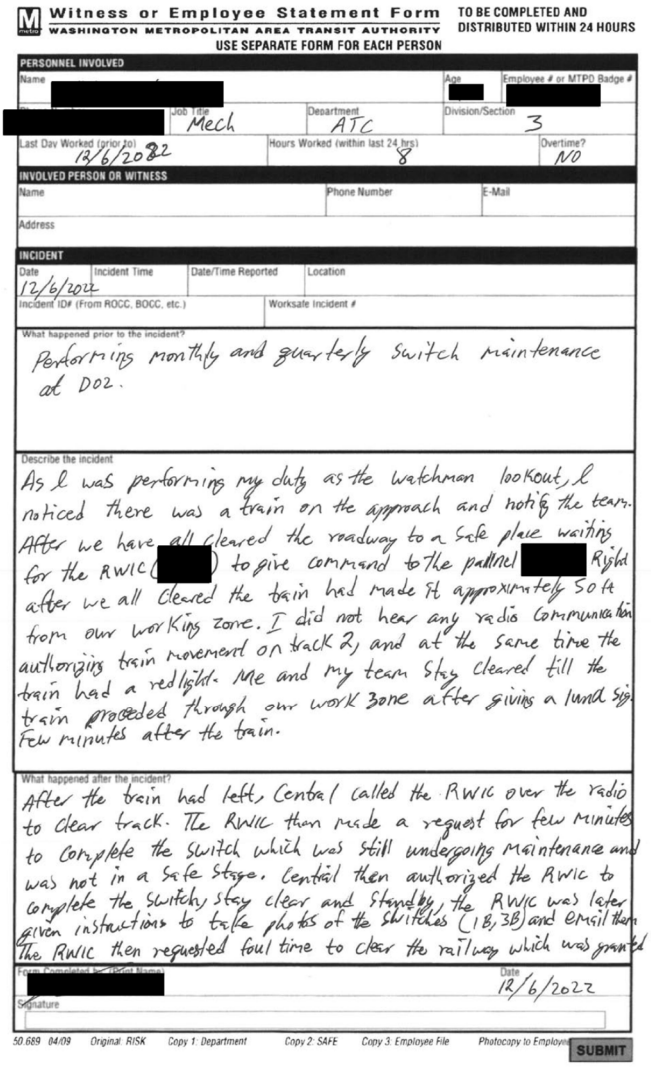
What happened after the incident?

WE INSPECTED SWITCHES 1B AND 3B TO MAKE SURE EVERYTHING IS FINE; FORTUNATELY BEFOR TRAIN OVERRUN THE SIGNAL, SWITCHES 1B AND 3B WERE IN NORMAL POSITION

Form Completed by: (Print [redacted] | Date 12-06-2022
Sign [redacted]

50.689 04/09 Original: RISK Copy 1: Department Copy 2: SAFE Copy 3: Employee File Photocopy to Employee SUBMIT

Figure 6 – RWIC statement redacted 1 of 2



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

TO BE COMPLETED AND DISTRIBUTED WITHIN 24 HOURS

PERSONNEL INVOLVED

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

[redacted] | Job Title: Mech | Department: ATC | Division/Section: 3

Last Day Worked (prior to): 12/6/2022 | Hours Worked (within last 24 hrs): 8 | Overtime?: NO

INVOLVED PERSON OR WITNESS

Name | Phone Number | E-Mail

Address

INCIDENT

Date: 12/6/2022 | Incident Time | Date/Time Reported | Location

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

What happened prior to the incident?

Performing monthly and quarterly switch maintenance at D02.

Describe the incident

As I was performing my duty as the watchman lookout, I noticed there was a train on the approach and notify the team. After we have all cleared the roadway to a safe place waiting for the RWIC ([redacted]) to give command to the pallmel [redacted] Right after we all cleared the train had made it approximately 50 ft from our working zone. I did not hear any radio communication authorizing train movement on track 2, and at the same time the train had a redlight. Me and my team stay cleared till the train proceeded through our work zone after giving a hand sig. Few minutes after the train.

What happened after the incident?

After the train had left, Central called the RWIC over the radio to clear track. The RWIC then made a request for few minutes to complete the switch which was still undergoing maintenance and was not in a safe stage. Central then authorized the RWIC to complete the switch, stay clear and standby, the RWIC was later given instructions to take photos of the switches (1B, 3B) and email them. The RWIC then requested foul time to clear the railway which was granted

Form Completed by (Print Name): [redacted] | Date: 12/6/2022

Signature

50.689 04/09 Original: RISK Copy 1: Department Copy 2: SAFE Copy 3: Employee File Photocopy to Employee

