

**WMSC Commissioner Brief: W-0081 – Derailment – Outside Silver Spring Station – July 7, 2020**

Prepared for Washington Metrorail Safety Commission meeting on May 18, 2021

Safety event summary:

Red Line Train 108 derailed as it departed the Silver Spring Station on July 7, 2020 at 11:20 a.m.

The train operator moved the train past a red signal seconds after a command was sent from the ROCC to the switch associated with that signal to move the switch. The switch moved under the train, leading to the first car entering the pocket track (following the position of the switch at the time the train departed the platform) and the second car derailling in the area of the switch. The first car and the trailing six cars of the eight-car 7000-series train remained on the rails, with the trailing five cars still within the platform limits.

As the train entered Silver Spring Station at 11:18 a.m. the speed commands dropped to zero due to another train (Train 880) entering the pocket track. Train 880's presence also led to the red signal at the end of the platform and was the reason for the diverging position of the switch at that signal toward the pocket track. Train 108 stopped 52 feet into the platform. As allowed by Metrorail rules, the train operator initiated stop and proceed mode to move the train within the platform limits without any communication with the ROCC.

The train operator serviced the station by properly opening and then closing the doors, then returned to the operating console and immediately moved the train forward in P5 power mode (equivalent to full throttle). The train operator, who had made the same trip several other times that day with a lunar signal at this location each time, did not identify that the signal was red or that the switch was not properly aligned for the intended straight-through move toward Forest Glen Station. The train automatically began to brake after it had moved 69 feet because the train reached 15.12 mph, over the 15-mph speed limit in stop and proceed mode. Train 108 was moving approximately 11.66 mph at the time of the derailment.

At 11:20:10 a.m., approximately two seconds before Train 108 departed the platform in the maximum P5 power mode, the ROCC began the steps required to send a command for the switch to move back to a normal (straight-through) position. At 11:20:14 a.m., the ROCC controller completed the command, and it was sent to the switch. At 11:20:18 a.m., Train 108 was approximately 20 feet beyond the signal. At 11:20:20, the switch began moving to a normal position. At approximately 11:20:25, the switch completed its move.

The first car of the train entered the pocket track following the direction the switch was first aligned, and the second car of the train derailed. The point of derailment was 83.6 feet from the signal. The train came to rest 118.4 feet from the signal, with the lead car coming to a rest 240 feet from the end of the station platform.

WMATA reviewed switch throw times from five interlockings with the same M3 switch machines and determined that the machines take an average of six seconds from switch call to completing their throw to a new position.

During this event, the signal had been taken out of automatic mode. ROCC management had previously instructed controllers to remove the automatic signal function and fleet (effectively electronically lock a signal/switch in a set direction) signals such as Silver Spring when turnbacks were not active. This meant that when the controller went to



place a manual route for Train 880 which required an alternate switch movement to enter the pocket track and the fleetling was removed, the switch remained positioned toward the pocket track since the automatic mode that would have detected Train 108's destination as Glenmont and automatically adjusted the switch to normal position was inactive. When set in automatic, the switch and signal automatically adjust based on the train's destination that is entered into the AIM system. In manual, the controller must return to the switch in the AIM system and manually direct the switch to return to the normal position. Since the controller was operating multiple interlockings at the time due to flooding between Cleveland Park and Woodley Park stations, the controller was not able to immediately restore the switch to its normal position when Train 880 cleared the switch. As the controller commanded the switch to return to the normal position, Train 108 departed Silver Spring Station. The signal remained red because the switch was aligned toward the pocket track, which was occupied by Train 880. Had Train 108 not derailed, it could have collided head on with Train 880.

The train operator of Train 880, the train in the pocket track, reported that Train 108 had derailed. Approximately 45 seconds later, the operator of Train 108 acknowledged on the radio that the train had derailed.

The WMSC investigation identified that a critical ROCC controller microphone appears to have failed during the event. Ambient audio recordings from the ROCC show the controller was speaking, but recordings of radio traffic show that the audio was not transmitting from the ROCC including as the ROCC attempted to confirm the derailment. After the WMSC raised this transmission issue, WMATA's Safety Department expanded their investigation to cover it, including identifying that the problem began the day before the derailment, but that Metrorail management had not sent anyone to fix the problem. When the issue was initially addressed after the derailment, the replacement microphone was wired incorrectly and had to be replaced again after it was in use for several hours. The investigation identified that this was a recurring issue.

A ROCC Assistant Superintendent called Montgomery County emergency dispatchers four minutes after the derailment was reported over the radio.

A rail supervisor reached the platform at 11:25 a.m. and the first Metro Transit Police officers arrived as part of the emergency response at 11:29 a.m., however communications about their status between the officers on scene and MTPD dispatchers was not clear, which appears to have contributed to communications challenges between MTPD and ROCC. At 11:31 a.m., Metrorail began to evacuate customers from the cars on the station platform. Montgomery County Fire and Rescue Services (MCFRS) were inside the station at 11:32 a.m.

The ROCC did not properly assign an On-Scene Commander or Maintenance Commander, and Metrorail personnel did not report to the staging area at the scene as required by SOP 1A. Instead, personnel crowded the station platform, and no commanders or forward liaisons identified all personnel on scene to ensure that those not immediately needed were moved to the staging area.

During the event response, ROCC controllers repeatedly received conflicting information from the ROCC Assistant Superintendent, from the ROCC Superintendent, and from another controller who was told to convey the superintendent's instructions regarding how to handle train movement with one instructing a service suspension for safety reasons and the other instructing the controllers to prepare for single tracking. At least some of this conflicting



information was linked to senior managers on the rail service disruption line that occurred outside of incident command and control protocols. The Fire Liaison stated that WMATA management's uncoordinated instructions ranged from suspending service to single tracking through Silver Spring (which Montgomery County Fire and Rescue Services instructed WMATA not to do).

Due to the derailment, the rear bulkhead door of the first car was not aligned with the bulkhead door of the second car, so the train operator and one passenger on the lead car could not walk through the train to reach the platform. The 31 other passengers on the train were evacuated directly onto the platform through the rear cars of the train that remained in the station. The customer in the lead car was later evacuated onto the roadway with the assistance of first responders.

In addition to the rail operations radio communication failure, the WMSC identified radio communications failures between the fire liaison (a WMATA employee, not a uniformed officer) and first responders in the field. During the response to this event, the fire liaison radio communication to first responders on scene did not function properly. A backup cell phone used to tie into the first responder radio systems was not available in the ROCC during this event, suggesting that two of the phones are needed, one for each ROCC facility, and that checklists should be required for transfers between the two facilities.

The transmission issues were in addition to the failures of Metrorail's emergency communications process with and within the ROCC and in addition to ROCC management not following incident management protocols. The Office of Emergency Management (OEM) employee who was serving in the fire liaison function at the time of this derailment indicated that they received no specific training on how to fill the role, was not familiar with incident command, stated checklists were not used, stated that there were no work instructions for the position, and was not familiar with relevant standard operating procedures. WMATA's Fire Liaison worksheet was also missing important fields. The fire liaison position was filled by OEM personnel from March 2020 to July 2020 without Metrorail ensuring that each individual was fully and specifically trained for the role. Regular uniformed staffing resumed in mid-July 2020.

The fire liaison's responsibilities and role are not clear to all ROCC employees.

An inspection of the tracks the morning after the derailment identified 20 loose screw spikes and missing clip housings in the frog area, as well as a broken frog plate and one screw spike on the edge plate in front of the switch. No major discrepancies were noted in three earlier monthly inspections. The investigation also identified that Switch #13 was not inspected in May 2020.

Total damage costs for this event were more than \$400,000.

Probable Cause:

The probable cause of this derailment was a lack of effective, redundant protections for train movement with zero speed commands and a lack of effective, redundant protections to prevent train movement over a switch that is in motion or switch movement under a train that is in motion.

Contributing to this event was ROCC management's direction, outside of written approval processes, to change the use of automatic signals on mainline.



The probable cause of the flawed emergency response was a lack of clear communication, a lack of systematic radio communication checks, maintenance, repairs and overhauls, a lack of WMATA management oversight, outdated and inadequate checklists, and inadequate training on emergency processes and procedures to ensure that incident management and other relevant processes are followed.

Corrective Actions:

Following the event, ROCC management included the use of automatic signals on mainline in daily safety briefings, and the OPS 1 microphone was replaced (twice).

Metrorail decided to change Stop and Proceed mode rules to require contacting the ROCC even to move a train with zero speed commands solely within the platform limits. A notice was distributed on July 22, 2020.

ROCC held a lessons learned/tabletop discussion on July 23, 2020, that included reversing prior management direction related to the use of automatic signals.

ROCC added aspects of this event to emergency SOP checklists.

RTRA issued a reminder notice to personnel regarding terminology for reporting emergencies such as derailments over the radio.

ROCC has incorporated microphone upgrades into technology improvements being put into place in conjunction with CAPs required by the WMSC.

Metrorail is developing and implementing a preventive maintenance schedule for ROCC radio equipment.

In accordance with WMSC CAPs and other event investigations, the ROCC is moving toward an emergency management process for events that affect controllers' ability to oversee normal operations. In response to the March 26 runaway train event, Metrorail added an incident management official in the ROCC.

Metrorail plans to enhance train operator OJT and ride checks, and to utilizing the new simulators for initial and recurring qualification.

Metrorail is revising the Fire Liaison worksheet to a checklist covering initial report, fire department notification and arrival, time of on-scene command, power status, fan activation, unified command times and other aspects.

A number of issues related to this event are also required to be addressed through corrective action plans Metrorail was required to develop and implement due to the WMSC's ROCC Audit published in September 2020 and related findings.

WMSC staff observations:

The WMSC responded to the scene of this event.

As the WMSC found in the ROCC Audit, the communications process has prevented information from being available to all who need it in a timely fashion and posed a risk that critical communication could be missed entirely.



The 25 findings issued by the WMSC from December 2019 through September 2020 identified dysfunction in the ROCC during unplanned events and emergencies, a lack of coordination, a lack of consistent and immediate communication, repeated failures to address safety issues, controllers with too many responsibilities, inconsistent training, a lack of structured on-the-job training, limited experience in emergency drills, and no training requirements for WMATA employees who serve in the fire liaison position. Metrorail is now in the process of implementing corrective action plans (CAPs) to address these findings.

Metro has not implemented any changes to Stop and Proceed mode that would reset it once doors are operated to require the operator to again enter a code to move with zero speed commands. This would restore the important, redundant safety feature and situational awareness reminder, and help ensure that Stop and Proceed actually serves its purpose in circumstances like this red signal overrun and derailment. The WMSC has raised this to WMATA, and department managers stated that they are evaluating this possibility.

Metrorail should also consider more specific training for train operators regarding acceleration and deceleration, since departing in a lower power mode might have lessened the severity of this event.

The initial ROCC lessons learned/event review document did not accurately capture the details of this event and did not include specific details related to the interaction of switch calls and automatic signals. 'Aux' switch calls override automatic signals, preventing the automatic signal from performing that automatic function of aligning the switch based on the train's destination. Following a WMSC red signal overrun investigation that identified this issue, the ROCC stopped directing controllers to place calls on automatic signals.

The rail controller who handled rail traffic after the incident performed extremely well, particularly given the significant challenges that had already occurred earlier in the day due to significant flooding near Cleveland Park and Woodley Park stations that had led to a service suspension and significant additional workload on the controllers.

Staff recommendation: Adopt final report.



