

WMSC Commissioner Brief: W-0140 – Red Signal Overrun – Twinbrook Station – September 28, 2021

Prepared for Washington Metrorail Safety Commission meeting on January 25, 2022

Safety event summary:

During scheduled unusual operations using Twinbrook Station as a Red Line terminal station due to the long-term closure of Shady Grove and Rockville stations for construction at Rockville Station, a Train Operator at the outbound end of a train moved the train into the interlocking beyond Twinbrook Station while passengers were on board, and a second Train Operator who had been assigned to board the train's opposite end then operated the train back past a red signal toward the Twinbrook Station platform without authorization at approximately 8:11 a.m. on September 28, 2021. The two passengers on the train were later evacuated back to the station platform.

Twinbrook does not normally operate as a terminal station. Based on the location of the interlocking (outbound of the station) and scheduled service frequencies (headways) at the time of this event, Metrorail was placing train operators at both ends of the train in order to move the train from one track to another prior to putting it into service back inbound toward Glenmont Station. Metrorail's bulletin for this movement that had begun on September 11, 2021 (17 days prior to this event) was overly prescriptive and did not match what was being directed in practice regarding the specific signals and switches being used to cross trains from one track to another.

The train doors were opened on the platform for 16 seconds after arrival at Twinbrook Station. The operator performing the initial move from the station platform had a flashing lunar (proceed) signal to enter the interlocking and cross from Track 2 to Track 1. Metrorail did not perform checks of the train as required by procedure to ensure that the train was clear of customers, and relied solely on the Train Operator's verbal announcements over the train's public address system that the train was out of service. The train was then keyed down (controls turned off), keyed back up (controls turned on), and, approximately 35 seconds after the doors had been closed, the Train Operator at the outbound end moved the train forward. The train crossed through the interlocking from Track 2 to Track 1, moving a total of approximately 1,026 feet. The operator at the outbound end of the train keyed down, and, 4 seconds later, the operator at the inbound end of the train keyed up their controls.

The Train Operator at the inbound end then entered stop and proceed mode 12 seconds after keying up their end of the train without communication required by procedure with the terminal supervisor or Rail Operations Control Center (ROCC). The Train Operator moved the master controller as far as the P4 (of 5) position to accelerate the train. The Train Operator then moved the master controller to a B4 (of 5) braking mode when the train was moving 13.1 mph and was approximately 77 feet past the red signal (A13-02). The train entered the interlocking, and the front of the train made a diverging move toward Track 2. The train stopped approximately 158 feet beyond the signal. The intended move, had the operator waited for a lunar signal and proper switch alignment, was to continue on Track 1 back into Twinbrook Station to go into service toward Glenmont Station. A Rail Controller communicated to the operator of the next train approaching Twinbrook Station, Train 101, that they had to stop that train, and the controller later gave authorization to berth one door on the platform. Service was suspended between Grosvenor-Strathmore and Twinbrook stations.



When contacted by the ROCC, the Twinbrook Station Coordinator (acting as a terminal supervisor but without control of the interlocking beyond the station) stated there is poor radio communication at Twinbrook Station. During an investigative interview, the Rail Controller also stated that there were difficulties communicating with the Twinbrook Station Coordinator and others at Twinbrook Station due to radio system deficiencies.

The ROCC Assistant Superintendent improperly designated the Twinbrook Station Coordinator as "On-Scene Commander" during a phone call. Metrorail procedures require such designations to be made over the radio. The Rail Controller then separately appointed the Rail Supervisor as "On-Scene Commander."

A rider on the train used the train's emergency intercom to contact the operator at 8:23 a.m., 8:34 a.m. and 8:45 a.m. The Train Operator stated that one rider still on the train intended to go to Rockville Station and did not know that station was closed.

A Rail Supervisor arrived and was directed to hot stick to confirm third rail power was now de-energized.

Metrorail placed Warning Strobe and Alarm Devices (WSADs) as required to provide warning if third rail power was reenergized, then the Metro Transit Police Department and Rail Supervisor helped evacuate the two riders back to the station approximately 35 minutes after the red signal overrun.

Metrorail inspections determined there was no switch damage and that the train was safe for movement back to Brentwood Rail Yard.

Service was restored at 10:47 a.m., approximately 2.5 hours after the red signal overrun.

Probable Cause:

The probable cause of this event was insufficient training and supervisory oversight for unusual operations. Contributing to this event was supervisory direction and schedules providing limited time to turn trains around in this temporary terminal format.

Corrective Actions:

Metrorail distributed a stop and proceed mode notice on 6000 Series railcars.

Metrorail reminded train operators to thoroughly check trains that are going out of service to verify that they are clear of customers.

Metrorail has implemented corrective actions since this event related to Metro Transit Police Department and Safety Department oversight identified in other investigations.

WMSC staff observations:

The WMSC is beginning a communications audit, which focuses on Metrorail's radio system.

The WMSC assessed Metrorail's incident command process as part of the Audit of Emergency Management and Fire and Life Safety Programs. The draft report was transmitted to Metrorail in December for their technical review. The WMSC expects to issue a final report in coming weeks.

Metrorail reopened Rockville and Shady Grove Stations on January 16, 2022.

Metrorail should consider reviewing or establishing and communicating radio communications procedures for instances where train operators are positioned at both ends of a train.



Office: 202-384-1520 • Website: www.wmsc.gov

Metrorail could not provide a signature or acknowledgement from the train operator who operated past the red signal for the stop and proceed operations notice issued in July 2020 following the July 7, 2020 derailment near Silver Spring Station.

Staff recommendation: Adopt final report.



Washington Metro Area Transit Authority Department of Safety and Environmental Management (SAFE) FINAL REPORT OF INVESTIGATION A&I E21471

Date of Event:	09/28/2021
Type of Event:	Red Signal Overrun
Incident Time: 08:11 hours	
Location:	Twinbrook Station Interlocking at A13-02 Signal
Time and How received by SAFE: 08:15 hours. SAFE/IMO In-Person Notification	
WMSC Notification Time: 09:21 hours	
Responding Safety Officers:	WMATA: Yes
	WMSC: No
	Other: No
Rail Vehicle:	Train ID 124
	L7658-7659.7589-7588.7462-7463.7365-7364T
Injuries:	No
Damage:	No
SMS I/A Incident Number:	20210928#95848MX

Twinbrook Station Interlocking at A13-02 Signal Red Signal Overrun September 28, 2021 **Table of Contents**

Abbreviations and Acronyms	3
Executive Summary	4
Incident Site	6
Field Sketch/Schematics	6
Purpose and Scope	6
Investigation Methods	7
Investigation	7
Chronological Event Timeline	8
Advanced Information Management System (AIMS)	13
Metro Transit Police Department (MTPD)	15
SAFE Incident Management Officer (IMO) Incident Log	15
Automatic Train Control Maintenance (ATCM)	15
Automatic Train Control Engineering (ATCE)	15
Office of Chief Mechanical Officer (CMOR) / Incident Investigation Team (IIT)	16
Event Recorder (ER) Data Graph/Sequence of Events	16
Consist Emergency Intercom Event Log Activation	17
Office of Car Maintenance (CMNT)	17
Office of System Maintenance, Office of Radio Communications (COMR)	18
Interview Findings	18
Weather	18
Human Factors	18
Fatigue	18
Train Operator One	18
Train Operator Two	19
Post-Incident Toxicology Testing	19
Findings	19
Immediate Mitigation to Prevent Recurrence	20
Probable Cause Statement	20
Recommendations/Corrective Actions	20
Appendices	22
Appendix A – Interview Summaries	22
Office of Rail Transportation (RTRA)	22
Rail Operations Control Center (ROCC)	23
Appendix B – RTRA Total Shutdown Rail Service Adjustment Bulletin # 254-R	25
Appendix C – ATCE Data Analysis	26
Appendix D – ATC Data Analysis	28
Appendix E – ATCM Roadway Job Safety Briefing Form	29
Appendix F – CMNT Work Order Details	31
Appendix G – ATC Work Order Details	33
Appendix H – RTRA Stop and Proceed Mode Operations Personnel Notice	35
Appendix I – Permanent Order T-20-28	36
Appendix J – MTPD Hot Wash Summary	39
Appendix K – RTRA Operations Personnel Notice	44
Appendix L – RTRA Lessons Learned Number: 2021-009	45
Appendix M - Root Cause Analysis	47

Abbreviations and Acronyms

AIMS	Advanced Information Management System		
ARS	Audio Recording System		
ATCE	Automatic Train Control Engineering		
АТСМ	Automatic Train Control Maintenance		
CAP	Corrective Action Plan		
ССТV	Closed-Circuit Television		
СМ	Chain Marker		
CMNT	Office of Car Maintenance		
COMR	Office of Systems Maintenance, Office of Radio Communications		
ERT	Emergency Response Team		
ESR	Event Scene Release		
ЕТО	Exclusive Track Occupancy		
FTA	Federal Transit Administration		
FT	Foul Time		
IMO	Incident Management Officer		
MSRPH	Metrorail Safety Rules and Procedures Handbook		
MTPD	Metro Transit Police Department		
NOAA	National Oceanic and Atmospheric Administration		
ROCC	Rail Operations Control Center		
RSAB	Rail Service Adjustment Bulletin		
RTC	Rail Traffic Controller		
RTRA	Office of Rail Transportation		
RWIC	Roadway Worker In Charge		
RWP	Roadway Worker Protection		
SAFE	Department of Safety and Environmental Management		
SAFTE-FAST	Sleep Activity Fatigue Task Effectiveness – Fatigue Avoidance Scheduling Tool		
SIP	Special Instruction Procedure		
SMS	Safety Measurement System		
SOP	Standard Operating Procedure		
TRPM	Traction Power Maintenance		
TRST	Office of Track and Structures		
VMDS	Vehicle Monitoring and Diagnostic System		
WMATA	Washington Metropolitan Area Transit Authority		
WMSC	Washington Metrorail Safety Commission		
WSAD	Warning Strobe Alarm Devices		

Executive Summary

On Tuesday, September 28, 2021, at approximately 08:11 hours, a Brentwood Division Train Operator of Train ID 124 [L7658-7659.7589-7588.7462-7463.7365-7364T] overran the A13-02 signal displaying a red aspect. As a result, the Rail Operation Control Center (ROCC) initiated emergency notifications to the respective internal departments for support during investigative efforts. Personnel responded to the incident scene, including representatives from Automatic Train Control Maintenance (ATCM), the Office of Track and Structures (TRST), Metro Transit Police Department (MTPD) and the Department of Safety and Environment Management (SAFE).

According to the Rail Service Adjustment Bulletin (RSAB) # 254-R, Train Operators were performing turn-back moves at Twinbrook Station Interlocking due to the Twinbrook Station to Shady Grove Station Shutdown. Based on the Advanced Information Management System (AIMS) playback at approximately 08:08 hours, Train ID 124 berthed at Twinbrook Station platform, Track 2, to discharge passengers. At approximately 08:10 hours, Train ID 124 cleared the A13-08 signal displaying a lunar aspect and crossed over from Track 2 to Track 1. At approximately 08:11 hours, Train ID 124 overran the A13-02 signal displaying a red aspect and began crossing over from Track 1 to Track 2 (see AIMS display Diagrams 1 through 3).