SUBMIT

Figure 6 – Watchman statement redacted 2 of 2

Appendix C – Recent RTRA Lesson Learned for Red Signal Overruns

Office of Rail Transportation

RTRA OFFICE OF RAIL TRANSPORTATION

metro

Looking back, to effectively move forward

Lessons Learned

December 2, 2022
RTRA-303-04-00

Shady Grove Yard and Station - Red Signal Overrun

INCIDENT SUMMARY

INCIDENT #1

On Thursday, October 20, 2022, at 7:10 pm, The Interlocking Operator instructed the yard operator to board 8 cars on Track #14. At 7:58 pm, the operator boarded the train and moved without communicating with the Interlocking Operator. Shortly thereafter the Interlocking Operator noticed a train had moved and cleared signal A99-60. The Interlocking Operator then asked who was on the train at A99-60. The operator confirmed their location. The Interlocking Operator realized that the operator had moved the train without permission, passed red signals A99-118 and A99-62, and trailed various switches. The Yard Operator failed to stop 10 feet in the approach of the red signal in accordance with OR 3.67 and passed two red signals by 1,800 feet.

INCIDENT #2

On Thursday, November 3, 2022, at 7:59 pm, an operator departing Shady Grove Yard was given an instruction from the Terminal Supervisor which told the operator to hold on the platform upon arrival. The operator then gave a 100% repeat back. The operator, then moved the train and stopped at the 8-car marker, Track #1 while ID 115 was departing on Track #2. At approximately 8:01 pm, the operator asked the Terminal Supervisor, if the train would be placed in service on the platform. The Terminal Supervisor stated 'no' and shortly after this radio communication, the operator moved the train without permission disregarding the previous instructions and failing to confirm, a lunar, correct rail alignment, and speed commands. The operator passed signal A15-02 red.

There were no reported injuries, or damages, as a result of these incidents.

ROOT CAUSE

INCIDENT #1

The train operator involved failed to follow all proper radio procedures. More specifically, the operator failed to communicate with the Interlocking Operator prior to taking a point of power and moving the train.

INCIDENT #2

The train operator became distracted after speaking with the Terminal Supervisor the second time and lost focus and failed to confirm a lunar and adhere to the Terminal Supervisor's instructions despite providing a 100% repeat back.

MSRPH RULES

GR 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.

OR 3.67 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.

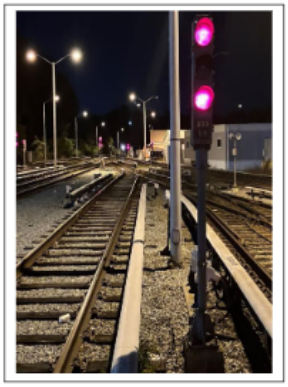
OR 3.77 If a rail vehicle runs through an improperly aligned track switch, the operator shall stop the vehicle immediately, and report the occurrence to ROCC or the Interlocking Operator. All parties shall treat the situation as if the vehicle has derailed (SOP #9), and the vehicle shall not be undertaken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

Figure 7 – Lesson Learned 1 of 2

RTRA Lessons *Learned*

Looking back, to effectively move forward

What happened…	*What should have happened…*
The Yard Operator failed to contact the Interlocking Operator and inform them they were holding at A99-118 signal red.	*Operators should be governed by GR 1.79 and establish clear two-way communication before moving a train.*
The Yard Operator failed to stop immediately and notify the Interlocking Operator when the train passed signal A99-118 red.	*Operators must stop immediately and notify the Interlocking Operator when overrunning a red signal and going over a misaligned switch in a rail yard.*
The operator left the platform without permission from the Terminal Supervisor.	*Operators must not depart from the platform without permission from the Terminal Supervisor along with a lunar, correct rail alignment and speed commands.*



A99-118 Signal

RECOMMENDATIONS

- ✓ Rail vehicles shall not be operated past or closer than a point 10 feet in the 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.
- ✓ Abide by GR 1.79 and not take action until clear radio communication has been established.
- ✓ Emphasize that all operational personnel abide by Operating Rule 3.67 when operating trains.
- ✓ Ensure operators comply with all Operating Rules, especially Cardinal Operating Rules.

Figure 7 – Lesson Learned 2 of 2

Appendix D – ROCC Incident Report (redacted)

View Approved Incident Report

INCIDENT ID: 2022340SILVER4

DATE	TIME	LINE	ITEM
2022-12-06	1853	Silver	4

LOCATION (STATION/YARD)	LOCATION/CHAIN MARKER (If Applicable)	REPORTED BY
Smithsonian (D02)		AIM Display

TRAIN ID	DIRECTION	TRACK NUMBER	DEPTS NOTIFIED
607	I/B	2	Everbridge Alert/Messaging

CAR NUMBERS (XXXX-XXXX)
Lead Car

3163-3162	3101-3100	3162-3163	-
Caused Issue ☑	Caused Issue ☐	Caused Issue ☐	Caused Issue ☐

TRBL CODE	RESP CODE
RSIG-RED SIGNAL OVERRUN	RTR

TYPE INCIDENT
Red Signal Overrun.