Washington Metro Area Transit Authority

Department of Safety and Environmental Management (SAFE)

FINAL REPORT OF INVESTIGATION A&I E20244

Date of Event:	7/7/2020
Type of Event:	Derailment
Incident Time:	11:20 hrs.
Location:	Silver Spring Station, Track 1
Time and How received by SAFE:	11:26 hrs. - SAFE Email Notification
WMSC Notification Time:	7/7/2020 at 12:49 hours – Email
Rail Vehicle:	Train ID 108, L7502-03x7561-60x7592-93x7567-66T
Injuries:	None
Damage:	\$413,981.12

Silver Spring - Derailment

July 7, 2020

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Abbreviations and Acronyms

AIMS	Advanced Information Management System
ARS	Audio Recording Service
ATC	Office of Automatic Train Control
ATCE	Office of Automatic Train Control Engineering
CCTV	Closed Circuit Television
CENV	Vehicle Program Services
CM	Chain Marker
CMNT	Office of Car Maintenance
COMM	Office of Communications Maintenance
ER	Event Recorder
ERT	Emergency Response Team
IC	Incident Command
ICP	Incident Command Post
MC	Maintenance Commander
MCFRS	Montgomery County Fire and Rescue Service
MSRPH	Metrorail Rules and Procedures Handbook
MTPD	Metro Transit Police Department
NIMS	National Incident Management System
NOAA	National Oceanic and Atmospheric Administration
OEM	Office of Emergency Management
OJT	On-the-Job Training
OSC	On-scene Commander
POD	Point of Derailment
POR	Point of Rest
ROCC	Rail Operations Control Center
ROIC	Rail Operations Information Center
ROQT	Rail Operations Quality Training
RTC	Rail Traffic Controller
RTRA	Office of Rail Transportation
SMNT	Office of System Maintenance
SOP	Standard Operating Procedure
TRST	Office of Track and Office
VMDS	Vehicle Monitoring and Diagnostic System

Executive Summary

On Tuesday, July 7, 2020, at 11:18 hrs., a Red Line train [Train ID 108 consist L7502-03x7561-60x7592-93x7567-66T] heading in the direction of Forest Glen Station, entered Silver Spring Station, Track 1 platform limits. Train ID 108 Train Operator lost speed commands approximately 52 feet after entering the platform limits due to a Red Signal at B08-26. The Red signal was a result of Train ID 880 moving into Silver Spring Pocket Track with a diverging route set ahead of Train ID 108. The Train Operator of Train 108 initiated Stop and Proceed Mode, [at the time of the incident, Metrorail Safety Rules and Procedure Handbook (MSRPH) did not require contacting Rail Operations Control Center (ROCC) for permission to adjust the consist to the eight-car marker if speed commands were lost within the platform limits] and proceeded to the eight-car marker to service the station.

Once berthed at the eight-car marker, the Train Operator serviced the station for approximately 22 seconds by performing a left side door operation, returned to the console, and departed Silver Spring Station without verifying correct rail alignment [straight through move], Lunar aspect and speed commands. They ultimately overran Signal B08-26, which was displaying a Red Signal aspect. Approximately two seconds before the train overran Signal 26; Switch 5 had begun to throw to the Normal position due to a route requested from ROCC to allow Train ID 108 to continue towards Forest Glen Station. Train ID 108 Train Operator lead car 7502 took a facing point move [diverging route] into the Pocket Track, and the second rail car [7503] rear truck subsequently derailed; Point of Derailment (POD) was 83.6 feet past B08-26 Signal as switch 5A alignment changed to the Normal position. Point of Rest (POR) was 118.4 feet from B08-26 Signal, and the lead car [7502] was 240 feet past the end of the platform limits.

All 32 customers and Train Operator aboard the train were escorted onto the platform without injury. One customer was unable to evacuate to the platform from the lead car as a result of the offset position of derailed car 7503 position blocking the rear bulk head emergency door. The customer was later evacuated by emergency personnel from 7502. The labor and repair cost to restore the Office of Car Maintenance (CMNT) Railcars to a state of Good Repair totaled \$409,738.45, and the Office of Track and Structure (TRST)'s total cost was \$4,242.67.

The probable cause of the Red Signal overrun event at Silver Spring Station, Track 1 was a combination of factors. The Train Operator of Train 108 did not verify correct rail, Lunar aspect or speed commands before moving the train consist towards Forest Glen Station. In addition, Switch 5 was moving to the normal position as the lead car [7502] moved into to pocket track. Signal B08-26 was Red due to Train 880 being located in the Silver Spring Pocket Track. These combinations of factors resulted in a derailment outside Silver Spring platform limits, Track 1. The Train Operator was not in compliance with the Metrorail Safety Procedures Handbook (MSRPH) Operating Rules 3.79. *"Upon losing speed commands on the platform, the operator may adjust the train in the same direction of traffic to service the station without contacting ROCC for permission. After servicing the station, the operator must keep their train doors open, until such time when the operator has received speed commands, a proper signal aspect (Lunar or Flashing Lunar), along with contacting ROCC for permission to leave and an absolute block for the move if speed readouts do not return."* and The Train Operator was not in compliance with MSRPH 3.67

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

Upon completion of an analysis of data collected from systems of record and the results of interviews with staff, multiple human factors failures occurred in response to this incident. The investigation identified several processes and procedural gaps that directly or indirectly contributed to the incident.

SAFE identified radio communication deficiencies [radio not transmitting], which directly affected ROCC operations. Radio checks were not performed during turnovers to ascertain the system was operating as designed. There is no maintenance schedule and/or process to inspect, overhaul or perform preventative maintenance with frequency intervals on the radio microphones within the ROCC, with exception to handheld radios positioned at the terminals for mobile/backup use.

The Office of Communication Maintenance (COMM) technicians were not immediately dispatched to the ROCC upon notification of a radio communications problem prior to the event; the radio communications on the Rail Traffic Controller (RTC) console had been experiencing functional issues [the shift prior to the incident] since July 6, 2020. A notification was made to COMM; however, technicians did not arrive to troubleshoot the issue prior to the RTC's shift change. COMM determined the probable cause of radio communication issues were due to the microphone not functioning properly.

ROCC Management did not follow the National Incident Management System (NIMS) coordination protocols as follows:

ROCC did not assign an On-Scene Commander (OSC) to stabilize the scene until the arrival of the first Metro Transit Police Department (MTPD) unit. This was not in compliance with Standard Operating Procedure (SOP) 1A.5.2.1 under securing Scene Once an Emergency Occurs, which states, *"ROCC assigns an OSC to stabilize the scene until the arrival of the first MTPD unit at the incident scene."*

The Radio RTC notified an Office of Rail Transportation (RTRA) Supervisor en route; they would be the OSC upon arrival. This is not in compliance with SOP 1A.5.3.1. *"ROCC shall dispatch two RTRA managers/supervisors to the scene. The first manager/supervisor to arrive shall be directed to the incident scene to assume the position of the OSC (if no OSCs assigned) or the RTRA Forward Liaison. When the second manager/supervisor arrives, ROCC shall direct the RTRA manager to go to the Command Post and assume the RTRA IC Liaison role."*

The Maintenance Operations Center (MOC) Assistant Superintendent or MOC Supervisor did not assign a Maintenance Commander (MC) to coordinate all maintenance activities at the incident scene. This was not in compliance with SOP 1A.4.2 Under the Responsibilities Section: *"The Assistant Superintendent of MOC, or designated MOC Supervisor, is responsible for the coordination of all of the maintenance activities at the incident scene through the Maintenance Commander (MC) and Washington Metropolitan Area Transit Authority (WMATA)'s OSC except for Car Maintenance."*

There was significant crowding on Silver Spring Platform from responding personnel. WMATA personnel did not report to the staging area once it was established. This was not in compliance with 1A.5.4.8 “*All responders shall report to the staging area once established.*” Additionally, OSC/Forward Liaisons did not identify all personnel on the scene and move personnel not immediately needed to the staging area. This was not in compliance with SOP 1A.5.4.6.

Communication breakdowns, lack of management oversight, lack of adherence to written procedures and processes within MSRPH and outdated emergency “checklists” contributed to this event collectively.

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

- RTRA to update the Stop and Proceed Mode Personnel Notice on 7000 Series Railcars to reflect changes in platform limit reporting processes.
 - a. RTRA revised and distributed Operations Personnel Notice to all train operations personnel on July 22, 2020. See Appendix B, Attachment 1.
- ROCC to develop and implement mandatory Lessons Learned/Tabletop discussion, reenacting the associated derailment.
 - b. RTRA developed and held a Lessons Learned/Tabletop discussion on July 23, 2020. See Appendix D, Attachment 1.
- ROCC revise all emergency SOP Checklists to include the associated incident to enhance preparation and efficiency during emergencies.
 - c. A draft of the updated SOP Checklists was distributed to executive leadership on July 21, 2020. The revised checklist is currently under review by stakeholders.
- ROCC shall issue Permanent Order T-20-01 with revised language used to report an emergency.
 - d. An RTRA Operations Personnel Notice was issued to all RTRA operations personnel on Monday, July 27, 2020, for Enhanced Radio Communications during Emergencies. See Appendix E, Attachment 1
- Explore opportunities to update the ROCC RTC transmitting device (microphone) with headsets replacing the antiquated microphones currently in use throughout the system to mitigate the intermittent transmission issues discovered during this investigation.
- Develop and incorporate a preventative maintenance schedule for radio equipment within the ROCC.
- Establish an emergency management process for events that will directly affect RTC’s ability to oversee normal operations on the roadway, i.e., directing traffic around the incident, troubleshooting efforts for mechanical breakdowns, etc.

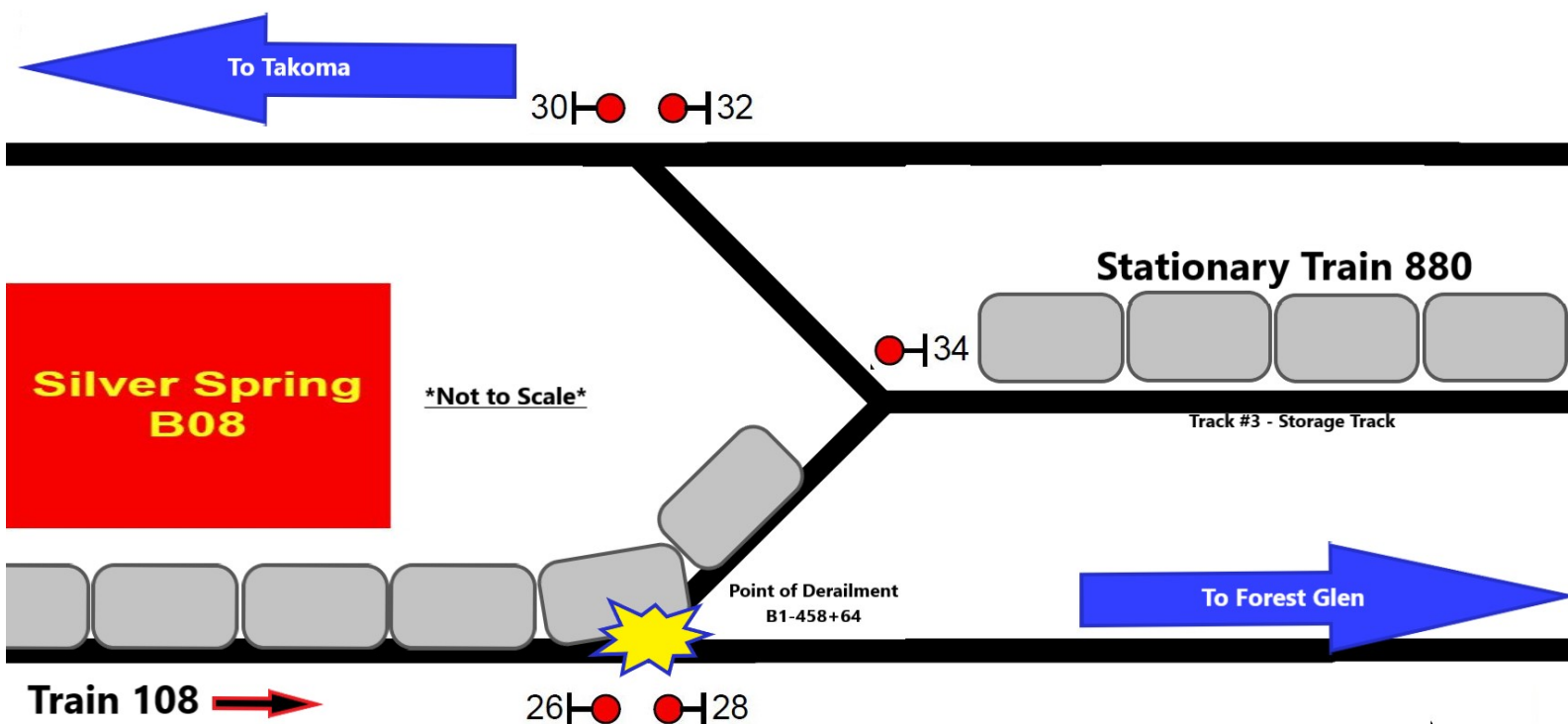
- Enhance Operator OJT and ride check process and deploy a simulator program to include initial and recurrent qualification requirements.
- Revise current Fire Liaison worksheet to checklist form to reflect times for initial report, Fire Department notification and arrival, respective department arrival, time of SOP 1A/OSC initiation, power de-energization, re-energization, fan activation, unified command established and terminated, transfer of command, etc.