Vehicle Monitoring and Diagnostic System (VMDS) data revealed that at approximately 08:10 hours, Train ID 124 departed Twinbrook Station, Track 2, in P1-P4 power mode. At approximately 08:10 hours, Train ID 124 entered Twinbrook Interlocking and crossed over from Track 2 to Track 1. Train ID 124 came to a complete stop after traveling approximately 1,026 feet and Car 7364 was keyed down at approximately 08:11 hours. At approximately 08:10 hours, Car 7658 was keyed up on the opposite end of Train ID 124 in the direction of Twinbrook Station, facing A13-02 Signal on Track 1. At approximately 08:11 hours, Train ID 124 Train Operator One on Car 7658 initiated Stop and Proceed Mode. At approximately 08:11 hours, Train ID 124 began moving in the direction of Twinbrook Station on Track 1 and passed the A13-02 signal at 5.2 mph, with the master controller in a "P1-P4" power mode position. The consist master controller was placed in a B4 braking mode position with a speed of 13.1 mph and traveled approximately 77 feet past the A13-02 signal, entering into interlocking and diverging towards Track 2. After the consist traveled approximately 174 feet, the consist came to a complete stop approximately 158 feet beyond the A13-02 signal. At approximately 08:13 hours, Car 7658 was keyed down. Forward-facing and operator's cab video footage confirmed the VMDS data.

Audio Recording System (ARS) playback revealed that at approximately 08:14 hours, the ROCC Radio Rail Traffic Controller (RTC) contacted Train ID 124 Train Operator One and asked, "Did you have a signal displaying a lunar aspect at A13-02 to make the crossover move?" Train ID 124 Train Operator One stated, "confirm, I had a lunar signal." At approximately 08:17 hours, this incident was classified as a Red Signal Overrun, when the ROCC Assistant Superintendent contacted MTPD and reported the incident. At approximately 08:20 hours, Train ID 124 Train Operator One contacted the Radio RTC and reported two customers were aboard the incident train in the Twinbrook Interlocking and one of the customers was irate. At approximately the same time, MTPD Officers were dispatched for the reported Red Signal Overrun event.

At approximately 08:34 hours, the Office of Rail Transportation (RTRA) Supervisor arrived on the scene, and the Radio RTC appointed them as the On-Scene Commander (OSC). At approximately 08:36 hours, the Radio RTC granted the RTRA Supervisor Foul Time (FT) protection to hot stick and confirm third rail power was de-energized at Twinbrook Station, Track 1. Upon the MTPD Officer's arrival on the scene, MTPD assumed OSC responsibilities and

another MTPD Officer was assigned as the MTPD Forward Liaison. At approximately 08:40 hours, the RTRA Supervisor reported to the Radio RTC that they hot sticked and confirmed that the third rail power was de-energized at CM A1-702+00. The Radio RTC then gave the RTRA Supervisor permission to escort MTPD to the incident train to evacuate the two customers. At approximately 08:46 hours, Warning Strobe Alarm Devices (WSADs) were installed to evacuate two customers from the disabled train. An emergency ladder was securely positioned by the RTRA Supervisor at the car end door and the roadway for the customers to be assisted down the ladder by MTPD. At approximately 08:48 hours, an MTPD and RTRA Supervisor assisted the customers off the disabled train and safely to the platform without incident. At approximately 09:25 hours, MTPD turned the scene over to RTRA.

ATCM personnel arrived on the scene and, with permission from ROCC, established Exclusive Track Occupancy (ETO) utilizing Local Signal Control (LSC) by taking local control of Twinbrook Station Interlocking as their Roadway Worker Protection (RWP). ATCM personnel inspected switches 1A and 1B in the incident area and determined there was no damage to ATCM equipment. In addition, ATCM performed a switch obstruction test and verified proper adjustment and operation of the switch machine. Based on the ATCM compliance review of the area and the event, ATCM determined there were no ATCM equipment anomalies that contributed to the cause of this incident.

Office of Car Maintenance (CMNT) personnel conducted a ground walk-around inspection of the affected consist. There were no anomalies, and CMNT deemed the incident train safe for rail vehicle movement back to Brentwood Rail Yard for further assessment. At approximately 10:47 hours, normal service resumed, and Train ID 124 was immediately put back into service. There were no reported injuries as a result of this incident. See Appendix K. At the Brentwood Rail Yard, CMNT performed a master controller operational check, brake rates check, and inspected all cars for flats. CMNT found no anomalies and reported that all systems were functioning as designed.

Train Operator One and Train Operator Two were removed from service for post-incident toxicology testing. There were no injuries or equipment damage reported as a result of this incident. SAFE's Incident Management Officer (IMO) notified the Washington Metrorail Safety Commission (WMSC) and obtained an Event Scene Release (ESR) on Tuesday, September 28, 2021, at approximately 08:33 hours.

The probable cause of the Red Signal Overrun event on September 28, 2021, were multiple human factor errors and lack of procedural adherence. Contributing factors to the incident were the Train Operator One initiating Stop and Proceed Mode without contacting ROCC for permission to move the train and failing to verify lunar signal, correct rail alignment and acknowledge the red signal before taking a point of power. These actions resulted in the rail vehicle violating the A13-02 signal, displaying a red aspect and beginning an unintended diverging move. Train Operator One and Train Operator Two experienced human performance difficulty and lack of procedural adherence when they failed to check the train for customers prior to leaving the platform at Twinbrook Station.

Incident Site

The incident area was located at CM 700+99 at A13-02 Signal, Twinbrook Station Interlocking, Track 1.

Field Sketch/Schematics



Diagram 1 – Train ID 124 crossed over from Track 1 to Track 2 and overran A13-02 signal displaying a red aspect.



Diagram 2 – The green arrows illustrate Train ID 124 departed Twinbrook Station, Track 2 traveling outbound. Train ID 124 passed the A13-08 signal and proceeded through interlocking crossing over to Track 1. The red arrows illustrate that after Train ID 124 cleared the interlocking, Train ID 124 traveled inbound on Track 1, proceeded past the A13-02 signal displaying red signal aspects, and crossed over from Track 1 to Track 2.

Purpose and Scope

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

Investigation Methods

The investigative methodologies included the following:

- Site response by on-duty Safety Officer
- Formal Interview SAFE performed three interviews as part of this investigation:
 - Train Operator One
 - Train Operator Two
 - Radio RTC
- Informal Interviews Collected through conversations with individuals during the investigation to provide background and supporting information.
- Documentation Review A collection of relevant work history information and process documentation in Metro systems of record. These records include:
 - Employee Training Procedures & Records
 - Certification
 - The 7-Day work history review
 - Metrorail Safety Rules and Procedures Handbook (MSRPH)
 - Metro Transit Police Department (MTPD) Hot Wash Summary
 - National Oceanic and Atmospheric Administration (NOAA)
 - Rail Operations Control Center (ROCC) Procedures Manual Review
 - Office of Rail Transportation (RTRA) Twinbrook Station to Shady Grove Station Shutdown Review Playbook
 - Office of Systems Maintenance Communication Section (COMM)
 - Automatic Train Control Maintenance (ATCM) Data Review
 - Automatic Train Control Engineering (ATCE) Data Review
 - Office of Chief Mechanical Officer (CMOR) / Incident Investigation Team (IIT) Post-Incident Analysis Data Review
 - Office of Car Maintenance (CMNT) Post-Incident Inspection Data Review
 - Maximo
- System Data Recording Review A collection of information contained in Metro Data Recording Systems. This data includes:
 - Audio Recording System (ARS) playback [Radio and Phone Communications]
 - Advanced Information Management System (AIMS)
 - Closed-Circuit Television (CCTV)
 - Train ID 124 Forward-Facing and Operators Cab Camera Video

Investigation

On Tuesday, September 28, 2021, at approximately 08:11 hours, a Brentwood Division Train Operator of Train ID 124 [L7658-7659.7589-7588.7462-7463.7365-7364T] overran the A13-02 signal displaying a red aspect. As a result, the ROCC initiated emergency notifications to the respective internal departments for support during investigative efforts. The ROCC removed Train Operator One and Train Operator Two from service for post-incident toxicology testing. There were no injuries or equipment damage reported as a result of this incident.

Chronological Event Timeline

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

Time	Description		
08:11:41 hours	Radio RTC: Announced on Ops 1, "Hey Train ID 124, this is the ROCC. <u>Train ID 124 Train Operator One:</u> Responded, "This is Train ID 124. Go with your message." [Ops 1]		
08:12:20 hours	Radio RTC: Contacted Train ID 101 Train Operator and instructed them to stop their train. [Ops 1]		
08:13:39 hours	Radio RTC: Contacted Train ID 124 Train Operator One and asked, "what end of the train are you keyed up?" <u>Train ID 124 Train Operator One:</u> Responded, "keyed up on the Shady Grove end." [Ops 1]		
08:14:52 hours	Radio RTC: Contacted Train ID 124 One and asked, "did you have a signal displaying a lunar aspect at A13-02 to make the crossover move?" <u>Train ID 124 Train Operator One:</u> Responded, "confirmed, I had a lunar signal." [Ops 1]		
08:15:08 hours	<u>Train ID 124 Train Operator Two:</u> Contacted Radio RTC, announced they were Train ID 124, and keyed up on the Shady Grove end. <u>Radio RTC:</u> Responded, "I am talking to two different operators. I need to speak with the Train Operator that indicated they had a lunar signal at A13-02." [Ops 1]		
08:17:24 hours	ROCC Assistant Superintendent: Contacted MTPD and reported a Red Signal Overrun event at Twinbrook Station interlocking. The ROCC suspended train service from Grosvenor Station to Twinbrook Station. Additionally, the ROCC Assistant Superintendent indicated the train in the Interlocking does not have any customers on board. MTPD Communication: Acknowledged. [Phone] Note: This information was later determined to be incorrect. During the incident response, it was later reported that there were two customers on board the incident train. [Phone]		
08:18:40 hours	Radio RTC: Contacted Train ID 101 Train Operator and granted them an absolute block to properly berth one door on the platform at Twinbrook Station, Track 2. Radio RTC instructed the Train Operator to walk all customers through the bulkhead doors. Train ID 101 Train Operator Two: Acknowledged. [Ops 1]		
08:20:11 hours	<u>Radio RTC:</u> Announced that all Red Line train service had been suspended from Twinbrook Station to Grosvenor Station due to an incident. The Radio RTC instructed all trains to offload at Grosvenor Station, Track 2 going into the pocket track, reverse ends going in the direction of Glenmont Station. [Ops 1]		