ACTION PLAN
Interlocking Out of Service. ATC Dispatched. RTRA Supervisor Dispatched. Turned Back Trains. Operator Removed from Service. Shuttle Bus Service Requested.

DELAYS IN MINUTES

LINE	INCIDENT	TRAIN	TOTAL DURATION
67	62	67	0

TRIPS MODIFIED

PARTIAL	GAP TRAIN	LATE DISPATCHES	REROUTED	NOT DISPATCHED	OFFLOADS
12	0	0	0	0	12

FIVE PRIMARY CONSOLE INDICATIONS

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

Figure 8 – ROCC Incident Report 1 of 2

View Approved Incident Report

INCIDENT CHRONOLOGY

TIME	DESCRIPTION
1850	ATC [redacted] and personnel were on the scene at Smithsonian conducting an interlocking inspection utilizing exclusive track occupancy. RTC [redacted] provided Train 607 a permissive block to properly berth the train at the 8-car marker at Smithsonian track two and to be advised D02-08 signal was red. Train 607 Operator [redacted] provided a 100% repeat back of the permissive block. RTC Dillon requested lunars from ATC [redacted] on tracks one and two at Smithsonian.
1853	AIM displayed Train 607 overran D02-08 signal. RTRA Supervisor [redacted], [redacted] was dispatched to the scene for assistance. Assistant Operations Manager, ROIC, ATC, MTPD, MAC and all other concerned personnel notified.
1856	Train 607 Operator [redacted] confirmed he overran D02-08 signal red and stated properly berthed on the platform at Federal Triangle.
1900	Train 607 Operator [redacted] was instructed to offload train and verify clear of all passengers with the assistance of the Federal Triangle station manager. RTRA Supervisor [redacted], was dispatched to the scene for additional assistance.
1906	RTRA Supervisor [redacted] arrived on the scene to removed the Operator [redacted] from service. RTRA Supervisor [redacted] was instructed to move the incident train in non-revenue service to L'Enfant Plaza track two.
1908	RTRA Supervisor [redacted] was instructed to re-blocked to 707 and hold at Metro Center track two for SAFE. Train 608 was the first train to offload and turn back in service from Federal Center to Downtown Largo.
1951	Safety 710 reported on the scene at Metro Center to inspect the incident train, Train 707.
1957	ATC [redacted] reported the interlocking was good for revenue service and all personnel were clear of the roadway. SAFE 710 reported incident Train 707 was safe to be transported to West Falls Church Yard for storage.
2000	Train 707 continued in non-revenue service to West Falls Church. Normal service resumed.
0000	Service Adjustment: Service was suspended from Metro Center to L'Enfant Plaza pending an interlocking inspection by ATC [redacted]. Trains discontinued service and were turned back utilizing McPherson Square and Federal Center interlockings. Shuttle bus service was requested.
0000	Note: Train 607 Operator, [redacted], was removed from service pending a post incident investigation.

MAXIMO TICKET#
8638885

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

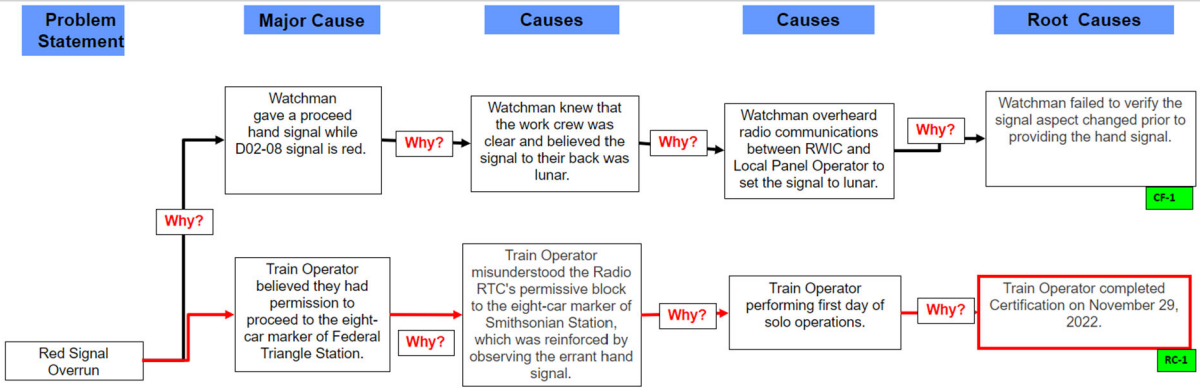
SUPERINTENDENTS OR ASSISTANTS SECTION

ADDITIONAL FOLLOW-UP CORRECTIVE ACTIONS OR REMARKS

FOLLOW-UP INFORMATION OBTAINED FROM SUPPORT DEPARTMENTS RAIL 1 notified.

Figure 8 – ROCC Incident Report 2 of 2

Appendix E - Root Cause Analysis



Root Cause Analysis

metro OSI Office of Safety Investigations

Figure 9 – Root Cause Analysis Page 1 of 1.