Incident Site

Silver Spring Station, Track 1

Ballast Track

Field Sketch/Schematics



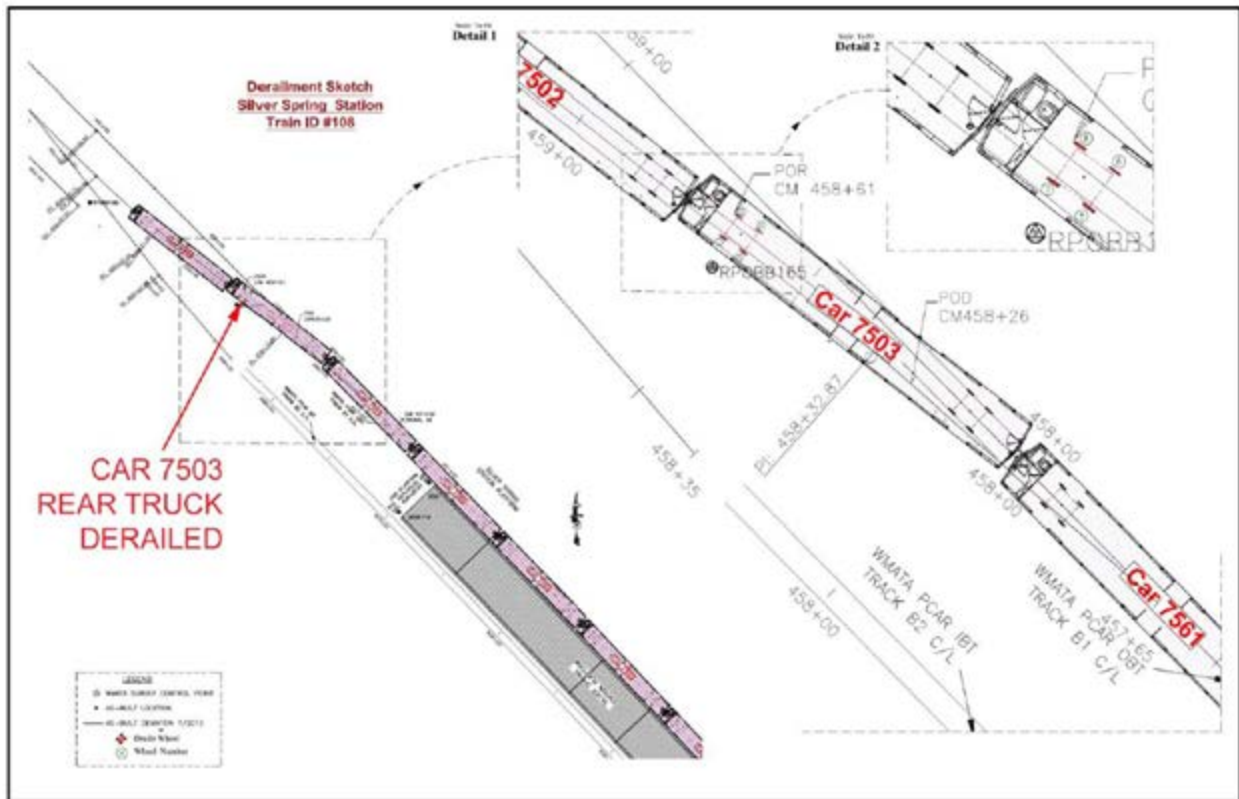


Diagram 1 - Derailment Map.

Purpose and Scope

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

Investigation Process and Methods

Upon receiving notification of the derailment incident at Silver Spring Station on July 7, 2020, SAFE dispatched a cross-functional team to assess the scene and conduct the subsequent investigation. SAFE team members worked with relevant WMATA subject matter experts to review facts and data associated with the incident.

Investigative Methods

The investigative methodologies included the following:

- Physical Site Assessment
- Formal Interviews – Eight individuals were interviewed as part of this investigation. Interviews included persons present at, during, and after the time of the incident, those directly involved in the response process, Managers responsible for the process. The following individuals were interviewed:
 - Two Radio RTC

- Two Buttons RTC
 - Student RTC
 - ROCC Fire Liaison
 - Train Operator
 - ROCC Assistant Superintendent
- Informal Interviews – Collected through conversations with individuals during the course of the investigation to provide background and supporting information
 - Documentation Review – Collection of relevant work history information and process documentation contained in Metro systems of record These records include:
 - Employee Training Procedures & Records
 - Certifications
 - 30 Day work history review
 - MSRPH
 - TRST maintenance records review
 - National Oceanic Atmospheric Administration (NOAA) data
 - ROCC Procedures Manual Review
 - CMNT Train and Repair data
 - Office of Automatic Train Control (ATC)
 - Office of Automatic Train Control Engineering (ATCE)
 - Vehicle Program Services (CENV)
 - COMM
 - System Data Recording Review – Collection of information contained in Metro Data Recording Systems This data includes:
 - Audio Recording System (ARS) playback
 - Closed Circuit Television (CCTV) playback
 - Automated Information Management System (AIMS) playback
 - Event Recorder (ER) [Train]

Investigation

On Tuesday morning, July 7, 2020, at 11:18:47 hrs., an outbound, red line 7K eight-car consist traveling on Track 1 in the direction of Forest Glen Station, entered Silver Spring Station platform limits. Based on Forward Facing Train Operator console footage and CENV vehicle ER download, the affected consist lost speed commands within the platform limits; thereafter, the Train Operator initiated Stop and Proceed Mode via code entry on the Train Operator console, which at the time was permitted by the MSRPH. The Train Operator then berthed at the eight-car marker with a Red signal aspect displayed at B08-26. Based on field investigation and playback footage, the signal lens was operable and clean prior to and after the event. Note: Prior to Train ID 108 arrival, Train ID 880 entered Track 3 [Pocket Track] with switch alignment set as a diverging route causing a red signal aspect to be displayed as a result of track occupancy in the intended direction of travel. The Train Operator then serviced Silver Spring Station, Track 1 performed left side door

opening and closing procedures [Metrorail rules did not require contacting ROCC for permission to adjust the consist to the eight-car marker if speed commands were lost within the platform limits].

After servicing the station, Train ID 108 Train Operator returned to the console, did not verify correct alignment [for a straight-through move], did not verify correct Signal indication and did not verify speed commands. This resulted with the Train Operator ultimately overrunning Signal B08-26, which was displaying a Red Signal aspect. Approximately two seconds before the train overran B08-26 Signal; Switch 5 had begun to throw to the Normal position (approximately 5 seconds) due to a route request from ROCC. Train ID 108 lead Car 7502 took a facing point move [diverging route] into the Pocket Track and the second rail car [7503] rear truck subsequently derailed; Point of Derailment (POD) was 83.6 feet away from B08-26 Signal as switch 5A alignment changed to the Normal position. Point of Rest (POR) was 118.4 feet from B08-26 Signal, and the lead car [7502] was 240 feet away from the end of the platform limits.

All 32 customers and Train Operator aboard the train were escorted onto the platform without injury. As a result of the derailment, the car to car [7502 and 7503] alignment was offset, which blocked the rear emergency door. This prevented a customer and Train Operator from evacuating onto the platform with the other customers. The customer and Train Operator were later evacuated by emergency personnel from 7502 once third rail power was de-energized. As the incident progressed, the Montgomery County Fire and Rescue Service (MCFRS) turned the scene over to MTPD. SAFE determined, during the incident, there were three (3) radio communications attempted by the Buttons RTC which did not transmit to personnel in the field. The Buttons RTC subsequently utilized a landline to inform the ROCC Superintendent of the derailment. During the investigation, SAFE also determined that the disparity in communication began on July 6, 2020. During the interview process, SAFE discovered that the communication department was not immediately dispatched to the ROCC upon notification of the defective radio communications.

Chronological Timeline of Events

Time	Description
11:18:47 hrs.	Train ID 108 lead car entered Silver Spring Station.
11:19:35 hrs.	Train ID 108 berthed at Silver Spring Station 8-Car marker.
11:20:14 hrs.	Train ID 108 departed Silver Spring Station.
11:20:26 hrs.	Train ID 108 derailed at B08-5A switch.
11:20:30 hrs.	Train ID 880 positioned in the Pocket Track 3, reported a train on Track 1 had derailed.
11:20:44 hrs.	Buttons RTC communications do not transmit.
11:21:14 hrs.	Train ID 108 Train Operator reported their train was off the tracks.
11:21:36 hrs.	Buttons RTC reported via phone to Rail Operations Information Center (ROIC) Specialist that Train ID 108, Silver Spring Station, Track 1 derailed.
11:22:15 hrs.	Buttons RTC reported via phone to the ROCC Assistant Superintendent that Train ID 108, Silver Spring Station, Track 1 derailed.

11:24:09 hrs.	The Buttons RTC de-energized Third rail power on Track 1 in accordance with MSRP Emergency SOP 2 Emergency Removing and Restoration of Third Rail Power.
11:24:30 hrs.	ROCC Assistant Superintendent contacted Montgomery County 911 and advised, "I am calling with WMATA and the address of the emergency is 8400 Colesville Road, Silver Spring MD 20910." ROCC Assistant Superintendent advised the dispatcher that the purpose of the call was a train derailment at Silver Spring Station. The emergency dispatcher acknowledged.
11:24:35 hrs.	MOC Assistant Superintendent notified MTPD of a Train Derailment event at Silver Spring Station, Track 1.
11:25:00 hrs.	The First RTRA Supervisor arrived on the Silver Spring Station platform (per CCTV).
11:28:20 hrs.	RTC reported via phone to MOC Supervisor that Train ID 108, Silver Spring Station, Track 1 derailed. MOC Supervisor; responded, "Yes, I got you."
11:28:27 hrs.	MOC Assistant Superintendent contacted Buttons RTC and asked, "how many trucks came off the tracks." RTC responded, "I do not know we are checking now."
11:29:00 hrs.	MTPD officers arrived on the platform (per CCTV).
11:31:00 hrs.	MTPD officers and RTRA personnel begin evacuation processes of customers at Silver Spring Station platform (per CCTV).
11:32:00 hrs.	MCFRS arrived at the mezzanine level (per CCTV).
11:32:29 hrs.	ROCC Asst. Superintendent contacted MTPD and asked the dispatcher if transit police were already on the platform? MTPD responded, "Yes, I believe one officer is there." ROCC Assistant Superintendent asked MTPD to let the officer know to keep customers off the platform. MTPD acknowledged.
11:35:42 hrs.	ATC contacted the RTC and advised they are at B02. RTC responded; we have a derailment; I need ATC at B08.
11:37:20 hrs.	MOC Assistant Superintendent joined the Rail Disruption line, and the following was discussed, "RTRA Executive Management asked; what is the service pattern we are operating on the Red Line at this time? WMATA ROCC Superintendent responded, "the service pattern has been established from Glenmont to Forest Glen Station and Shady Grove to Silver Spring Station using Track 2 only. Power has been de-energized, and service was suspended between Silver Spring Station and Forest Glen Stations. Executive management stated, "all maintenance personnel that should be responding are responding, MTPD is on the scene, CMNT has been advised, and the re-rail crew is en route." MTPD Chief advised, "the incident command post is at the Silver Spring Station bus bay." ROCC Assistant Superintendent reported due to the positioning of the bulkhead door on the lead car; there is one customer on the lead car with the train operator."