Time	Description
08:22:00 hours	ROCC Assistant Superintendent: Contacted Twinbrook Station
	Coordinator of a Red Signal Overrun at Twinbrook Station.
	Twinbrook Station Coordinator: Acknowledged and indicated "we have
	poor radio communication at Twinbrook Station."
	<u>ROCC Assistant Superintendent:</u> Responded, "the Train Operator did not
	contact us and just moved without instructions." ROCC Assistant
	Superintendent then appointed the Twinbrook Station Coordinator as the
	Twinbrook Station [Phone]
	Note: During the virtual interview the Radio RTC stated they were
	unaware that the ROCC Assistant Superintendent had appointed
	Twinbrook Station Coordinator as the OSC over the phone.
08:31:10 hours	Montgomery County Police: Contacted the ROCC RTC and reported that
	they just received a call from a customer on the Red Line who was upset
	and cursing at one of the Train Operators there and just wanted to make
	sure the employee was ok.
	ROCC RTC: Responded, "yes, thank you." [Phone]
08:31:22 hours	Train ID 124 Train Operator One: Contacted Radio RTC and reported two
	customers were aboard the train, and one customer was about to pull the
	emergency door.
	Radio RTC: Responded, "let the customer know to standby."
	<u>Irain ID 124 Irain Operator One:</u> Responded, I am trying to keep them
	beard over the radio using explicit language velling to get off the train [Ons
	1
08:34:30 hours	RTRA Supervisor: Contacted Radio RTC and reported they are at
	Twinbrook Station.
	Radio RTC: Acknowledged and indicated, "you will be appointed as the
	OSC." [Ops 1] Note: The customer can be heard over the radio yelling,
	stating "I need to go now." [Ops 1]
08:36:03 hours	Radio RTC: Contacted RTRA Supervisor to ask if they have a working hot
	stick and whether MTPD was on scene.
	<u>RTRA Supervisor:</u> Responded, "MTPD is standing right next to me, and I
	have a working hot stick."
	Radio RIC: Acknowledged, and stated, "A13-02 signal is red, prohibit
	form status are in place. ET was granted for the RTPA Supervisor to enter
	the readway at Twinbrook Station. Track 1 to bet stick, confirm third rail
	nower was de-energized, and provide the ROCC with a CM "
	RTRA Supervisor: Acknowledged. [Ops 1]
08:40:31 hours	RTRA Supervisor: Contacted the Radio RTC and reported third rail power
	was confirmed de-energized at CM A1-702+00.
	Radio RTC: Acknowledged and stated, "you have permission to enter the
	roadway and escort MTPD to the incident train to evacuate the two
	customers onto the roadway and safely escort them to the Twinbrook
	Station platform."
00.45.40 5	KIKA Supervisor: Acknowledged. [Ups 1]
08:45:12 nours	ROUC Assistant Superintendent: Contacted ROUC RTC and asked if
	ROCC RTC: Responded "Train ID 124 has two customers on board, and
	customer evacuation efforts are in progress " [Phone]
	reaction evaluation enorts are in progress. If hold

Time	Description
08:47:03 hours	RTRA Supervisor: Contacted the Radio RTC and reported MTPD
	evacuated two customers onto the roadway and safely escorted them to
	the Twinbrook Station platform.
	Radio RTC: Acknowledged. [Ops 1]
09:02:08 hours	RTRA Supervisor: Contacted the Radio RTC and reported ERT arrived on
	the scene.
	Radio RTC: Acknowledged. [Ops 1]
09:09:52 hours	RTRA Supervisor: Contacted the Radio RTC and reported ATC arrived on
	the scene.
	Radio RTC: Acknowledged. [Ops 1]
09:18:09 hours	Radio RTC: Contacted RTRA Supervisor and asked "has MTPD
	transferred command to RTRA?"
	<u>RTRA Supervisor:</u> Responded, "yes MTPD transferred command back to RTRA."
	Radio RTC: Acknowledged and appointed them as the OSC and indicated
	"you could give ATC permission to enter the roadway to perform their
	assessments." [Ops 1]
09:20:10 hours	ATC: Contacted Radio RTC and advised ATC personnel is requesting to
	enter the roadway under Exclusive Track Occupancy (ETO) protection with
	three additional ATC personnel and four TRST personnel to perform an
	nitehocking inspection. ATC reported they would be taking control of the
	spots were identified
	Radio RTC ⁻ Acknowledged [Ops 1]
09:25:22 hours	Radio RTC: Contacted ATC and stated. "vou plus seven WMATA
	personnel have permission to enter the roadway at Twinbrook Station,
	Track 1, third rail power is de-energized," and ATC would be taking control
	of the panel.
	ATC: Acknowledged. [Ops 1]
09:25:54 hours	<u>CMNT Mechanic:</u> Contacted Radio RTC and reported they are on scene at Twinbrook Station. Track 1.
	Radio RTC: Acknowledged and instructed them to go direct with ATC to
	join their work crew to enter the roadway to inspect Train ID 124.
	CMNT Mechanic: Acknowledged. [Ops 1]
09:26:22 hours	ATC: Contacted Radio RTC and reported ATC personnel had taken over
	the panel and they are about to enter the roadway at Twinbrook Station,
	Track 1.
	Radio RTC: Acknowledged. [Ops 1]
09:42:01 hours	<u>CMNT Mechanic:</u> Contacted Radio RTC and reported they completed their
	ground walk-around inspection of the affected consist and stated they did
	on the platform
	Radio RTC: Acknowledged [Ons 1]
09·47·14 hours	Radio RTC: Contacted RTRA Supervisor and asked if SAFE was on the
	scene.
	RTRA Supervisor: Responded, yes, SAFE is on scene and provided their
	unit number. [Ops 1]
09:48:30 hours	RTRA Supervisor: Contacted Radio RTC and reported SAFE stated they
	are clear at this time.
	Radio RTC: Acknowledged, [Ops 1]

Time	Description		
10:00:03 hours	SAFE: Contacted Radio RTC and requested to go direct with the RTRA		
	Supervisor.		
	Radio RIC: Responded, "you have permission at this time."		
	<u>SAFE:</u> Contacted RTRA Supervisor and reported you have permission to		
	RTRA Supervisor: Acknowledged [Ops 1]		
10:05:41 hours	RTRA Supervisor Two: Contacted Radio RTC and requested to go direct		
	with the RTRA Supervisor.		
	Radio RTC: Responded, "you have permission at this time."		
	RTRA Supervisor Two: Contacted RTRA Supervisor and stated they are		
	standing by car 7364 and ready for third rail power to be restored.		
	RIRA Supervisor: Acknowledged and stated to Radio RIC that third-rail		
	Power could be restored at the ROCC's discretion. Radio RTC: Responded "have all personnel cleared the roadway?"		
	RTRA Supervisor Responded that all personnel and equipment were		
	clear of the roadway and third-rail power could be restored at the ROCC's		
	discretion.		
	Radio RTC: Responded, "have you confirmed that it is safe for rail vehicle		
	movement in the direction of Shady Grove Station, Track 1?"		
	I Winbrook Station Coordinator: Responded, "ATC has confirmed it is safe		
	Radio RTC: Acknowledged and announced third rail restoration efforts are		
	in effect at Twinbrook Station, Tracks 1 and 2. [Ops 1]		
10:17:22 hours	RTRA Supervisor: Contacted Radio RTC and reported they were aboard		
	Train ID 124, Lead Car 7364. "At this time, we have a good train and		
	Padio RTC: Acknowledged and stated "standby stand clear " [One 1]		
40.40.47 h	<u>Radio RTC.</u> Acknowledged and stated, standby stand clear. [Ops 1]		
10:19:47 nours	Radio RTC: Contacted RTRA Supervisor and asked ITATC could walk the		
	RTRA Supervisor: Responded "ATC is ready to walk the affected consist		
	to clear A13-02 signal." [Ops 1]		
10:20:06 hours	Radio RTC: Contacted RTRA Supervisor Two and asked, "are you keyed		
	up on the Shady Grove side, ready to move?"		
	<u>RTRA Supervisor Two:</u> Responded, "that's confirmed standing by for an		
	absolute block."		
	<u>Radio RTC:</u> Responded, at this time, you have an absolute block to the turnback to clear the A13-02 signal with speeds not exceeding 5 mph		
	looking out for ATC personnel in the roadway "		
	RTRA Supervisor: Acknowledged. [Ops 1]		
10:22:27 hours	ATC: Contacted Radio RTC and reported "we cleared the A13-02 signal."		
	Radio RTC: Acknowledged and stated RTRA Supervisor, ATC personnel		
	have permission to continue their interlocking inspection.		
10.05.55 have	<u> KIKA Supervisor:</u> Acknowledged. [Ups 1]		
10:25:55 nours	Twinbrook Station, Track 1, to perform a switch inspection in the offected		
	area		
	Radio RTC: Responded, "go direct with ATC; they are in control of that		
	area." [Ops 1]		

Time	Description
10:30:08 hours	TRST-ERT: Contacted ATC and requested to enter the roadway at
	Twinbrook Station, Track 1, to perform a switch inspection in the affected
	area.
	<u>AIC:</u> Responded, "you have permission to enter the roadway at 1 winbrook
	TRST ERT: Acknowledged [Ons 1]
10·40·28 hours	TRST-ERT: Contacted Radio RTC and reported they are clear of the
10.40.20 110013	roadway
	Radio RTC: Acknowledged.
10:43:02 hours	ATC: Contacted Radio RTC and reported all equipment and personnel are
	clear of the roadway. The ROCC can take control of the panel and confirm
	a good track inspection on the roadway and tracks were revenue ready.
	The area was deemed safe for rail vehicle movement.
	Radio RTC: Acknowledged. [Ops 1]
10:45:25 hours	Radio RTC: Contacted RTRA Supervisor and stated, "I am confirming that
	all personnel and equipment were clear of the roadway."
	<u>RIRA Supervisor:</u> Responded, "all personnel and equipment are clear of
10.10.10 h a una	The roadway and standing on the Twinbrook Station platform. [Ops 1]
10:46:12 nours	<u>RTRA Supervisor Two:</u> Contacted Radio RTC and requested permission
	Vard
	Radio RTC ⁻ Responded "you have permission to key up and be advised
	the A13-02 signal is red."
	RTRA Supervisor Two: Responded, "I am looking at the signal, and the
	A13-02 signal was lunar, and they had train readouts and correct rail
	alignment at this time."
	Radio RTC: Responded, "verify lunar at A13-02 signal, and you have
	permission to transport the affected consist to Brentwood Rail Yard."
	RTRA Supervisor Two: Acknowledged and stated the incident Train ID
	Radio RTC: Acknowledged
10·47·32 hours	Radio RTC: Announced Red Line train service had been restored between
	Twinbrook Station to Glenmont Station. IOps 11

**Note: Times above may vary from other system's timelines based on clock settings.

Advanced Information Management System (AIMS)

The images below depict the ROCC AIMS screen display during the incident sequence. These images are enlargements of a small portion of a controller's display screen and thus do not represent the actual view available to the ROCC controller.



Diagram 3 - At 08:08:55 hours, Train ID 124 berthed at Twinbrook Station platform, Track 2 to discharge passengers.



Diagram 4 - At 08:10:30 hours, Train ID 124 cleared the A13-08 signal displaying a lunar aspect and crossed over from Track 2 to Track 1.



Diagram 5 - At 08:11:35 hours, Train ID 124 overran A13-02 signal displaying a red aspect and began to cross over from Track 1 to Track 2.



Figure 1 – At approximately 08:11 hours, Train ID 124 Operators Cab camera video footage revealed the Train Operator on Car 7658 initiated the "Stop and Proceed" mode.



Figure 2 – At approximately 08:11 hours, Train ID 124 forward-facing camera video footage revealed the train overran A13-02 signal displaying a red aspect. The train responded as expected, and its performance was within design specifications. Additionally, no operational anomalies were noted on the VMDS fault log during the reported incident time.

Metro Transit Police Department (MTPD)

The MTPD report revealed that at approximately 08:20 hours, MTPD Officers were dispatched for a reported Red Signal Overrun event. Upon the MTPD Officer's arrival on the scene, MTPD assumed OSC responsibilities, and another MTPD Officer was assigned as the MTPD Forward Liaison. At approximately 08:40 hours, the RTRA Supervisor hot sticked and confirmed third rail power was de-energized. At approximately 08:46 hours, Warning Strobe Alarm Devices (WSADs) were installed to evacuate two customers from the disabled train. At approximately 08:48 hours, per DVEU, an MTPD and RTRA Supervisor assisted the customers off the disabled train and safely to the platform without incident. At approximately 09:25 hours, MTPD turned the scene over to RTRA. At approximately 10:47 hours, normal service resumed, and Train ID 124 was immediately put back into service. There were no reported injuries as a result of this incident. See Appendix K.

SAFE Incident Management Officer (IMO) Incident Log

The SAFE IMO Incident Log revealed that at approximately 08:33 hours, the WMSC granted responding WMATA personnel permission to move the incident train when necessary as long as all pertinent information was captured from the incident train.

Automatic Train Control Maintenance (ATCM)

ATCM conducted an inspection of switches 1A and 1B in the incident area and determined there was no damage to ATCM equipment. In addition, ATCM performed a switch obstruction test and verified proper adjustment and operation of the switch machine. Based on the ATCM compliance review of the area and the event, ATCM determined there were no ATCM equipment anomalies that contributed to the cause of this incident.

Automatic Train Control Engineering (ATCE)

Automatic Train Control Engineering (ATCE) data analysis of the ATC system revealed Train ID 124 violated the A13-02 signal displaying a red aspect. No anomalies were identified within the system logs. See Appendix C. Details from the data analysis are as follows:

Time	Description
08:06:48 hours	A13-08 signal showed clear with switch 1B in the reverse position.
08:07:59 hours	Train ID 124 occupied the Twinbrook Station platform, Track 2.
08:09:53 hours	Train ID 124 traveled outbound and passed the A13-08 signal. Train ID 124 proceeded through interlocking, crossing over to Track 2.
08:10:09 hours	Train ID 124 continued traveling outbound on Track 1. Twinbrook Station Interlocking track circuits showed vacant, which indicated that the train had cleared the interlocking.
08:11.22 hours	Track circuit 1AT showed occupied, while A13-02 was red, indicating Train ID 124 passed a signal displaying a red aspect and occupied the interlocking.

ATCE Analysis:

Event Recorder (ER) Data Graph/Sequence of Events

Based on CMOR IIT analysis of the downloaded VMDS and ER, details from the data analysis are as follows:

TIME	Description	
08:08:47 hours	Train ID 124 consist came to a complete stop at Twinbrook Station, Track 2.	
08:08:51 hours	The consist left door open pushbutton was activated, and the platform doors opened.	
08:09:07 hours	The consist left door open pushbutton was activated, and the platform doors closed.	
08:09:12 hours	The consist all doors closed and locked signal activated.	
08:09:17 hours	Car 7364 was keyed down.	
08:09:45 hours	Car 7364 was keyed up.	
08:09:47 hours	The consist master controller was placed in the "P1-P4" power mode position.	
08:10:01 hours	The consist began moving beyond the eight-car marker on Track 2.	
08:10:08 hours	The consist entered Twinbrook Station Interlocking, crossing over from Track 2 to Track 1.	
08:10:58 hours	The consist came to a complete stop after traveling approximately 1,026 feet.	
08:11:01 hours	Car 7364 was keyed down.	
08:11:05 hours	Car 7658 was keyed up on the opposite end in the direction of Twinbrook Station, facing A13-02 Signal on Track 1.	
08:11:17 hours	Train Operator on Car 7658 entered Stop and Proceed mode.	
08:11:30 hours	The consist master controller was placed in a "P1-P4" power mode position.	
08:11:31 hours	The consist began moving in the direction of Twinbrook Station.	
08:11:35 hours	The consist passed the A13-02 signal at 5.2 mph, with the master controller in a "P1-P4" power mode position.	
08:11:40 hours	The consist master controller was placed in a B4 braking mode position with a speed of 13.1 mph and traveled approximately 77 feet past the A13-02 signal, entering into interlocking and heading back towards Track 2.	
08:11:48 hours	After the consist traveled approximately 174 feet, the consist came to a complete stop approximately 158 feet beyond the A13-02 signal.	
08:13:45 hours	Car 7658 was keyed down.	
08:13:49 hours	Car 7364 was keyed up.	
08:46:19 hours	Car 7364 was keyed down.	

Note: CMOR IIT reported based on the VMDS Fault logs and ER data; there were no train functionality anomalies that contributed to the cause of this incident.

Consist Emergency Intercom Event Log Activation

The CMOR IIT VMDS download revealed a customer onboard the consist attempted to contact the Train Operator by activating the consist emergency intercom during the incident. The customer call events that were logged from Car 7658 are as follows.

Time	Description
08:23:31 hours	Customer Call Event Log
08:34:47 hours	Customer Call Event Log
08:45:43 hours	Customer Call Event Log





Office of Car Maintenance (CMNT)

At the incident site, CMNT conducted a ground walk-around inspection of the affected consist. There were no anomalies, and CMNT deemed the incident train safe for rail vehicle movement back to Brentwood Rail Yard for further assessment. At Brentwood Rail Yard, CMNT complied with Special Instruction Procedure (SIP) number G3 and performed the following post-incident inspection of the affected consist. CMNT performed a master controller operational check, brake rates check and inspected all cars for flats. CMNT found no anomalies and reported that all systems were functioning as designed. See Appendix F.

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

COMR performed a comprehensive radio operational test from White Flint Station to Twinbrook Station Tracks 1 and 2. The test was successful, and COMR reported a good radio signal.

Interview Findings

SAFE conducted three interviews via Microsoft Teams, which were attended by members of the WMSC. These virtual interviews identified the following key findings associated with this event:

During the virtual interviews, the Radio RTC stated the ROCC handled this incident as if the train had derailed and followed SOP 9, Train Derailment, Mainline, and Yard. *Note:* SOP 1A is a part of SOP 9 procedures. Train Operator One stated they were on Track 1, moving in the direction of Twinbrook Station, facing the A13-02 signal. Suddenly, their consist turned left, back into the interlocking crossing over from Track 1 to Track 2. The Train Operator One stated that once their train turned left, instead of keeping straight to Twinbrook Station, Track 1, they stopped, contacted the ROCC, and informed them of what occurred. Train Operator One stated they did not initiate Stop and Proceed Mode to move the train and said they had a lunar at A13-02 signal and correct rail alignment. Train Operator Two stated that before departing Twinbrook Station, Track 2 to perform turn back operations, they made three announcements to the customers that the train was out of service, looked out the window, and saw no more customers getting off the train. Train Operator Two stated they never walked through all cars to ensure the train was clear of all customers and assumed all customers had offloaded. Train Operator Two stated that the two customers on the train during the incident told them they didn't hear the announcements that the train was out of service due to wearing headphones.

<u>Weather</u>

At the time of the incident, National Oceanic and Atmospheric Administration (NOAA) recorded the temperature as 64° F with broken clouds with 67% humidity. Weather was not a contributing factor to this event. (Weather source: NOAA – Location: Rockville, MD)

Human Factors

Fatigue

Based on SAFE's review of the Train Operator One and Train Operator Two's 7-day work history, the employees' 7-day work schedules leading up to the incident were compliant with WMATA's Policy/Instruction10.6/1 Hours of Service Limitations for Prevention of Fatigue. The work schedules did not present a risk of impairment due to fatigue.

Train Operator One

Evidence of Fatigue

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

Fatigue Risk

The incident data was evaluated 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. Based on the employee's reported bed and wake times the day before the incident, the employee slept a total of 7 hours in the sleep period preceding the incident and was awake for 6.16 hours at the time of the incident. Train Operator One's off-duty period preceding the incident was 13 hours, which provides an opportunity for 7-9 hours of sleep. The employee reported usual workday sleep durations of 8 hours and no issues with sleep.

Train Operator Two

Evidence of Fatigue

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

Fatigue Risk

The incident data was evaluated 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. Based on the employee's reported bed and wake times the day before the incident, the employee slept a total of 9 hours in the sleep period preceding the incident and was awake for 3.18 hours at the time of the incident. Train Operator Two's off-duty period was 16.25 hours, which provides an opportunity for 7-9 hours of sleep. The employee reported usual workday sleep durations of 6 hours and no issues with sleep.

Post-Incident Toxicology Testing

After reviewing the Train Operator's post-incident testing results, it was determined that both Train Operators were not in violation of the Drug and Alcohol Policy and Testing Program 7.7.3/6.

Findings

- Train Operator on Car 7658 initiated Stop and Proceed mode prior to passing signal A13-02 and the consist passed the A13-02 signal at 5.2 mph.
- ATCE data analysis of the ATC system revealed Train ID 124 violated the A13-02 signal displaying a red aspect.
- COMR performed a comprehensive radio operational test from White Flint Station to Twinbrook Station Tracks 1 and 2. The test was successful, and COMR reported a good radio signal.
- A customer onboard the consist attempted to contact the Train Operator by activating the consist emergency intercom after the red signal overrun.
- Train Operator One and Train Operator Two were not in compliance with MSRPH Operating Rule 45.5.2.1.2, which states, "Obtain permission from the ROCC/Terminal Supervisor to walk through interior of the train and inspect each car for customers. If a customer is found on board the train, the Operator must inform the ROCC/Terminal Supervisor and allow the customer to exit to the platform via the nearest crew door."
- RTRA was unable to locate Train Operator One's signature/acknowledgement of the Stop and Proceed RTRA Operation Notice issued on July 22, 2020. See Appendix H.

- ROCC handled the Red Signal Overrun event as if the train had derailed and followed SOP 9 Train Derailment, Mainline, and Yard. The incident train was not moved until investigated and determined to be safe by authorized personnel.
- The Radio RTC was unaware that the ROCC Assistant Superintendent appointed Twinbrook Station Coordinator as the OSC over the phone and made a subsequent appointment of the RTRA Supervisor as OSC. This did not result in any conflicting orders as OSC responsibility was later transferred to MTPD.
- Based on the RSAB # 254-R, Train Operators were performing turn-back moves contrary to what was developed. The RSAB # 254-R states that during turn-back moves, trains shall crossover at A13-06 signal from Track 2 to Track 1. However, on the day of the incident, Although this deviation did not contribute to the incident, it is an example of an overly prescriptive procedure. AIMS playback revealed trains were crossing over at A13-08 signal from Track 2 to Track B.

Immediate Mitigation to Prevent Recurrence

- Train Operator One was removed from service for post-incident testing.
- Train Operator Two was removed from service for post-incident testing.
- The affected consist was removed from service for the post-incident investigation process.
- CMNT inspected the affected consist and deemed the consist safe for rail vehicle movement back to Brentwood Rail Yard for further inspection.
- ATCM conducted track and switch inspections and verified the area was safe for service.

Probable Cause Statement

The probable cause of the Red Signal Overrun event on September 28, 2021, were multiple human factor errors and lack of procedural adherence. Contributing factors to the incident were the Train Operator One initiating Stop and Proceed Mode without contacting ROCC for permission to move the train and failing to verify lunar signal, correct rail alignment and acknowledge the red signal before taking a point of power. These actions resulted in the rail vehicle violating the A13-02 signal, displaying a red aspect, and beginning an unintended diverging move. Train Operator One and Train Operator Two experienced human performance difficulty and lack of procedural adherence when they failed to check the train for customers prior to leaving the platform at Twinbrook Station.