11:44:00 hrs.	ROCC suspended train service between Takoma and Forest Glen Stations.
12:05:00 hrs.	Train Operator and last customer were removed from the lead car (per ROCC report, unable to determine through CCTV) Note: All passenger were evacuated in accordance to MSRP SOP 4 Customer Evacuation from Train.
12:08:53 hrs.	RTRA Supervisor asked RTC, "do you want me to do a ground walk around?" RTC responded, "yes."
12:14:00 hrs.	MCFRS Departed the incident scene and transferred command over to MTPD

Note: Times above may vary from other data based on clock settings.

Vehicles Program Services

Event Recorder (ER) Data Graph/Sequence of Events

Based on CENV analysis of the downloaded Vehicle Monitoring and Diagnostic System (VMDS) and ER. Details from the data analysis are as follows:

Time	Description
11:18:44 hrs.	Train ID 108, Lead Car 7502, arrived at Silver Spring Station with a speed of 13.45 mph. The Automatic Train Protection (ATP) limiting speed command was set to 22 mph.
11:18:45 hrs.	The consist lost speed commands when its speed was at 11.9MPH and 13 feet into the station's platform.
11:18:51 hrs.	The consist came to a complete stop after traveling 52 feet into the station's platform. Note: The consist reached a maximum speed of 14.6MPH as it moved through the station in Stop and Proceed Mode.
11:19:35 hrs.	The train stopped at the 8-car marker with the master controller in B5 position.
11:19:43 hrs.	The consist platform side doors were commanded open.
11:20:05 hrs.	The consist platform doors were commanded closed, and the consist started to move out of the station.
11:20:12 hrs.	The master controller was placed in the P5 position, in Stop and Proceed Mode.
11:20:18 hrs.	The consist lead car was 69 feet past the end of the station's platform, and the train speed reached 15.12 mph, and an over-speed was detected.
11:20:18 hrs.	The consist exited out of Stop and Proceed Mode.
11:20:29 hrs.	The consist came to a stop at the POR with the lead car 7502 at 240 feet away from the end of the station's platform.
11:20:23 hrs.	The consist had a speed of 11.66 mph at the time at the POD location.

Note: Times above may vary from other data based on clock settings.

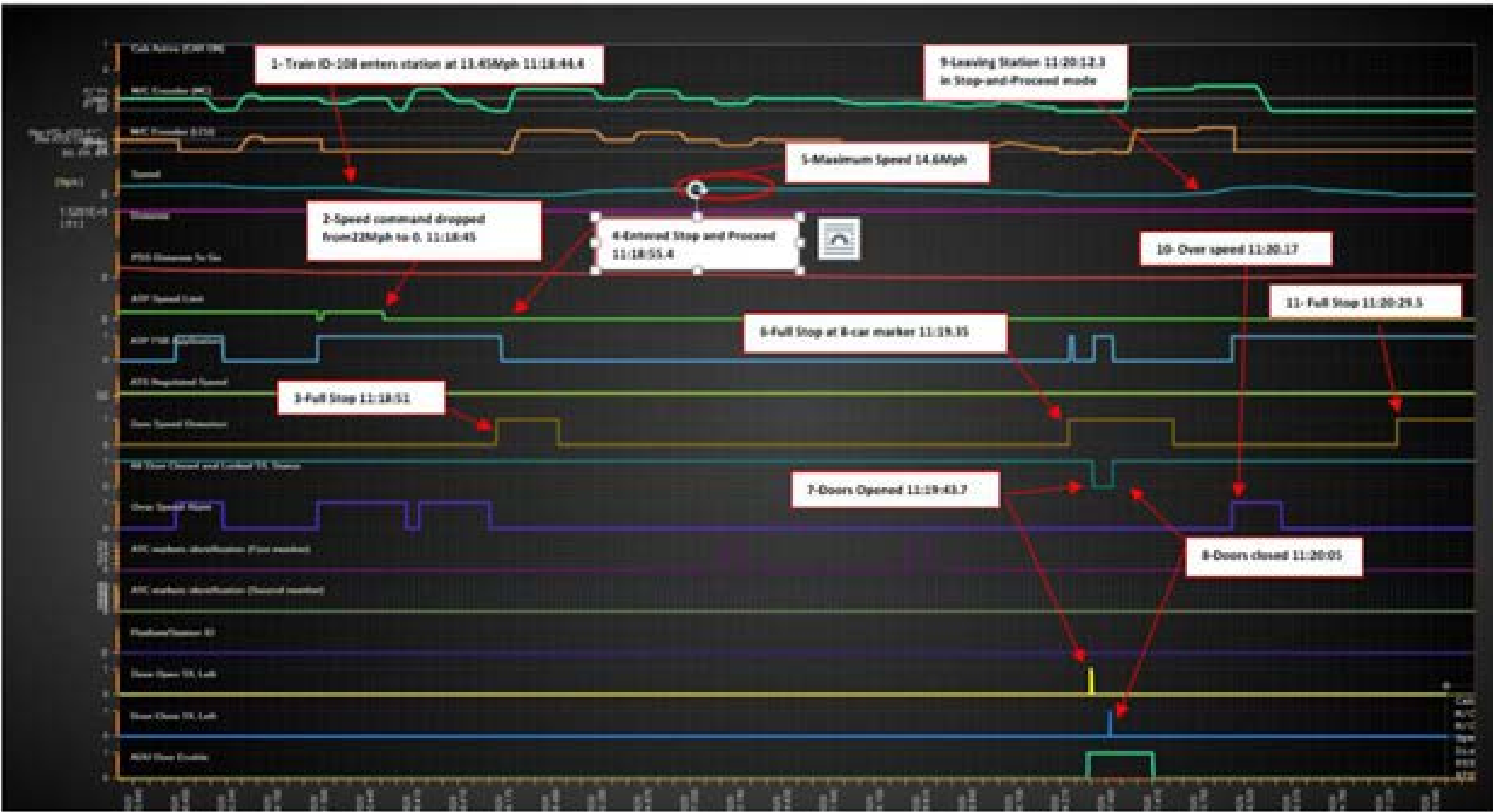


Diagram 2- ER Graphical Analysis.



Photo 1 - At 11:20:12 hrs. Train ID 108 overruns Red Signal B08-26.

NOTE: Based on forward-facing camera video footage review, the consist overran Signal B08-26 displaying a red aspect. The train responded as expected, and its performance was within design specification. No operational anomalies were noted on the VMDS fault log during the reported incident time.



Photo 2 - POD is 83'6" from Signal B08-26.

ROCC Intermittent Radio Communications

During the shift turnover, the Radio RTC and Buttons RTC changed consoles to compensate for an intermittent radio communication issue reported by the outgoing crew. At the time of the derailment, the Radio RTC was away from the Radio console for a personal break. The Buttons RTC and the Student RTC were operating from the console with the radio communications issue. The Buttons RTC was acting as the Radio RTC when the Buttons RTC received the initial report of the derailment from Train ID 880 at approximately 11:20 hrs., followed by Train ID 108 Train Operator notification at 11:21 hrs. There were several transmissions attempted by the Buttons RTC, which did not transmit over the radio [based on Ambient and Radio Recording Review]. Based on ARS review, the messages highlighted "red" did not transmit (all times are approximate):

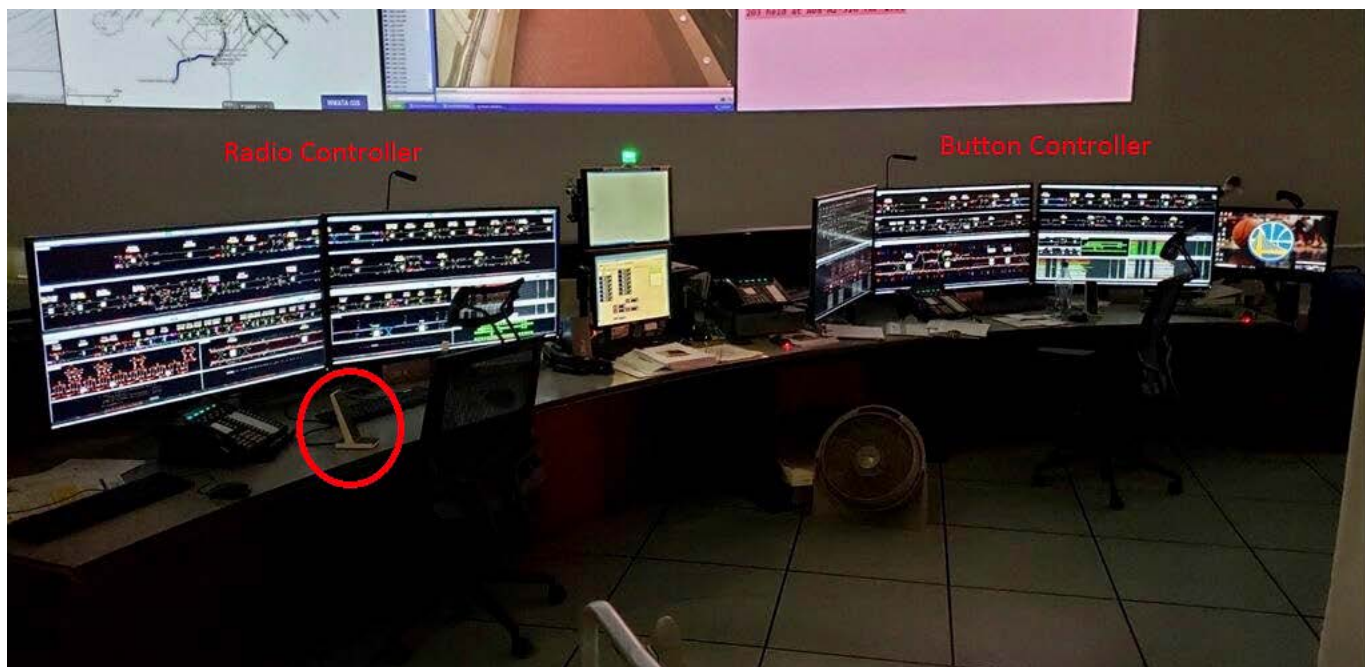
Time	Description
11:20:20 hrs.	Train ID 880 positioned in the Pocket Track 3, reported a train on Track 1 had derailed.
11:20:35 hrs.	Buttons RTC speaking to the student: "What did he say" Note: Ambient Audio conversation.
11:20:44 hrs.	Buttons RTC: "880 repeat your message, talk to me, repeat you're your message over" [Did not transmit-Ambient].