Recommendations/Corrective Actions

The following are the recommendations and corrective actions identified as a result of this investigation. These recommendations and corrective actions are tracked and verified by SAFE upon completion. The responsible department is identified in the corrective action code, and the respective departmental Safety Risk Coordinator (SRC) will manage the mitigation. Refer to the SMS I/A Module for additional information. Additionally, corrective actions related to MTPD and Roadway Worker Protection are in progress, as noted in Event Report 20488 (Customer Evacuation at Fort Totten Station). Those Corrective Actions are copied below for reference:

Corrective Action Code	Description	Due Date
95848_SAFE CAPS_RTRA _001	(RC-1) Developed and distributed Stop and Proceed Mode Personnel Notice on 6000 Series Railcars. To raise awareness, RTRA Division Managers conducted discussions with Train Operators and Interlocking Operators regarding this notice. Additionally, this notice was posted in the terminals, towers, and within divisions.	Completed

Date: 09/28/2021 Time: 08:11 hours. Final Report – Red Signal Overrun E21471	Drafted By: SAFE 705 – 11/8/2021 Reviewed By: SAFE 71 – 11/24/2021 Approved By: SAFE 71 – 11/26/2021	Page 20

Corrective Action Code	Description	Due Date
95848_SAFE CAPS_RTRA _0012	(RC-1) Developed and distributed Lessons Learned to RTRA personnel based on the incident facts. Topics emphasized the importance of verifying a lunar signal, correct rail alignment, and speed readouts before departing. Train Operators shall contact ROCC and advise them that they do not have speed commands before entering stop and proceed mode. Additionally, Train Operators must thoroughly check and verify clear of customers, per SOP #45.	Completed
95848_SAFE CAPS_RTRA _003	(RC-1) Train Operator One completed refresher training from a qualified Rail Operations Quality Training (ROQT) Instructor. Additionally, Train Operator One was reissued a copy of the RTRA Operations Personnel Notice Stop and Proceed Mode (dated July 22, 2020) for 7000 series railcars.	Completed
95848_SAFE CAPS_RTRA _0014	(RC-1) Rail Operations Supervisors conducted random ride along with Train Operators checks for observation purposes and documented them in the Rail Supervisor Daily Activity Report (RSDAR).	Completed
90755_SAFE CAPS_ MTPD_002	Shall develop an incident response / IC quick [tick] checklist to identify responsibilities, respective equipment, processes upon arrival.	Completed
90755_SAFE CAPS_ SAFE_004	MTPD RWP training materials shall be reviewed at least annually by OPMS, to ensure process changes and rule updates are reflected in the material.	Completed
90755_SAFE CAPS_ SAFE_006	The newly created Incident Management Officer's role shall be clearly defined when emergency response procedures are enacted. This includes supporting the Incident Commander when SOP 1A is followed.	Completed
90755_SAFE CAPS_ MTPD_009	ROCC and MTPD shall conduct after action reviews after each emergency response incident; this is in addition to MTPD's field Hot Wash reviews. Lessons learned will be documented, as well as mitigations that would address issues experienced.	Completed
90755_SAFE CAPS_ MTPD_010	Until all IMO personnel have been trained in MTPD procedures, an MTPD officer should be deployed to the ROCC to ensure proper communications are maintained in the event of an emergency.	Completed
90755_SAFE CAPS_ MTPD_011	The Incident Commander shall communicate to ROCC the full section of track that is part of their oversight when SOP 1A is enacted.	Completed

Appendices

Appendix A – Interview Summaries

The below narratives are summaries of the interviews with SAFE and represent the statements made by the involved individuals. As such, times and details may present a conflict with the data contained in systems of record.

Office of Rail Transportation (RTRA)

Train Operator One

The Train Operator is a WMATA employee with six years of service and approximately four years of experience as a Train Operator. The employee's last Rail Certification was in January 2020. This employee has no history of sleep issues to report.

During the virtual interview, Train Operator One stated they were assigned to support the Twinbrook Station to Shady Grove Station Shutdown and reported to Twinbrook Station. Train Operator One stated they were assigned to wait on the Twinbrook Station platform until the trains arrived on Track 2. Upon arrival, they were turning trains back using the Twinbrook interlocking to return to Track 1 in the direction of Glenmont. Train Operator One stated that all trains were double-ended during turnback operations. Before the incident, Train Operator One stated they boarded the trailing car of the incident train, and Train Operator Two boarded the lead car on Track 2. Train Operator Two operating Train ID 124 departed Twinbrook Station Track 2, cleared the A13-08 signal, and crossed over from Track 2 to Track 1. Once Train Operator Two cleared the A13-02 signal, Train Operator One stated they used their yard horn to indicate the tail end of the train had cleared signal A13-02. Train Operator Two stopped the train and sounded their horn to let Train Operator One know they keyed down. Train Operator One stated they then keyed up and soon after keying up, a customer aboard their consist activated the emergency intercom and indicated they were on the train and needed to go to Rockville Station. Train Operator One stated they told the customer to standby. They are waiting on a solid lunar signal and will take the customer back to Twinbrook Station.

After speaking with the customer, Train Operator One stated they had a lunar signal, speed commands, and correct rail alignment, so they proceeded to move. Train Operator One stated they were on Track 1 moving in the direction of Twinbrook Station, and all of a sudden, their consist turned left into the interlocking crossing over from Track 1 to Track 2. Train Operator One indicated that once their train turned left, instead of keeping straight, they stopped, contacted the ROCC and immediately informed them of what occurred. Train Operator One stated they did not activate stop and proceed mode to move the train. Train Operator One stated the ROCC asked them if they had a lunar at A13-02 signal, and they indicated that they responded "yes." Train Operator One then keyed down and went back to where both customers were to escort them to their lead car. Train Operator One stated there were radio communication issues with the train and handheld radio. Train Operator One stated an emergency ladder was securely positioned by the RTRA Supervisor between the car's end door and the roadway for the customers to be assisted down the ladder by MTPD. MTPD evacuated two customers onto the roadway and safely escorted them to the Twinbrook Station platform. Train Operator One stated they turned back approximately eight trains before the incident.

Train Operator Two

The Train Operator is a WMATA employee with eleven years of service and approximately one and a half years of experience as a Train Operator. The employee's last Rail Certification was in April 2020. This employee has no history of sleep issues to report.

During the virtual interview, Train Operator Two stated they were assigned to support the Twinbrook Station to Shady Grove Station Shutdown and reported to Twinbrook Station. Upon arriving at Twinbrook Station, they reported to the designated Station Coordinator to sign in to let them know they were there and participated in a safety briefing. Train Operator Two then reported to the Twinbrook Station platform on the Shady Grove end to support turnback train operations. Before the Red Signal Overrun incident, Train ID 124 entered Twinbrook Station, Track 2, berthed at the platform, and the customers offloaded the train. Train Operator Two stated they then entered the train and keyed up on Car 7364. They made three announcements that this train was out of service and looked out the window and saw no more customers were getting off the train. Train Operator Two stated they never walked through all cars to ensure the train was clear of all customers, and they just announced over the intercom that the train was out of service, assuming all customers offloaded. Train Operator Two stated they then departed Twinbrook Station, Track 2, cleared the A13-08 signal displaying a lunar aspect, and crossed over from Track 2 to Track 1. Train Operator Two stated that once they cleared the A13-02 signal, Train Operator One used their yard horn to indicate they cleared the signal. Train Operator Two stated they stopped the train and sounded their horn to let Train Operator One know they keyed down. Train Operator Two stated Train Operator One keyed up on their end and announced over the intercom that the train was moving. As the train began to move, Train Operator One announced over the intercom that the ROCC set the wrong route and then stopped the train. Train Operator Two stated that Train Operator One said they had a lunar signal and proper rail alignment, but the consist still went back into the interlocking. Train Operator Two stated that Train Operator One keyed down and told them to key up, get in position, and wait for the ROCC instructions. Train Operator Two keyed up but never moved and then, later on, keyed back down, and that's when they found out the operator overran the A13-02 signal displaying a red aspect. Train Operator Two stated that the two customers were found on the train during the incident and said they didn't hear the announcement that the train was out of service due to wearing their headphones.

Rail Operations Control Center (ROCC)

Radio RTC

The Radio RTC is a WMATA employee with 15 years of service and approximately five years of experience as a ROCC RTC. The employee's last Rail Certification was in December 2020. This employee has no history of sleep issues to report.

During the virtual interview, the Radio RTC stated that before the incident, the ROCC Assistant Superintendent directed them to monitor the Ops 1 console until the regular Radio RTC returned to their station. The Radio RTC stated that as soon as they sat down at the radio console, they looked at the AIMS display and noticed Train ID 124 overran the A13-02 signal displaying a red aspect. The Radio RTC stated there was poor radio communication, and they had to repeat their transmission several times before the Train Operator was able to acknowledge the transmission. The Radio RTC stated that Train Operator One stated there were two customers on the train, and they were upset. The Radio RTC stated they asked the Operator if they passed the switch point, and the Operator confirmed they did. The Radio RTC stated they dispatched an RTRA Supervisor, made them the OSC and made the Terminal Supervisor the RTRA Forward Liaison. **Note:** When asked during the interview for a time that the Radio RTC appointed the Terminal Supervisor, but they could not be confirmed via ARS playback, the Radio RTC stated they tried to appoint the Terminal Supervisor, but they could not

get in contact with them due to poor radio communication. The Radio RTC stated they were unaware that the ROCC Assistant Superintendent had appointed Twinbrook Station Coordinator as the OSC over the phone. The Radio RTC stated MTPD was dispatched, and third-rail power was de-energized on Track 2 just in case customers decided to pull the emergency doors to exit the train. The Radio RTC stated the RTRA Supervisor notified them that MTPD was on the scene with them. The Radio RTC stated the ROCC never implemented SOP 1A and stated that the ROCC handled this incident as if the train had derailed and followed SOP 9 Train Derailment. Mainline, and Yard. Note: SOP 1A is a part of SOP 9 procedures. The Radio RTC stated they instructed the RTRA Supervisor to hot stick and confirm third rail power was de-energized. After power was confirmed de-energized, they granted the RTRA Supervisor permission to enter the roadway and escort MTPD to the incident train to evacuate the two customers onto the roadway and safely escort them to the Twinbrook Station platform. Once the customers made it back to the platform, the Radio RTC stated MTPD transferred command back to RTRA. The Radio RTC stated CMNT, ATCM, and TRST personnel arrived on the scene to perform their assessments, and there was no damage reported to any track components and the incident train. The Radio RTC stated ATCM reported a good track inspection on the roadway, and tracks were revenue ready. The area was deemed safe for rail vehicle movement. The Radio RTC stated ATCM walked the affected train through the interlocking and to the Twinbrook Station platform. The Radio RTC then granted permission to Train Operator Three to transport the incident train to Brentwood Rail Yard, and then normal service resumed.

Appendix B – RTRA Total Shutdown Rail Service Adjustment Bulletin # 254-R

RAIL	SER	VICE ADJU	STMEN	T BULL	ETIN			
RSA Bulletin #	254-R	Line(s) Affected:	RED LINE					
Type of Operation	Total Shut	down – Twinbrook (A13)	to Shady Grove	(A15)				
Begin Date/Time	12:01 AM Saturday, Se	ptember 11 ^m , 2021	End Date/Time	4:00AM Saturday, Decem	ber 4 ^m , 2021			
Work Area(s)	Shutdown -	Rockville to Shady Grove	Person	W? T-10-05,	ere to SOP 07-06, T-10-06, T-10-07)			
Modified Schedule Provided?	YES See I	Posted Schedules		•				
Specifics of Operation	From Twinbr From Glenm serv will y #2, g flash from	 <u>a Twinbrook</u> - All trains will depart Twinbrook terminal in normal service to Glenmont, Track #1. <u>a Glenmont</u> - All trains will depart Glenmont terminal in normal service to Twinbrook, Track #2. After servicing the platform at Twinbrook, Train Operators being governed by ROCC/Terminal Supervisor will verify a lunar, correct rail alignment and speed commands at A13-08 signal, continue on Track #2, <u>CLEAR</u> A13-06 signal, key down and reverse ends. Once reversed, Train Operators will verify a flashing lunar signal, correct rail alignment and speed commands at A13-06 signal, crossing over from Track #2 to Track #1 and service Twinbrook platform, Track #1. Supervisor(s) will be on duty at their designated location 30 minutes prior to the beginning of the 						
Supervisor & ROCC Instructions	1. Suproper oper 2. Suprospect 3. ROC one oper 4. ROC 5. ROC 1 ve 6. Roc	 Supervisor(s) will be on duty at their designated location 30 minutes prior to the beginning of the operation and contact ROCC via radio and remain on duty until the last train has cleared the area. Supervisor(s) will ensure that Train Operators and Station Managers are aware of operational specifics. ROCC will advise operators of the shutdown operation and receive an acknowledgement from each one that they have received and understand the radio transmission regarding the shutdown operation. ROCC will ensure that the triangles are in place prior to implementing shutdown operations. ROCC will ensure that electronic safe guards (prohibit exits) will be initiated to prevent Class 1 vehicles from entering the work area. 						
Station Manager Special Instructions	6. Kola At Twi 1. Make 2. Cont Special	nbrook Station: e announcements advising cus lact ROCC to confirm the com Note: There will be no Statio	stomers of the destin eletion of the shutdow n Manager coverage	ation of arriving trains wn operation. e at Rockville and S	when possible.			
Train Operator Special Instructions	 Note that of Train desti Ensure the Operator n Spector com 	perators should be aware of the nation codes should read 11 for Relief Operator is aware of R nust not move the train until co cial Note: To ensure a smooth munication and make 8-car sto	neir destination befor or Twinbrook and 13 SA Bulletin 254-R. I intacting ROCC or Si shutdown operation ops at all times.	e departing the termin for Glenmont. f the Relief Operator i upervisor. all employees are rer	nais. s not aware, the Relief ninded to monitor radio			
Safety Equipment	Safety Warn Triangle(s)	Lanterns; Strobe lights	Shunt Straps	Barricades	ROCC to Place Prohibit Exits			
Bus Shuttle?	Yes Shuttle	bus service will be provided b	etween Twinbrook a	nd Shady Grove				
Line	Date & Time	Other Wor	A M1843	Work Location				
Blue	N/A		No track work scheduled					
Yellow	N/A		No track work scheduled					
Orange Sep	tember 11th Oper	ning - 4pm	Single tracking between New Carrollton and Cheverty					
or an all a com								
Green	N/A		No tr	ack work scheduled				

Attachment 1 – Page 1 of 1.

And And

	W	ashingt	on	Met	ropolit	an A	rea	equest:	A13-092821	l		
		Tr	ansi	t Au	uthorit	y	C	ate: 09,	/30/21			
				~ ^	ATOF		F	From:				
met	rð		EIN	GA-/	AICE		Т	o:	<i>45</i>			
Location: A	13	Time of incid	dent: (08:10	Date of	incident:	09/28	/21	Train ID:124	ž.		
Description					Contr	ol of inte	erlocking: Ce	ntral				
Initial state	as of: 08:05	:00										
Name	State	Auto	Nam	е	State	Auto	N	lame	State	Auto		
02	Stop	N/A	0	8	Stop	N/A		Sw1	Rev	N/A		
04	Stop	N/A						Sw3	Nor	N/A		
06	Stop	N/A										
Recorded E	vent Data:							2011				
Time	Location	Status/Cor	ntrol	AIMS DESCRIPTION Comments								
08:06:48	A13	Status	ŝ		Signal Stat	te 8 Clear		Signal	08 Cleared v 1 Reverse	with Switch se		
08:07:59	A13	Status	2	Track	Circuit A2	-694 Occ	upied	Train	124 occupied	d A13 Track		
08:08:05	A13	Status		Tra	ain Number	r Input 2	124		2 platfor	m.		
08:09:53	A13	Status		Tra	ck Circuit 1	BT Occu	pied	Train	124 continues traveling			
08:09:54	A13	Status			Signal Sta	te 8 Stop		Sign	al 08 at 08:0	9:53. The		
08:09:55	A13	Status		Tra	ck Circuit 1	-3T Occu	pied	d train proceeds through interlocking crossing over				
08:10:04	A13	Status		Tra	ck Circuit 1	AT Occu	pied		Track 1			
08:10:09	A13	Status		Trac	cCircuit A1	-704 Occ	upied	Train	124 continue	es traveling		
08:10:23	A13	Status		Track	c Circuit A1	-708 Occ	upied	outh	ound on Tra	ick 1. The		
08:10:24	A13	Status		Tr	ack Circuit	1BT Vac	ant		ocking track int. indicatin	g that the		
08:10:35	A13	Status		Tr	ack Circuit	1-3T Vac	ant	tr	ain has clear	red the		
08:10:40	A13	Status		Tr	ack Circuit	1AT Vac	ant		interlocki	ng.		
08:11:22	A13	Status		Tra	ck Circuit 1	AT Occu	pied	Track w	Circuit 1AT i hile Signal 02	s Occupied 2 is red,		
08:11:26	A13	Status		Tra	ck Circuit 1	-3T Occu	pied	indica	iting Train 12 red signa	24 passed a al.		

Original 09/30/21 A13 092821 Incident Report 0.0 Page 1 of 2 Incident Analysis-A13-092821-0.0-093021

Attachment 2 – Page 1 of 2.

Page 26

	Alarm Status	
Circuit Power Failure: Yes 🗌 No 🛛	Processor Failure: Yes□ No⊠	Power Transfer: Yes□ No⊠
AIM data was gathered from 09/28/	21 08:05:00 AM to 09/28/21 08:20	0:00 AM.
On 9/28/21 Train 124 occupies A13 TWC. Signal 08 is clear with Switch 1 move outbound.	Platform track circuit A2-694 and T 1 in Reverse. After stopping at A13	Train ID 124 is picked up by the 8 platform, Train 124 proceeds to
Train 124 passes Clear Signal 08 at 0 indicate Train 124 proceeds through interlocking track circuits are vacant	8:09:54. The consecutive occupan interlocking, crossing over to Trac , indicating Train 124 is clear of the	cy of the interlocking track circuits k 1. At 08:10:40, all the e interlocking.
Train 124 is now located on Track 1 o 08:05:00, and the status has not cha Train 124 has passed Signal 02 while	outbound of Signal 02. Signal 02 h nged. At 08:11:22, track circuit 1A the signal was at Stop.	ad the initial state of Stop at T becomes occupied indicating
During the data gathering time period position and there were no control to same time period, Signal 02 was at S signal.	od, 08:05:00 AM to 08:20:00 AM, S oits indicating an attempt to throw itop and there were no control bits	witch 1 was in the Reverse the switch Normal. During the s indicating an attempt to clear the



Original 09/30/21 A13 092821 Incident Report 0.0 Page 2 of 2 Incident Analysis-A13-092821-0.0-093021

Attachment 2 – Page 2 of 2.

Appendix D – ATC Data Analysis

M	с. 			ATC	-1000		
metro Fo	orm 1007	Switch H	And Point Detect	ector Tests Data Sheet Loc: A13			
Date	Switch		Hand Cut-Out	CWP Test (√)	Restoration Test (V)	Point Detector Test (V)	Techs
09-28-21	IA	M3		Normal/Reverse	Normal/ Reverse		
	3B	u	V	V	V	~	
	IB	*	~	V	V	~	
	3A	4	~	V	~		

Remarks: A13 - A02 SIG ONSR PUN -

Signature:	Technician Emp No.		Reviewing Sup	ervisor	Emp No.	
				Form 1007	Rev 2.0	08/12/15

Attachment 3 – Page 1 of 1.

Appendix E – ATCM Roadway Job Safety Briefing Form

Permanent Order # T-21-06	DO A DULAY WO			
WMAIN	A ROADWAY WOR	KER JUB SAFETY FORM	, 10	:40 AV
	CALL #1	EMPLOYEE ID	#-	
RWIC'S CELL PHONE #:	RADIO OPS CHA	NNEL: 2251	п	
SAFETY RULE OF THE DAY: Cardinal Ru	les 1-7			
WORKASSIGNMENT: Literlocking Inspec	dim	DIRECTION OF TRAFFIC: INBO		0 7
RAILLINE B C D E F G J K L N TRACK #: 1_	-23	WORK LIMITS CM: 7 00 +	-40 TO 749	1788
PLACE OF SAFETY: fence side and/	on play	u of suffety	-10-1	1 21
TYPE OF PROTECTION(s): IT ETO AUTHORITY	ET	O LOCAL SIGNAL	AMF FT	
REQUEST FROM ROCC: BLOCK CALLS CAN	CEL AUTOMATIC S	IGNALS	PROHIBIT EXITS	
RED HOT SPOT(S) TYPE/LOCATION	HOT SPOT HAZAR	DS	ETS/RADIO OUTAGE	
POWER OUTAGE: LOTO: RED TAG:	SU	PERVISORY: NO F	POWER OUTAGE:	
RED TAG #: ₩ / +λ RED	TAG HOLDER:			
WATCHMAN/LOOKOUT ASSIGNED: YES VO	WATCHMA	N/LOOKOUT NAME(s)	k	
WATCHMAN/LOOKOUT EQUIPPED WITH "W" WARNING D	C, AIR HORN AND	WHISTLE, ("W" Warning Disc re	quired for fixed Zones):	
FOUL TIME CAN BE	REQUESTED IN A	LL WORK ZONE CONFIGURATIO	NS	8
WATCHMAN/LOOKOUT MUST BE PROPERLY SPA	CED AND HAVE S	UFFICIENT SIGHTING DISTANCE	TO PROVIDE AMPLE WAR	NING
Advanced Mobile Flagger ASSIGNED: YES NO	AMF CALL	#:N/A	(1997) - T	
ADVANCE MOBILE FLAGGER EQUIPPED WITH A	MBER LANTERNS	/E-FLARES, ORANGE FLAG, AIR	HORN, WHISTLE, AND RAD	10:
PIGGYBACK CREW LEADER CALL #(s):	PIGGYBAC	WORKZONE CM(s):		
PIGGY BACK WORK ASSIGNMENT:				
# OF CLASS 2 RAIL VEHICLE(s): CLASS 2 RAIL V	EHCILE(s) OPERAT	ING IN THE WORK ZONE:		
ALL ROADWAY WORKERS MUST EXERCISE GOOD JUDGE	MENT AND CONSI ENTERING THE	DER THE FOLLOWING POTENTIA ROADWAY:	L HAZARDS AND PROCED	JRES BEFORE
WEATHER CONDITIONS	V	TRIPPING HAZARDS / UNEV	EN WALKING SURFACES	
TRACK GRADE AND VISIBILITY	\square	POOR LIGHTING / TUNNEL	AND VENT SHAFT(S)	G/
HAZARDS ASSOCIATED WITH RAIL VEHICLE MOVEMENT	r 🖬	TRAIN / CURVE SPEED(s)		I
WORKSITE CONDITIONS AND ACTIVITIES	V	ETS BOX(s) LOCATIONS		I
EMERGENCY PROCEDURES	7	EQUIPMENT AND TOOL SAI	FETY	I.
ADJACENT TRACK PROTECTION	P	ROTATION AND RELIEF PRO	CEDURES	ľ
WSAD CERTIFICATION DUE WSAD SERIAL	#/ASSET ID	WSAD CERTIFICATION DUE	WSAD SERIAL #/	ASSET ID

Attachment 4 – Page 1 of 2.