11:20:54 hrs.	Buttons RTC: "108, 108 come in to Central over, 108" [Did not transmit-Ambient].
11:21:05 hrs.	Buttons RTC: "All personnel standby stand clear."
11:21:15 hrs.	Train ID 108 Train Operator: "central, I'm off the tracks."
11:21:23 hrs.	Buttons RTC: "Copy 108, 880 standby stand clear, all personnel stand clear" [Did not transmit- Ambient].
11:21:33 hrs.	Buttons RTC using a landline, calls ROCC Superintendent and reports the derailment. [Ambient Audio].
11:24:57 hrs.	Radio RTC attempted to have ATC at Judiciary Square dispatched to Silver Spring Station.
11:25:35 hrs.	Radio RTC notified ATC personnel at Farragut North of the derailment and instructed ATC personnel to report to Silver Spring for assistance.
11:44:46 hrs.	Radio RTC instructs Train ID 110 track one Takoma to offload and reverse ends for service to Shady Grove.
11:45:15 hrs.	Radio RTC makes an announcement to all operators on the mainline. "Service is suspended, Silver Spring is officially closed at this time. Trains will be operating from Glenmont to Forest Glen; trains will be operating from Shady Grove to Van Ness and DuPont Circle to Takoma."

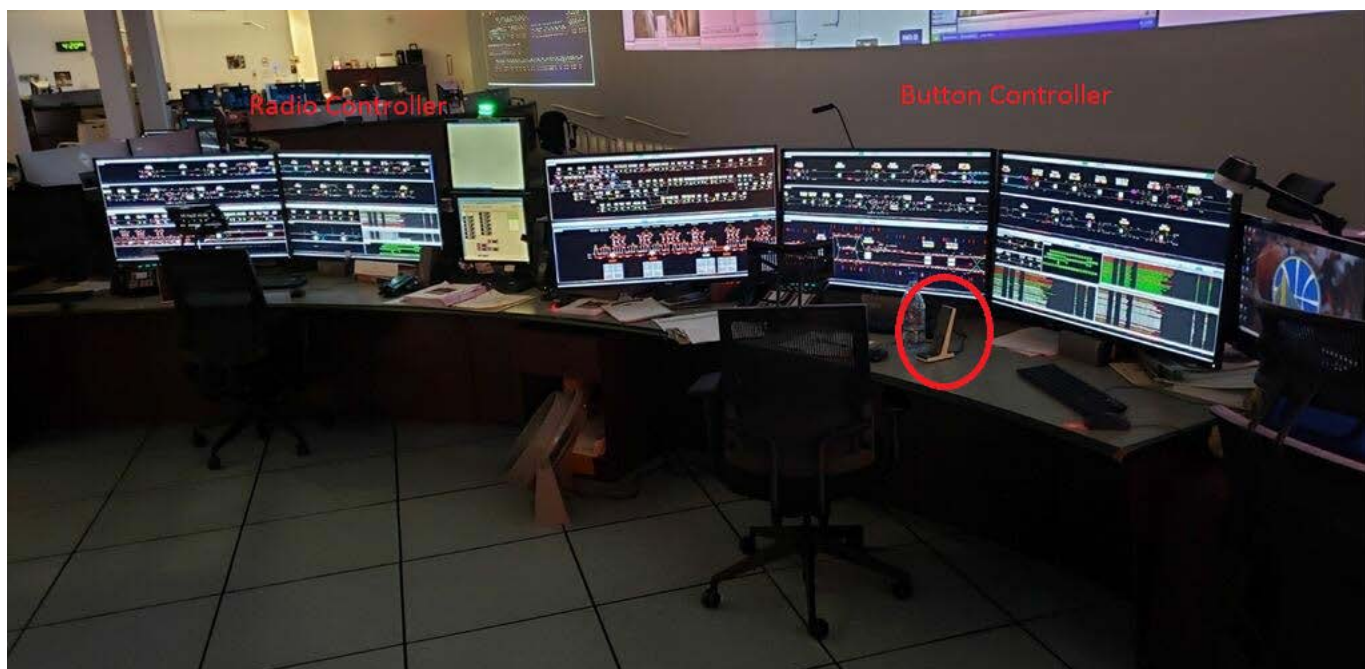
Note: Times above are based on the VMDS and may vary from other data based on clock settings.



Normally, the RTC's are positioned with the Radio Controller to the right of the console and the Button Controller to the left of the console. The microphone device the RTC utilizes to communicate over the radio is circled in red.



On the day of the incident, the Radio RTC and the Button RTC swapped positions due to the defective microphone where the Radio Controller normally is positioned. The Radio RTC sat to the left of the console utilizing the microphone circled in red.



At the time of the incident, Radio RTC stepped away from the console leaving the Buttons RTC to perform the duties of the Radio Controller and the Button Controller simultaneously. The microphone Button RTC was utilizing is circled in red and is the reported microphone that had intermittent communication.

Advanced Information Management System (AIM)

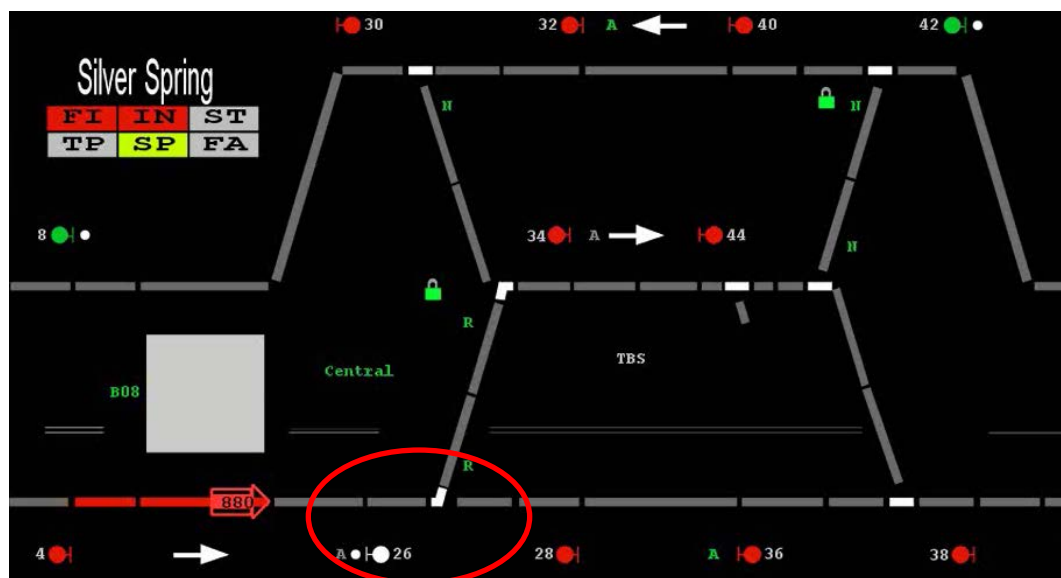


Diagram 4 - A manual route set at B08-26 Signal for Train ID 880 to enter Silver Spring Pocket Track.

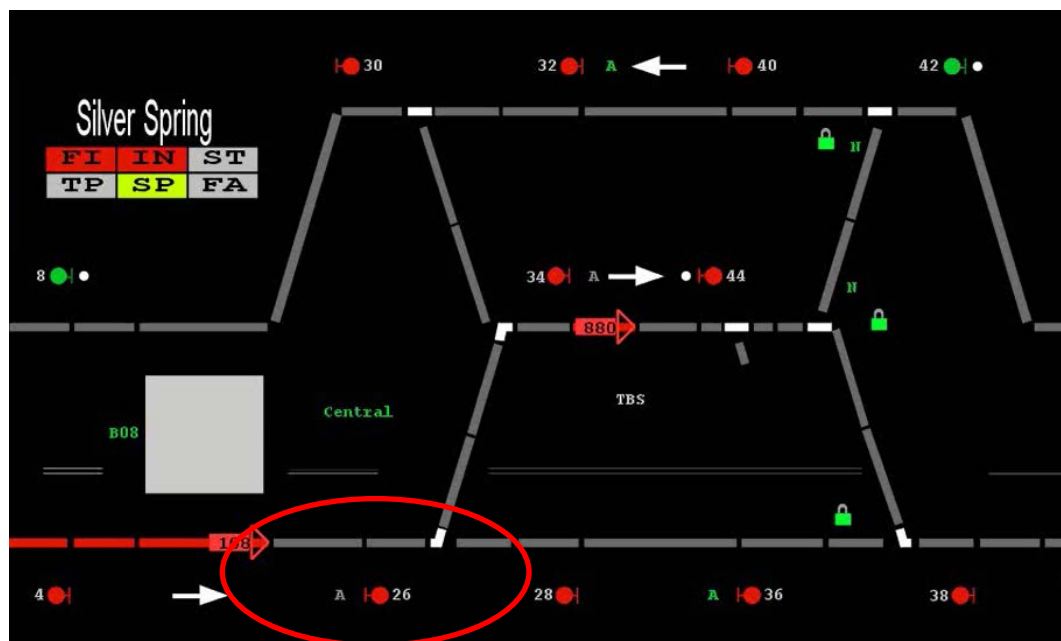


Diagram 5 - Train ID 880 secured in Silver Spring Pocket Track with Train ID 108 in approach to Silver Spring platform. B08-26 signal displaying a Red aspect.

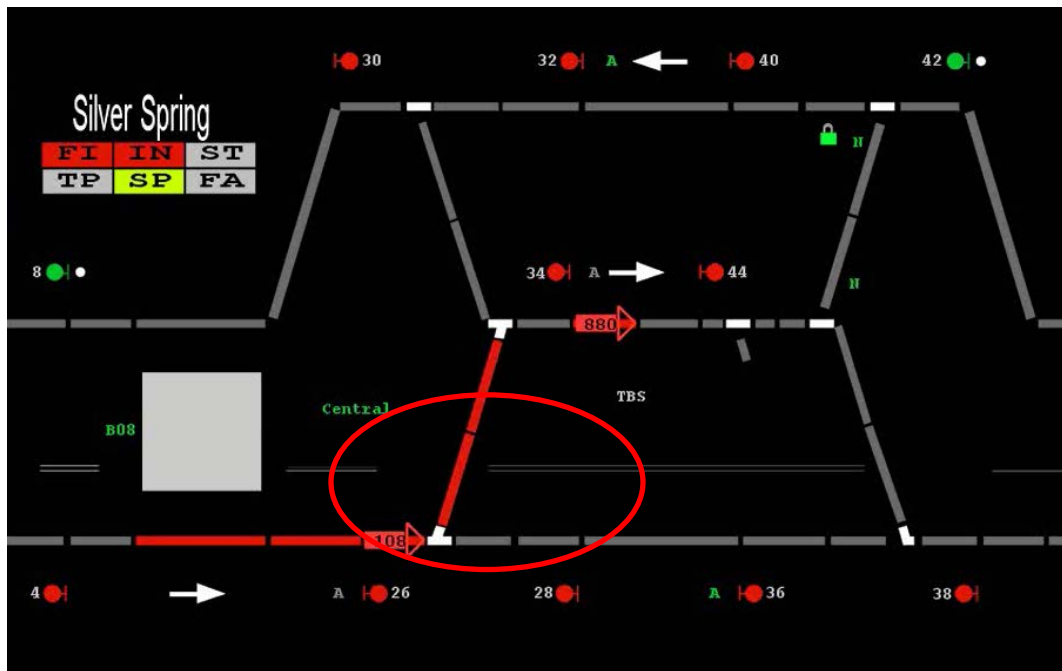


Diagram 6 - Train ID 108 overrun B08-26 signal displaying a Red aspect.

ROCC Emergency Response

ROCC Management did not follow the National Incident Management System (NIMS) SOP 1A coordination protocols.