	Electrical Safety	Gloves Date:	N	/A	INSPECT RWP	STICKER:	4
			OPANGE	VELION	MATEVOD	ATE	
BOLATED MAT. N/A						AIL	
I understand and agree w	ith all aspects of the Roa	DADWAY WORKER AC	iust received. I a	m adequately pro	tected from any	train moveme	ent
		or roadway ha	zards.				
ROADWAY WO	I understand I have RKERS HAVE THE RIG	a responsibility to conduc HT AND RESPONSIBILIT	myself in a safe Y TO INITIATE A	Manner at all tim GOOD FAITH	es. CHALLENGE WH	EN NECESS	ARY
Roadway Worker	Employee/			Radio Call	Radio		
Signature	Contractor ID#	Crew Leader's Signature/ ID #		ID	Certification Date	Serial #/ As	set I
					6/10/23	T000 4	2F
					8123	T0000	421
					02/25/22	Tooo	42
					8-9-23	9029.	43
							_
					02/2/22	Thomas	(7)
					01/ciles	Jerr	TC
							-
	G	JOD FAITH CHALLENGE	INFORMATIO	N			
EMPLOYEE(s) NAME		EMPLOYEE(s) #			DATE/TIME		
RWP ISSUE(s)			ISSU	ED RESOLVED:	Yes	No	
WIC Comments:							
							_
WIC SIGNATURE				DATE/TIME	9.28.	2021 0	. 2

Attachment 4 – Page 2 of 2.

Appendix F – CMNT Work Order Details

M		Washing Mainter	ton Metrop nance and N Worl	olitan Area Material Mar	a Transit / nagement ails	Authority System			Page 1	of 2 MX76PROD
Work Ord Type: CM	er #: 16604377						Statu 09/29	is: CLOSE //2021 19:0	9	
Joł	Work Description Plan Description	Red signal overrun, 24/0, /	A13, RTR, RSIG	, 124						
				Work Informat	ion					
	Asset: R7658	7658, RAIL CAR, KAWASAKI, 700 CAR	00 AC, A	Owning Offic	ce: CMNT-CMNT	-CMNT		Pare	nt:	
	Asset Tag: R7658			Maintenance Offi	ce: CMNT-BRWD	-INSP		Create Da	te: 09/28/202	21 11:44
	Asset S/N: 7658			Labor Grou	ip: CMNT			Actual Sta	art: 09/28/202	1 11:46
	Location: 1151	B99, BRENTWOOD YARD		Cre	w:			Actual Con	np: 09/28/202	1 16:46
Wor	rk Location: 1151	B99, BRENTWOOD YARD		Lea	ad:			Item: K18050001		
Fa	ilure Class: CMNT018	AUTOMATIC TRAIN CONTROL (/	ATC)	GL Accou	nt: WMATA-02-3	3330-50499160-04	1-*****************)PR**		
Pro	blem Code: 2437	N/A CODE (ATC SYSTEM)		Supervis	or:			Target Sta	art:	
Red	Requested By:			Requestor Pho	ne:			Target Con	np:	
Chain	Chain Mark Start:			Chain Mark Er	nd:		5	Scheduled Sta	art:	
Crea	ate-Mileage: 198606.0			Complete-Mileag	ge: 198606.0					
Task IDs										
Task ID										
10	checked operation of N	IC and checked brake rates, no prob	olems found							
	brake rates A car b1 9 b4 35 b5 45 E 46 brake rates B car									
	b1 5 b4 35 b5 45									
	E 46									
Component	000-300-E00 SUBSYS	TEM; FRICTION BRAKE; 2K/3K/	Work Accomp: C	HECKED	Reason: N		D Status: CLOSE	Position	Wai	rantv?: N
20	visually inspection the	wheels flange wheels flats or spalli	ng . no problem four	d	neuson. n		0 00000	r conton.		rung
Component	- 000 200 K02 002 MUE		Mark Assam	ISPECTED	Bassar: Ib		NT Status: CLOSE	Desition: 55	7 14/	mantu 2: N
Component	.: 000-300-K03-002 WHE	EL, TRUCK; ZN/3N/0N//K	WORK Accomp: IN	ISFECTED	Reason: IN	ICIDENT//ACCIDEI	status: GLOSE	Position: 55	wai	ranty ?: N
Actual Labor	Labor		Start Date	End Date	Start Time	End Time	Approved?	Regular Hours	Premium Hours	Line Cos
10			09/28/2021	09/28/2021	13:30	14:30	Y	01:00	00:00	\$41.76
20			09/28/2021	09/28/2021	13:30	14:30	· · · · · · · · · · · · · · · · · · ·	01:00	00:00	\$38.09
20			00.20/2021	00/20/2021		.4.00	· · ·	01.00	00.00	\$50.00
WT_plust_wo	oprint.rptdesign								10	/3/2021 14:09

Attachment 5 – Page 1 of 2.



Washington Metropolitan Area Transit Authority

Maintenance and Material Management System

Status: CLOSE 09/29/2021 19:09

Work Order #: 16604377 Type: CM



Work Description: Red signal overrun, 24/0, A13, RTR, RSIG, 124 Job Plan Description:

Task ID Lat	oor		Start Date E	nd Date Start Time	End Time	Approved?	Regular Hours	Premium Hours	Line Cos	
					Tota	Actual Hour/Labor:	02:00	00:00	\$79.8	
Related Incidents										
Ticket	Description	Class Status		Relations	hip					
8562101	Red signal overrun, 24/0, A13, RTR, RSIG, 124			SR	SR CLOSED			ORIGINATOR		
Failure Reporting		- 1441 - 2271441100				1	100-111-001-100-			
Cause		Remedy			Supervisor			Rema	ark Date	
2477 NO	DEFECT; OPERATOR ERROR	3192	TESTED / INSPE	CTED				09/28	3/2021	

WT_plust_woprint.rptdesign

10/3/2021 14:09

Attachment 5 – Page 2 of 2.

Appendix G – ATC Work Order Details



Washington Metropolitan Area Transit Authority Maintenance and Material Management System

Page 1 of 2 MX76PROD

Work Order Details



Status: COMP 09/28/2021 14:42

Work Description: A13, TRAIN OVERRUN SIGNAL 2

Job Plan Description:

				Work Informatio	n					
	Asset: 442713	ATCS, A13 SIGNAL SYSTEM		Owning Office	ATCS-TSSM			Par	ent:	
	Asset Tag:			Maintenance Office	: ATCS-TSSM-A	RFO		Create Date: 09/28/2021 08:49		
	Asset S/N:			Labor Group	: ATCSD1A99			Actual S	tart: 09/28/202	1 14:21
	Location: 6837	A13, TWINBROOK, STATION, 016, ROOM 111, TRAIN CONT (A13 IB FT DN)	MEZZANINE, ROL ROOM	Crew				Actual Co	mp: 09/28/202	1 14:42
Wor	k Location:			Lead				I	em: ATCSV99	89
Fai	ilure Class: ATCS013	SIGNALS / SIGNS		GL Account	: WMATA-02-33	530-50499270-04	2-*******************	OPR**		
Pro	blem Code: 2894	RUN THRU RED SIGNAL		Supervisor	:			Target S	tart:	
Req	uested By:			Requestor Phone	:			Target Co	mp:	
Chain Mark Start:				Chain Mark End	:		:	Scheduled S	tart:	
Crea	te-Mileage: 0.0			Complete-Mileage	: 0.0					
Task IDs										
Task ID										
10	No damage found on t	ne switch								
Component			Work Accomp:		Reason:		Status: COMP	Position:	War	ranty?: N
20	Did obstruction test									
Component			Work Accomp:		Reason:		Status: COMP	Position:	War	ranty?: N
30	Returned back to servi	ce								
Component			Work Accomp:		Reason:		Status: COMP	Position:	War	ranty?: N
Actual Labor										
Task ID	Labor		Start Date	End Date	Start Time	End Time	Approved?	Regular Hours	Premium Hours	Line Cost
			09/28/2021	09/28/2021	08:00	13:00	Y	05:00	00:00	\$164.01
			09/28/2021	09/28/2021	08:00	13:00	Y	05:00	00:00	\$164.83
			09/28/2021	09/28/2021	08:00	13:00	Y	05:00	00:00	\$184.06
			09/28/2021	09/28/2021	08:00	13:00	Y	05:00	00:00	\$213.98
						Tota	Actual Hour/Labor:	20:00	00:00	\$726.88

WT_plust_woprint.rptdesign

Attachment 6 - Page 1 of 2.

10/3/2021 14:16



Washington Metropolitan Area Transit Authority

Maintenance and Material Management System



Page 2 of 2 MX76PROD

Status: COMP 09/28/2021 14:42

Work Description: A13, TRAIN OVERRUN SIGNAL 2

Related Incide	ents					
Ticket	Description			Class	Status	Relationship
8562101	Red signal overrun, 24/0, A13, RTR, RSIG, 124			SR	CLOSED	RELATED
Failure Report	ting					
Cause		Remedy		Supervisor		Remark Date
3307	UNKNOWN CAUSE	4303	PM COMPLIANCE INSPECTION COMPLETE	ED	- 1994 (V) 1976 30 304 (V) 1976 - 19	09/28/2021
Remarks	No damage found					

WT_plust_woprint.rptdesign

10/3/2021 14:16

Attachment 6 – Page 2 of 2.

	Wednesday, July 22, 2020
UPDATE: Stop and Proceed Mode on 7000) Series Railcars
All Train Operations personnel shall adhere to MSRPH Operating R they are operating displays zero speed commands on the operating o	ule 3.79 when the rail vehicle console:
MSRPH Operating Rule 3.79: Train Operators shall not move trains with zero speed commands ex and being given permission to move with zero speed commands and for the move going with traffic or an absolute block for the move goi	xcept after notifying ROCC d either a permissive block ing against traffic.
Upon losing speed commands on the platform, the operator may ad direction of traffic to service the station without contacting ROCC for the station, the operator must keep their train doors open, until suc has received speed commands, a proper signal aspect (Lunar or Fi contacting ROCC for permission to leave and an absolute block for to do not return.	djust the train in the same permission. After servicing ch time when the operator lashing Lunar), along with he move if speed readouts
If speed commands are lost on the mainline and the consist con displaying the code number, <u>the Operator MUST contact ROCC to</u> <u>Absolute block BEFORE</u> pressing the corresponding number on the <u>and Proceed Mode</u> . ROCC MUST also be contacted, <u>even within</u> entering Stop and Proceed Mode.	nes to a stop with the ADU obtain either a Permissive or ADU Touchpad to enter Stop the platform limits, BEFORE
Note: An update to MSRPH OR 3.79 in the form of a Permanent Orde	r will be forthcoming shortly.
As a reminder, Stop and Proceed mode enables Train Operators to absence of speed commands with the ATP System enforcing a maxi The procedure for entering Stop and Proceed mode has been modifi to reduce the risk of accidentally overrunning a red signal.	o take a point of power in the imum speed of up to 15 MPH. ied on the 7000 Series railcars
To enter Stop and Proceed mode:	
 the train must be stopped, the master controller in B4 or B5, and no speed or door commands are being received. 	
This applies when Operators silence the overspeed alarm by placing to Once stopped, the Operator must use the ADU touchpad to enter the Regulated Speed display before the train can be moved in Stop and the stop of the train can be moved in Stop and the stop of the train can be moved in Stop and the stop of the stop o	the master controller in B4/B5. e code number shown on the Proceed mode.
I acknowledge the receipt of and understanding of this RTRA C "UPDATE: Stop and Proceed Mode on 7000 Series Railcars."	Operations Personnel Notice,
Print Name/Payroll# Signature	
Date Received Supv. Print Name / Signatu	ıre

Attachment 7 – Page 1 of 1.



Attachment 8 – Page 1 of 3.

Permanent Order # T-20-28

when the operator has received speed commands, a proper signal aspect (Lunar or Flashing) along with contacting the ROCC<u>or terminal</u> <u>supervisor</u> for permission to leave and an absolute block for the move if speed readouts-commands do not return (Reference SOP 40).

- 3.79.2. On 7000 Series Trains If speed commands are lost on the mainline and the consist comes to a complete stop with the ADU displaying the code number; the Operator must contact ROCC or terminal supervisor to obtain either a permissive block or absolute block before entering the corresponding number on the ADU touchpad to enter Stop and Proceed Mode.
- 3.79.3. Legacy Trains Operators shall contact ROCC or terminal supervisor anytime the train loses speed commands and comes to a stop, even within the platform limits. Before moving the train a permissive or absolute block must be established.

PERMANENT ORDER

Page 2 of 3

Attachment 8 – Page 2 of 3.



Attachment 8 - Page 3 of 3.





ADMINISTRATION HANDLING INSTRUCTIONS

This report will be completed after a debriefing or "hot wash" in accordance with applicable department policies/directives and procedures; at the request of the Chief of Police or designee or following any incident or event requiring the activation of the Incident Command System (ICS). The purpose of the report is to provide information, assess response, identify training, equipment needs, and to identify areas that may require improvement. After completion of this report, it should be forwarded to the Deputy Chief through the chain of command for review.

This report and any attachments are classified as For Official Use Only. This report may be used for emergency incidents, special events, and exercises. Items marked with an asterisk (*) will be completed by the last official designated as the Incident Commander (IC) as there may be more than one IC during the incident.

	IN	ICIDENT	SUMMARY	The subcester		
Incident Requiring ICS Activation: Inter			erruption to Rail Services/Red Signal Overrun			
*Incident Commander (IC):	Rail Super	Rail Supervisor			
MTPD CCN:	2021-000464	8 Local CCN:		N/A		
*Date ICS Initiated:	09/28/2021		*Time ICS Initiated:	0825 hours		
*Date ICS Terminated:	09/28/2021		*Time ICS Terminated:	0925 hours		
*Duration of Incident:	2 hours and 32 minutes		*Service Disrupted (Type and Time):	Interruption to Rail Services/Red Signal Overrun: 0815 hours – 1053 hours		
Incident Location:	Twinbrook Metro Station/Track 2		Command Post Location:	Kiosk		
MTPD On-Scene Commander (OSC):	Officer		Command Aid for OSC: N/A	N/A		
Forward Liaison:	Officer		Unified Command:	Yes		
IMO Liaison:			Alternate Channel:	Yes - MTPD 2		
Single Tracking (Time & Track No.):	N/A		Bus Bridge Established (From /To)	Yes - TWIN to GROS Shuttle Buses used from in place SDGR- TWIN Shutdown		
Inner and/or Outer Perimeter:	Yes		Power De-energized:	Yes/Track 1		
OSC Relinquished Scene Command to Name: Dept: <u>RAIL</u>	Rail Supervisor		Medical Attention Required/Requested:	N/A		

For Official Use Only

The information in this document marked FOUO is the property of the Washington Metropolitan Area Transit Authority's Metro Transit Police Department (MTPD) and may be distributed within the Federal Government (and its contractors) to law enforcement, public safety and protection, intelligence officials and individuals with a need to know. Distribution to other entities without prior MTPD authorization is prohibited. Procautions shall be taken to ensure this information is stored and destroyed in a manner that precludes unauthorized access. Information bearing the FOUO marking may not be used in legal proceedings without prior authorization from the originator. Recipients are prohibited from posting information marked FOUO on a website or unclassified network.

Attachment 9 - Page 1 of 5.

Lind yrExit Log.	Exit Log. Tes Cid Response.		100	
	WMAT	A ON-SCENE PERSON	INEL	
Name		epartment/Office	Title/Role	
Lieutenant		MTPD/YSU	Watch Commander	
Sergeant		MTPD/District One	Responding Sergeant	
Officer	T UNCLES	MTPD/TWIN Detail	On-Scene Commander	
Officer		MTPD/TWIN Detail	Forward Liaison	
		RTRA	RTRA Supervisor	
		RTRA	RTRA	
		CMNT	CMNT	
		Emergency Management	Emergency Management	
		Emergency Management	Emergency Management	
		TRST	TRST	
		ERT	ERT	
		ERT	ERT	
		SAFETY	SAFETY	
		ATCM	ATCM	
		ATC	ATC	
		ATC	ATC	
		ATC	ATC	
		For Official Use Only		
MTPD-OSP-TMPL-009-00		Page 2 of 5	Effective: 12/3	

Attachment 9 - Page 2 of 5.

EXTERNAL ON-SCENE PERSONNEL					
Name	gency/Departmen	ncy/Department		Title/Role	
				The second second	an and a second se
enseenen op oor ve be	anci was goorala	on a disabled train w	bebns da en		HE MAN
the engineering (3) or	o publick survice	r DVED a supervisi	ed sinon (P	mately 0848 (0	Kalask militar
conference de la sue sue pr	reased those thru i	icer R. Rose advised	40 sworth	mateh 0848 (3	ADDION
by suppryside W.Sri	meet via Holstox	deanergized and vei	newog in	n BABY Viellan	norma service
					а. С
when not inpred-or	ant beatvos, tro	Pedey Seats who is	bas biowat) risseot as b	shitoes
and were give-thild she	eneos no berme	Salaty, and Track e	eam (ERT)	stoy Response	eprenta versio

Use separate sheet if additional space is required.

REQUESTS		
*Radio Run Requested (Yes/No):	No	
If "Yes," location where tape is stored:	Torred own Superviser M. Smith	
*Digital Video Evidence Unit (DVEU)	No	
Video Requested (Yes/No):	•	
If "Yes," location where video is stored:	No	



Attachment 9 – Page 3 of 5.

On Scene Commander, were two (2) passengers	Officer advised by Rai s stranded on a disabled train which wa	I Supervisor that there s operated by Operator
 Approximately 0848 (01) tracks) hours, per DVEU, a supervisor was v	valking two (2) passengers in the
Approximately 0848 (34)	hours, Officer advised that bo	th passengers are on the platform
 Approximately 0846 hou who also put down a WA platform by Officer identified as need of medical or other 	Ars, power deenergized and verified via SAD on the tracks and the two patrons and Supervisor without incide and who both adv services.	Hotstick by Supervisor were ejected and escorted to the nt. The two (2) passengers were rised they were not injured nor in
Emergency Response To to enter the roadway to a	eam (ERT), Safety, and Track arrived o effect repairs and maintenance	n scene and were given the clea
Officer Maintenance personnel	responding to Friendship Hei	ghts Metro Station to pick up Ca
 Approximately 0925 hou turned over Supervisor 	urs incident determined to be a mainte	nance issue and Command wa
Bus bridge was set-up	from Twinbrook and Grosvenor Metro	o Stations by Bus Supervisor
 No train service between minutes). 	en TWIN and GROS from 0815 hours	to 1053 hours (2 hours and 3
Approximately 1047 hou service resumed	rs Train# 124 was immediately put back	k into service when service norma
 A Hotwash was conducted use of MTPD Channel # 	d on the platform at Twinbrook Metro Si 2 versus MTPD Channel #1 discussed	ation. Communication issues an
Use separate sheet if additional	l space is required.	n bulan Gran (Space)
	NOTES	
	For Official Use Only	

On Scene Commander's Title, Printed Name, and Signature/Date			
Officer September 28, 20	21		
Watch Commander's Title, Printed Name and Signature/Date			
Lieutenant	nber 28, 2021		
Patrol Operations Bureau Commander's, Printed Name and Signature/Date			
	10.20.301		
Office of Emergency Management Director	's, Printed Name and Signature/Date		
	10/26/2021		

· · · · ·

For Official Use Only

MTPD-OSP-TMPL-009-00

Page 5 of 5

Effective: 12/30/20

Attachment 9 – Page 5 of 5.



Attachment 10 – Page 1 of 1.



Red Signal Overrun-Twinbrook Station

INCIDENT SUMMARY

On Tuesday, September 28, 2021, at approximately 8:11am, there was a red signal overrun at Twinbrook, Track #1. Prior to the overrun, Train 124 arrived at Twinbrook, Track #2. The train was temporarily taken out of service and offloaded so it could clear the interlocking at Twinbrook and continue in service towards Glenmont. Two (2) 'As Directed' train operators boarded the train to verify it was clear of customers and then double ended the train across the interlocking. The operator in the lead car verified a lunar signal at A13-08, correct rail alignment, and speed commands prior to taking a point of power, crossing from Track #2 to Track #1. The operator then continued with clearing the interlocking and signal A13-02. Upon clearing, the operator keyed down so the operator in the trailing car could key up and take over operation.

Once the operator in the trailing car keyed up and took over operation, they were punched up via the emergency intercom by a customer who was still aboard the out of service train. After communicating with the customer, the operator without verifying a lunar signal at A13-02 signal, correct rail alignment (for a straight through move), and speed commands, entered into the stop and proceed mode and moved the train past A13-02 signal, red and began to cross over from Track #1 to Track #2 in the opposite direction of normal traffic. The operator stopped the train and contacted ROCC to report the incident.

After the red signal overrun was reported, the two (2) customers that were aboard the incident train had to be escorted to the platform via the roadway by MTPD personnel. There were no reported injuries or damages reported because of this incident.

ROOT CAUSE

The operator, first, failed to ensure the train was properly clear of customers (violating SOP #45). When the customer punched the operator up on the emergency intercom, it served as a distraction to the operator. Next, the operator failed to ensure speed commands, proper alignment, and a lunar signal prior to moving the train. Upon noticing speed commands were not present, the operator then entered stop and proceed mode, without obtaining proper authorization. All these factors contributed to the red signal overrun.

MSRPH RULES VIOLATED

GR 1.3 Acceptance of employment signifies the individual's willingness to comply with all WMATA rules, regulations, and orders: and to perform specific job duties and requirements in a safe, orderly, and efficient manner.

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, 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 asspecified in Rule 3.1

MSRPH 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 3.79 Train Operators shall not move trains with zerc speed commands except after notifying ROCC and being giver permission to move with zero speed commands and either a permissive block for the move going with traffic or an absolute block for the move going against traffic.

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

Attachment 11 – Page 1 of 2.

RTRA Lessons Learned



What happened	What should have happened
The operator did not verify a	The operator <u>should have</u>
lunar signal, correct rail	verified a lunar signal, correct
alignment, and speed readouts	rail alignment, and speed
prior to departing.	readouts prior to departing.
The operator entered stop and proceed mode without receiving an absolute or permissive block from ROCC.	The operator should have contacted ROCC and advised them that they did not have speed commands before entering stop and proceed.
The train was not thoroughly	The train should have been
checked and verified clear of	thoroughly checked and verified
customers.	clear of customers, per SOP #45.

Looking back,

to effectively move forward

RECOMMENDATIONS

- ✓ 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 3.79 when operating rail vehicles.
- ✓ Review SOP #45 regarding the proper procedures to follow when checking out-of-service trains for customers.
- ✓ Ensure that all operational personnel comply with all Operating Rules, especially Cardinal Operating Rules.
- ✓ Always follow Rules/Procedures outlined in WMATA's MSRPH, PI's and Operator Manuals.

Office of Rail Transportation (RTRA)

Lessons Learned

Number: 2021-009

Attachment 11 – Page 2 of 2.

pg. 2

Appendix M - Root Cause Analysis