ROCC did not assign an OSC to stabilize the scene until the arrival of the first MTPD unit. This was not in compliance with SOP 1A.5.2.1 under section Securing Scene Once an Emergency Occurs, *“ROCC assigns an OSC to stabilize the scene until the arrival of the first MTPD unit at the incident scene.”*

The Rail RTC notified an RTRA Supervisor en route they would be the OSC upon arrival. This is not in compliance with SOP 1A.5.3.1. *“ROCC shall dispatch two RTRA managers/supervisors to the scene. The first manager/supervisor to arrive shall be directed to the incident scene to assume the position of the OSC (if no OSCs assigned) or the RTRA Forward Liaison. When the second manager/supervisor arrives, ROCC shall direct the RTRA manager to go to the Command Post and assume the RTRA IC Liaison role.”*

The MOC Assistant Superintendent nor did the MOC Supervisor assign an MC to coordinate all maintenance activities at the incident scene. This was not in compliance with SOP 1A.4.2 Under Responsibilities Section: *“The Assistant Superintendent of the MOC, or designated MOC Supervisor, is responsible for the coordination of all of the maintenance activities at the incident scene through the MC and WMATA’s OSC except for Car Maintenance.”*

There was significant crowding on Silver Spring Platform from responding personnel. WMATA personnel did not report to staging area once it was established. This was not in compliance with 1A.5.4.8 *“All responders shall report to the staging area once established.”* Additionally, OSC/Forward Liaisons did not identify all personnel on the scene and move personnel not immediately needed to the staging area. This was not in compliance with SOP 1A.5.4.6.

Track Data Collected from Derailment Site

CENV conducted a visual inspection of the tracks, cross ties, tie bolts, tie plates, and found a broken roadway equipment cable and only minor damage to the ties and the bolts. Measurements were taken to determine the POD and POR. Minor damage was found at the derailment site, as seen in the photos below. All damages noted were caused after the train derailed.

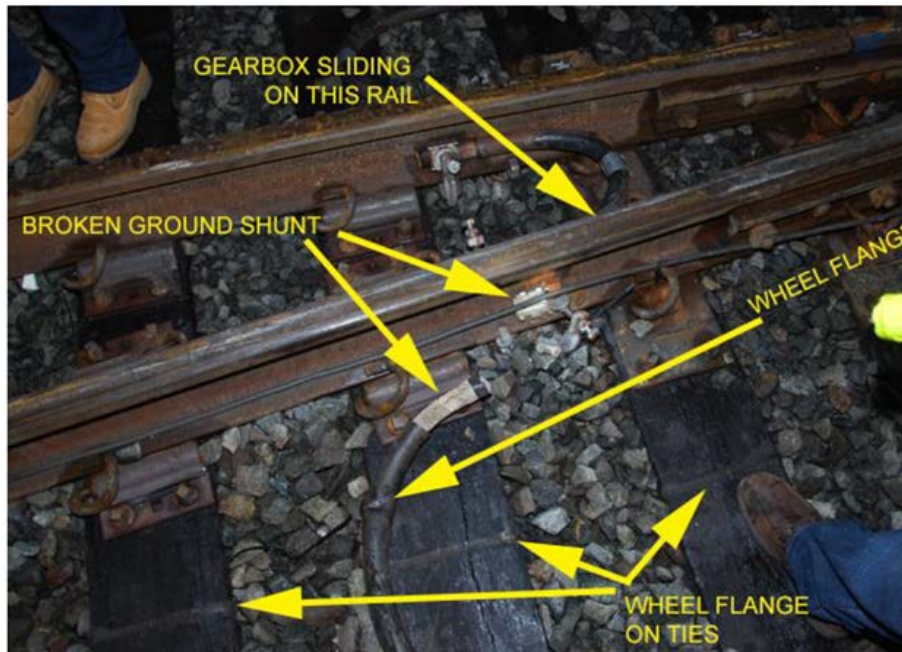


Photo 1 - Broken roadway ground shunt clamp and tie damage.



Photo 2 - POD wheel #7 climbed over the guard rail, and collector shoe contacted the running rail.

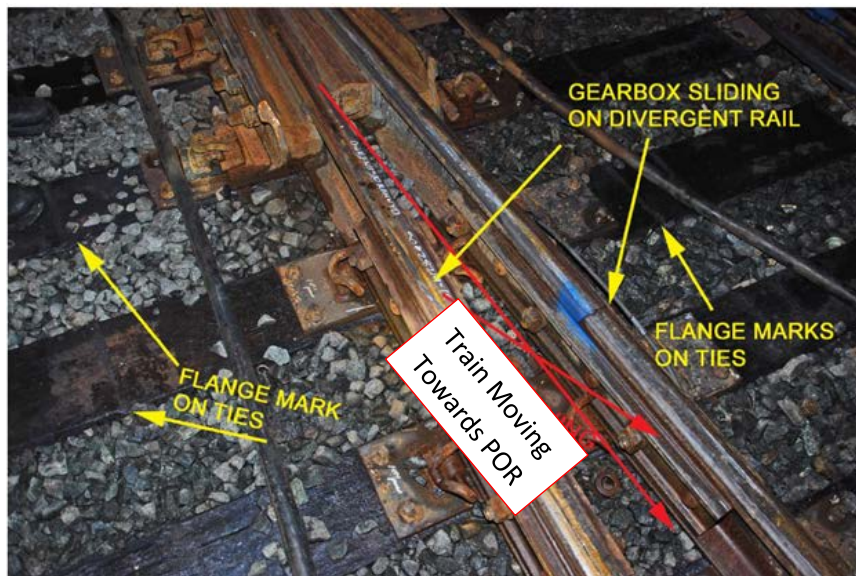


Photo 3 - Under Car Equipment impressions on the trackbed.

POD and POR

POD was 83 feet 6 inches from Signal B08 26. See the below figure. Switch 5A is located at Chain Marker (CM) 457+58, placing the POD at CM 458+26. The POR was measured from Signal B08-26 and is located at CM 458+61, 118'4" from Signal B08-26. The POD and POR of the Rear Truck shows that car 7503 traveled 35'2" after the Rear Truck had derailed.

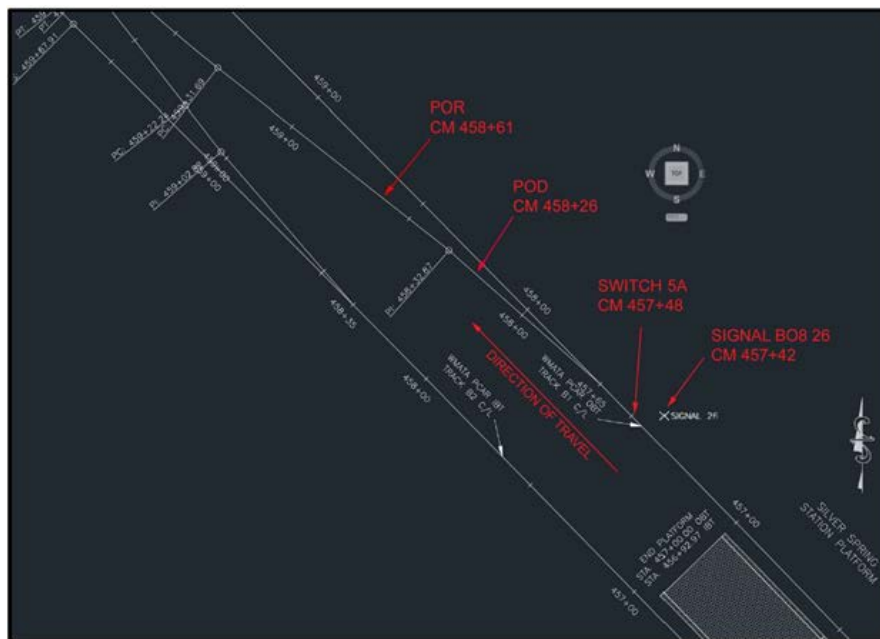


Diagram 3 – Derailment area overview.



Photo 4 - POR distance measured with reference to Signal B08-26.



Photo 5 - Wheel climb marking of car derailed rear truck of car 7503

Office of Car Maintenance

CMNT personnel performed an under-car visual inspection for the following non-derailed cars, and no derailment related structure defects were found:

- R7560/61
- R7566/67
- R7592/93

During the visual under-car inspection, minor anomalies were found to Cars R7560 and R7567. Details of the damages are as follows:

Date: 7/7/2020 Time: 11:20 hrs.
Final Report – Derailment
E20244

Drafted By: SAFE 702_703_705 – 08/14/2020
Reviewed By: SAFE 704 – 09/03/2020
Approved By: SAFE 701 – 09/08/2020
Final Version Approved by: SAFE 701 – 12/11/2020

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- R7560 – micro [hairline crack] on pneumatic piping support bracket above wheel # 1. See Figure 1.
- R7567 – broken plug at Front Emergency Pipe Control Unit (EPCU) – See Figure 2.



Car 7560: Hairline crack on pneumatic piping support bracket above wheel 1.



Car 7567 Broken plug at Front EPCU.

Office of Automatic Train Control

Switch Obstruction Tests Data Sheets were reviewed for the last 90 days at Silver Spring Station for switches #5A, #5B, #7, #9, #11A, #11B, and #13. Switch #13 was not inspected during May 2020. No major discrepancies were found for ATC Maintenance records data.

Automatic Train Control Engineering

ATC Engineering Analysis:

11:20:10	B08	Control	Signal 26 Request Route Request Route	ROCC requests a 26 to 28 route. A 26 to 28 route is the route that will align Switch 5 Normal so Train 108 can continue outbound on Track 1.
11:20:14	B08	Control	Signal Entrance 26 Received	
11:20:14	B08	Control	Signal 28 Request Route Request Route	
11:20:19	B08	Status	Track Circuit B1-450 Vacant	Track Circuit B1-450 going vacant indicates that Train 108 has moved forward enough to no longer post-shunt this track circuit. This indicates Train has or is moving forward, not that it started moving forward at this time. When an 8-car train is stopped at the platform, the last car is position close enough to the platform track circuit bond that it post-shunts the preceding track circuit.
11:20:19	B08	Status	Switch Call 5 Call Normal	Switch 5 is called Normal due to the route request sent by ROCC. The out of correspondence indication occurs when the switch begins to throw. Switch 5 has started to move.
11:20:19	B08	Status	Switch Position 5 Out of Corresp	
11:20:21	B08	Status	Track Circuit 5AAT Occupied	The occupancy of Track Circuit 5AAT indicates that Train 108 has passed Signal 26 while the signal was at Stop.
11:20:25	B08	Status	Switch Position 5 Normal	Switch 5 completes the movement to the Normal position, roughly 4 seconds after Train 108 passed Signal 26.

Note: Times above are based on the VMDS and may vary from other data based on clock settings.

The occupancy of Track Circuit 5AAT indicates that Train ID 108 has passed Signal 26 while the signal was at Stop. Switch 5 completes the movement to the Normal position, roughly 4 seconds after Train ID 108 passed Signal 26.

The Vital logic data log did show the Switch 5 and 7 Overrun bits dropping while Train ID 108 occupies the 5AAT Track Circuit. This bit dropping would have canceled all signals in the Switch 5 and 7 interlocking areas and prevented any signals from being cleared until all the switch 5 and 7 completed their alignment. At the time of the overrun, none of the affected signals were cleared.

Switch 5 continued to throw as Train ID 108 entered the interlocking. All WMATA switches are designed, per AREMA 16.6.5 D., to prevent switches from stopping mid-throw.

The B08 interlocking has M3 switch machines. These machines take an average of six seconds from switch call to correspondence in the new position. This time was calculated by analyzing switch throw times from five interlockings with M3 switch machines.

Office of Track and Structure

A systematic track inspection was performed at 06:30 hrs., on July 8, 2020, at Silver Spring, which included rail ties, fasteners, grout pads, and measurements of switch points, closure rails, guard rails, and frogs. Twenty (20) loose screw spikes were found missing clip housings in the frog area. In addition, one broken frog plate and one screw spike on the edge plate in front of the switch were also notated. Three earlier monthly inspections were reviewed, no major discrepancies were found, and no repairs were needed or performed.

Communication Maintenance

COMM performed a comprehensive radio operational test at Silver Spring Station area between Chain Marker (CM) 382+00 to 472+00. The test was successful, and the signal was at an optimal level.

Based on Maximo history, ROCC OPS 1 reported a handheld unit intermittent [Student RTC misreported and used the incorrect term to describe the console radio] on July 7, 2020, at 00:46 hrs. COMM reported to ROCC on July 7, 2020, at 15:30 hrs., and replaced OPS 1 Radio RTC console microphone. Later that evening, ROCC reported a second issue to COMM; ROCC OPS 1 needs to have a microphone replaced on July 7, 2020, at 22:47 hrs. COMM technicians reported to ROCC and replaced the defective microphone on Ops 1 Radio RTC console on July 8, 2020, at 00:00 hrs. COMM determined the microphone was wired incorrectly.

Upon review of the Maximo Work Order history in 2020, there has been a total of eight radio discrepancies reported for Radio Communications issues on OPS 1 with four (4) of those discrepancies resulting in the microphones being replaced.

Interview Findings

Based on the investigation into the Silver Spring derailment event, SAFE conducted eight (8) investigative interviews and identified the following key findings associated with this event, as follows:

ROCC personnel reported the microphone located on the radio side of the console began experiencing intermittent radio transmissions on July 6, 2020. A notification was made to the Communications department; however, personnel were not immediately dispatched to ROCC to replace the defective handset. The oncoming RTC's swapped console positions on July 7, 2020, due to the defective handset on the Radio RTC side of the console. This action moved the Buttons RTC to perform their function from the Radio RTC side of the console [different desk same line console] and the Radio RTC to perform their function from the Button side of the console. The Buttons RTC received conflicting information between the ROCC Assistant Superintendent and the ROCC Superintendent on duty about the operation of train movement. The Buttons RTC was instructed by the Assistant Superintendent to terminate service utilizing the adjacent interlocking; the Buttons RTC was then instructed by the Superintendent to prepare for single-track operations.

The Fire Liaison stated that there were radio communication issues with the MCFRS transmissions need to be done via landline. The Fire Liaison stated, there are no work-instructions detailing the process for the Fire Liaison position. The Fire Liaison stated, "the time stamp process is a waste of valuable time during an emergency" [but agreed its important], did not have a timeline of the event or checklist [just a dated document used for note-taking in events], did not recall who

hot stick and confirmed third rail power was de-energized or when the initial call was made to MCFRS and by whom. The Fire Liaison stated, there are no work-instructions detailing the process for the Fire Liaison position.

RTRA Train Operator operating Train ID 108 lost speed commands within the Silver Spring Station platform limits and initiated Stop and Proceed Mode. Additionally, the Train Operator stated that they confirmed a lunar, verified correct rail alignment and speed commands.

Findings

- Train ID 108 Train Operator activated the “Stop and Proceed Mode” to move the consist from the mid platform to the eight-car marker, and once the station was serviced, it enabled the Train Operator to move without speed commands, pass B08-26 signal with red signal aspect and ultimately derailling the consist. The Train Operator was in direct violation of MSRPH Operating Cardinal Rule 3.79, which states, *“Train Operators shall not move trains with zero speed commands except after notifying ROCC and being given 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 Upon losing speed commands on the platform, the operator may adjust the train in the same direction of traffic to service the station without contacting ROCC for permission. After servicing the station, the operator must keep their train doors open, until such time when the operator has received speed commands, a proper signal aspect (Lunar or Flashing Lunar), along with contacting ROCC for permission to leave and an absolute block for the move if speed readouts do not return.”*
- The Rail RTC notified an RTRA Supervisor en route they would be the OSC upon arrival. This is not in compliance with 1A.5.3.1. *“ROCC shall dispatch two RTRA managers/supervisors to the scene. The first manager/supervisor to arrive shall be directed to the incident scene to assume the position of the OSC (if no OSCs assigned) or the RTRA Forward Liaison. When the second manager/supervisor arrives, ROCC shall direct the RTRA manager to go to the Command Post and assume the RTRA IC Liaison role.”*
- The MOC Assistant Superintendent neither the MOC Supervisor assigned a Maintenance Commander (MC) to coordinate all maintenance activities at the incident scene. This was not in compliance with 1A.4.2 Under Responsibilities Section: *“The Assistant Superintendent of the MOC, or designated MOC Supervisor, is responsible for the coordination of all of the maintenance activities at the incident scene through the Maintenance Commander and WMATA's OSC except for Car Maintenance.”*
- There was significant crowding on Silver Spring Platform from responding personnel. WMATA personnel did not report to staging area once it was established. This was not in compliance with 1A.5.4.8 *“All responders shall report to the staging area once established.”* Additionally, OSC/Forward Liaisons did not identify all personnel on the scene and move personnel not immediately needed to the staging area. This was not in compliance with SOP 1A.5.4.6.
- Based on console footage, the Train Operator appeared distracted as a result of communicating with someone outside the right-side operator window.
- Based on Closed Circuit Television (CCTV) recording playback and SAFE’s interview with the Train Operator aboard the affected consist it was revealed that 31 customers on the trailing seven (7) cars exited the train consist (moving through the bulkhead doors

and exiting through the side doors) at the platform areas efficiently. However, there was difficulty during the emergency exit process with the customer on the lead car. One remaining customer in Lead Car 7502 and the Train Operator needed to exit through the consist front bulkhead door and walked on the roadway due to the straddled married-pair 7502-03 between Silver Spring Station, Track 1, and Silver Spring Pocket Track.

- WMATA Office of Emergency Management (OEM) Fire Liaison worksheet does not capture times for Fire Department arrival, respective department arrival, SOP 1A/OSC, power de-energization, re-energization, fan activation, unified command established, location of the incident command post, and termination/ transfer of command, etc.
- All customers aboard the train were escorted onto the platform in accordance to SOP 4 Customer Evacuated from Train.
- CENV investigation did not reveal any anomalies with the rail cars or trucks/components, which may have contributed to the derailment.
- CENV also reviewed the report from ATC and did not find any abnormalities with Switch 5A.
- ROCC did not assign an OSC to stabilize the scene until the arrival of the first MTPD unit. This was not in compliance with SOP 1A.5.2.1 under securing Scene Once an Emergency Occurs, *“ROCC assigns an OSC to stabilize the scene until the arrival of the first MTPD unit at the incident scene.”* Additionally, effective emergency radio communications were non-existent due to no OSC being assigned to direct radio traffic and relay information directly to ROCC.
- The Buttons RTC acting in the absence of Radio RTC, attempted to acknowledge derailment transmissions from Train ID 880 and Train ID 108; however, the microphone did not work.
- The handset on the Radio RTC side of the console had been intermittent since July 6, 2020. A notification was made to the communications department, and technicians did not arrive to replace the handset prior to the RTC's shift relief.
- The Radio RTC took a personal relief at the time of the incident; therefore, they were not at the console at the time of the derailment.
- The Buttons RTC attempted to communicate to Train ID 880 and Train ID 108 at the time of the incident utilizing the handset on the Radio side of the console.
- The handset on the radio side of the console was replaced at 15:00 hrs., on July 7, 2020.
- After the derailment and initial response, the Radio RTC and the Buttons RTC that assumed duties on July 7, 2020, changed positions on the console due to the defective handset on the radio side of the console.
- MCFRS radio was defective and later repaired; therefore, communication occurred over the phone.

Weather

At the time of the incident, the temperature was recorded at 82 °F and clear. SAFE has concluded that weather was not a contributing factor in this incident (Weather source: NOAA – Location: Silver Spring, MD.)

Human Factors

Fatigue

The Train Operator's 30-day work schedule leading up to the incident was compliant with WMATA's *Policy/Instruction 10.7/1 Hours of Service Limitations for Prevention of Fatigue* and did not present a significant risk of impairment due to fatigue. Based on the Train Operator's interview, there were no personal factors present that would have increased the likelihood of fatigue-related impairment. The Train Operator had no history of sleep issues to report.

Post-Incident Toxicological Testing

After reviewing the Train Operator's post-incident testing results, it was determined that the Train Operator involved was not in violation of the Drug and Alcohol Policy and Testing Program 7.7. 3/5, therefore, being under the influence of a controlled substance has been excluded as a contributing factor.

Damage Costs

CMNT Labor Cost	\$9,224.12
CMNT Parts Cost: <ul style="list-style-type: none">- R-End Semi-permanent Draw bar.- Socket Joint Kit.- Exterior Safety Chain Assembly (Rear).- Rear Truck.	\$400,514.33
Total CMNT Cost/Parts & Labor	\$409,738.45

Probable Cause Statement

The probable cause of the Red Signal overrun event at Silver Spring Station, Track 1 was a combination of factors. The Train Operator of Train 108 did not verify correct rail, Lunar aspect or speed commands before moving the train consist towards Forest Glen Station. In addition, Switch 5 was moving to the normal position as the lead car [7502] moved into to pocket track. Signal B08-26 was Red due to Train 880 being located in the Silver Spring Pocket Track. These combinations of factors resulted in a derailment outside Silver Spring platform limits, Track 1. The Train Operator was not in compliance with the Metrorail Safety Procedures Handbook (MSRPH) Operating Rules 3.79. *"Upon losing speed commands on the platform, the operator may adjust the train in the same direction of traffic to service the station without contacting ROCC for permission. After servicing the station, the operator must keep their train doors open, until such time when the operator has received speed commands, a proper signal aspect (Lunar or Flashing Lunar), along with contacting ROCC for permission to leave and an absolute block for the move if speed readouts do not return."* and The Train Operator was not in compliance with MSRPH 3.67 *Rail vehicles shall not be operated past or closer than a point 10 feet in approach of an interlocking*

signal or lamp displaying a red aspect, a red flag, or a dark interlocking signal, except at a bump post or entering a pocket track, or unless authorized by ROCC or the Interlocking Operator and the move is consistent with customer safety as specified in Rule 3.1.

Upon completion of an analysis of data collected from systems of record and the results of interviews with staff, multiple human factors failures occurred in response to this incident. The investigation identified several processes and procedural gaps that directly or indirectly contributed to the incident.

Additionally, SAFE identified radio communication deficiencies [radio not transmitting], which directly affected ROCC operations. Radio checks are not performed during turnovers to ascertain the system is operating as designed. There is no maintenance schedule to inspect, overhaul, and/or process to perform preventative maintenance with frequency intervals on the radio's microphones within the ROCC with exception to handheld radios positioned at the terminals for mobile/backup use. ROCC Management did not follow NIMS coordination protocols for IC. Communication breakdowns, lack of management oversight, adherence to written procedures, and processes within MSRPH, outdated emergency checklists contributed to the management of this event collectively.

SAFE Recommendations

1. RTRA to update the Stop and Proceed Mode Personnel Notice on 7000 Series Railcars to reflect changes in platform limit reporting processes.
 - a. RTRA revised and distributed Operations Personnel Notice to all train operations personnel on July 22, 2020. See Appendix B, Attachment 1.
2. ROCC to develop and implement mandatory Lessons Learned/Tabletop discussion, reenacting the associated derailment.
 - a. RTRA developed and held a Lessons Learned/Tabletop discussion on July 23, 2020. See Appendix D, Attachment 1.
3. ROCC revise all emergency SOP Checklists to include the associated incident to enhance preparation and efficiency during emergencies.
 - a. A draft of the updated SOP Checklists was distributed to executive leadership on July 21, 2020. The revised checklist is currently under review by stakeholders.
4. ROCC shall issue Permanent Order T-20-01 with revised language used to report an emergency.
 - a. An RTRA Operations Personnel Notice was issued to all RTRA operations personnel on Monday, July 27, 2020, for Enhanced Radio Communications during Emergencies. See Appendix E, Attachment 1

5. Explore opportunities to update the ROCC RTC transmitting device (microphone) with headsets replacing the antiquated microphones currently in use throughout the system to mitigate the intermittent transmission issues discovered during this investigation.
6. Develop and incorporate a preventative maintenance schedule for radio equipment within the ROCC.
7. Establish an emergency management process for events that will directly affect RTC's ability to oversee normal operations on the roadway, i.e., directing traffic around the incident, troubleshooting efforts for mechanical breakdowns, etc.
8. Enhance Operator OJT and ride check process and deploy a simulator program to include initial and recurrent qualification requirements.
9. Revise current Fire Liaison worksheet to checklist form to reflect times for initial report, Fire Department notification and arrival, respective department arrival, time of SOP 1A/OSC initiation, power de-energization, re-energization, fan activation, unified command established and terminated, transfer of command, etc.

Appendix A - Interview Summaries

Interview Details

RTRA

Train Operator Operating Train ID 108 Interview Statement:

A WMATA employee with three (3) months of experience as a Train Operator and 11 years of service in various positions, Bus Operator.

During post-incident interviews with SAFE, the Train Operator operating Red Line Train ID 108, 7K 8-Car Consist Lead Car 7502, stated they were traveling outbound from Takoma Station to Silver Spring Station, Track 1. Train Operator stated that as he was coming around a curve in approach to Silver Spring Station, the train speed commands dropped to 22 MPH, and he entered the station at 17 MPH. Train Operator stated while entering the station; they noticed the consist in front of them going into the Pocket Track on Track 1. Train Operator stated that Signal B08-26 did not shunt. Train Operator stated before they berthed the consist, and after he serviced Silver Spring Station, they had a Lunar Signal at B08-26. Train Operator stated they never activated Stop and Proceed Mode while at Silver Spring Station because their train had speed commands. However, the Train Operator stated the only time they initiated Stop and Proceed Mode on their outbound trip heading in the direction of Glenmont Station when they left Farragut North Station. Train Operator stated that when they left Farragut North Station. They had to initiate Stop and Proceed Mode twice to get the train to move. Train Operator stated they received permission from the ROCC to initiate Stop and Proceed Mode when leaving from Farragut North Station. Train Operator stated that when they arrived at Silver Spring Station, they berthed at the 8-car marker, saw the lunar, and opened the doors. By the Train Operator's own admission, the Train Operator stated that when they were getting ready to depart the station, they never verified proper rail alignment, but they still had a solid lunar and had speed commands and proceeded on. Train Operator stated when departing Silver Spring Station; they noticed their lead car started to turn into the Pocket Track. Train Operator stated he then immediately put the train in P5 Mode dumped the consist, and then heard a banging noise. Train Operator stated they did not realize what the banging noise was until a customer or employee aboard the affected car contacted the Train Operator via the emergency intercom and informed them of the derailment. The Train Operator reported the derailment incident to the ROCC. The Train Operator stated they then took actions to secure the train and attempted to check for customer injuries, but they could not get on the B car through the bulkhead doors due to the consist married-pair 7502/03 being straddled between Silver Spring Station Track 1 and Silver Spring Pocket Track. The Train Operator stated they were given Foul Time from the ROCC to exit the consist with the only customer that was in the lead car through the consist bulkhead door and through the roadway to the platform. The Train Operator and customer were able to exit without incident or injury. All customers aboard the trailing seven (7) cars were escorted onto the platform without incident or injury.

ROCC

Buttons RTC

A WMATA employee with Five (5) years of experience as an RTC and 24 years of service in various positions, Bus Operator, Station Manager, Train Operator and RTRA Supervisor.

Based on SAFE interview, the RTC acting in the training capacity as the OJT Training Instructor was in observation of the Student RTC performing the functions of the Buttons RTC position. At the time of the incident, the RTC stated that the student was operating the button functions. The Buttons RTC stated that Train ID 880, a non-revenue test train, performing burner testing (mainline simulation for newly delivered cars acceptance process), requested permission to enter the Pocket Track at Silver Spring Station. The Student RTC placed a single manual route at B08-26 signal to allow the train consist to enter the Pocket Track; the RTC stated that once the train consist cleared B08-26 signal, the aforementioned signal turned red. The RTC reported that before the Student RTC was able to set a normal route at B08-26 signal, revenue Train ID 108 proceeded thru the red signal. The operator on Train ID 880 reported that Train ID 108 had derailed; upon confirmation of the derailment, revenue Train ID 108 reported and confirmed the derailment on Track 1. The OJT Training Instructor reported that prior to the incident, the Radio RTC stepped away from the console for personal relief. At the time of the incident, the OJT Training Instructor took over operations as the Buttons RTC, which included making notifications to the Assistant Superintendent and de-energizing third rail power. The OJT Training Instructor performed as the RC until the assigned Radio RTC returned from the personal relief; a brief turnover was given to the returning Radio RTC, allowing them to resume operations on the radio. The OJT Training Instructor states that a memorandum was issued to the ROCC controllers instructing them to remove the automatic signal function from an automatic signal and place a manual route for trains that require any alternate switch movement. The OJT Instructor stated that the memorandum was issued due to a prior incident where a train accepted an incorrect lead and that upon investigation ATC reported that when a manual route is set the automatic function is active, and mechanism with the associated signal gets convoluted, and a train can accept an incorrect lead. The OJT Instructor reported that prior to the train entering the Pocket Track at Silver Spring, B08-26 signal was in an automatic state which was removed before the arrival of Train ID 880. The OJT Training Instructor reported an additional incident involving a flood between Cleveland Park and Woodley Park Stations required the Buttons RTC to operate several interlockings at once. During the incident, the OJT Training Instructor reported that after receiving information from the Assistant Superintendent, a controller from another console not associated with the incident involving the derailment gave conflicting information issued from the Superintendent on duty, which caused confusion during the incident.

Radio RTC

A WMATA employee with three (3) years of experience as an RTC and 13 years of service in various positions, Bus Operator.

Based on SAFE interview, The Radio RTC stated that prior to the incident, they requested a personal relief due to being stationed on the console for an incident of a flood between Cleveland Park and Woodley Park Stations. The Radio RTC reported that when they departed, the console non-revenue Train ID 880 was in approach to Takoma Station. The RTC reported that the state of B08-26 signal was fleeted upon their arrival to their shift at 05:00 hrs., and B08-26 signal

remained fleeted (a function to allow more than one train to proceed pass B06-26 signal in the direction of Glenmont Station), an automatic signal was placed on B08-36 signal. Upon the RTC return to the console, they were informed of the derailment at Silver Spring Station and resumed duties as the Radio RTC. The Radio RTC reported that they were working primarily with the student controller and that the student has a slow reaction time performing the duties of an RTC, to include setting routes and canceling routes for trains. The RTC stated that during the day, the student took an extended time to set manual routes at various locations, and train operators would report that they were holding at red signals due to zero speed commands. The RTC also reported that a track circuit continued to intermittently drop in and out in approach to the Silver Spring Station platform, causing trains to lose speed commands, which was a known issue with the Maintenance Operations Center. The Radio RTC also stated that during the incident, they received conflicting information during the entirety of the incident between the Assistant Superintendent and the Superintendent on duty. The RTC states that the Assistant Superintendent instructed them to suspend service at Silver Spring Station and that a controller from another console told them the Superintendent wanted to set up a single-track operation between Silver Spring and Forest Glen Stations utilizing Track 2. The RTC also reported a memorandum stating that any manual route that was to be set, the RTC were to remove the automatic signal and manually set a lead for a train to an alternate route. The RTC stated that a prior incident where a controller was unable to set a route spearheaded the memorandum.

Student RTC

A WMATA employee with one (1) year of service as an RTC Trainee.

Based on SAFE interview, the Student RTC reported they were in the role of the Button RTC with the OJT Instructor observing their performance. The Student RTC reported that non-revenue Train ID 880 departed Brentwood Yard with a destination for Silver Spring Pocket Track with a final destination of Greenbelt Yard. The student stated that the R/C was excused from the console for personal relief and that the student worked together with The OJT Training Instructor, occasionally taking control as the Buttons RTC for efficiency. The student reported that prior to the incident B08-26 signal was fleeted prior to non-revenue Train ID 880 entering the Pocket Track. The student reported that they set a manual route for the non-revenue train to enter the Pocket Track at Silver Spring Station. While the non-revenue train entered the Pocket Track, the RTC student stated that revenue Train ID 108 was in approach to Silver Spring Station and that B08-26 signal was red and that the Student RTC was under the impression that Train ID 108 would not be able to move their train. The RTC student stated that during their transmission with non-revenue Train ID 880, Train ID 108 interrupted and reported that their train had derailed on Track 1; at the time the student received the report of the derailment the student attempted to set B08-26 in the normal direction of travel and was unable to set a lead. After a failed attempt at setting a normal route at Silver Spring, the OJT Training Instructor took over operations for the duration of the incident.

ROCC Assistant Superintendent

A WMATA employee with one (1) year of experience as an Assistant Superintendent and 19 years of service in various positions, Bus Operator, Train Operator, Interlocking Operator and RTC.

Based on SAFE interview, the Assistant Superintendent reported that at approximately 11:20 hrs., they received a report from the R/C of a derailment at Silver Spring Track 1. Upon notification, the A/S dispatched the MCFRS, instructed the RTC to de-energize the third rail power, and

ascertain if any personnel on the consist required medical assistance. The A/S reported that under their observation of the RTC student, the student has been behind in the certification process and has requested remediation training for the student controller. The A/S stated that they were unaware that the Superintendent instructed another RTC to perform a directive that conflicted with instruction that were previously issued to the R/C and B/C during the incident. The A/S reported that B08-26 signal was in an automatic state and that the automatic signaling was removed to perform a manual route for non-revenue Train ID 880. The A/S stated that they were aware of a memorandum regarding automatic signals and the memorandum states that when a train is in approach to an automatic signal and the train does not receive a lunar signal, the RTC are to remove the automatic function and the place a manual route on the associated signal.

Button RTC (Owl Shift)

A WMATA employee with three (3) years of experience as an RTC and 9 years of service in various positions, Bus Operator, Train Operator and Interlocking Operator.

Based on SAFE interview, the Buttons RTC was on duty at 21:00 hrs., on July 6, 2020 to 05:00 hrs., July 7, 2020 at Carmen Turner Facility.

The Buttons RTC reported that they were in the capacity of the OJT Training Instructor and recalled the Radio RTC experiencing intermittent radio transmission from their handset radio to personnel in the field around 23:00 hrs. The RTC stated that at times they would have to communicate with personnel utilizing the handset located at the Buttons RTC console to establish clear communication with personnel in the field. The RTC stated that the intermittent radio communication consisted of personnel in the ROCC having the ability to receive radio transmissions from personnel but unable to transmit effectively over the radio handset. The Buttons RTC stated that there were no radio communication issues from the Button RTC side of the console. The RTC notified the Communication department to report the defective handset on the Radio RTC's side of the console. The RTC stated that the Communication department did not report to ROCC to replace the defective handset for the duration of their time on duty. The RTC stated that the issue was reported to the Maintenance Operations Center, and the Radio RTC documented the defective handset in the daily activity log to be turned over to the oncoming shift. The RTC reported that at the time of the shift turnover, the oncoming RTC was to act in the roles of the Button RTC, the oncoming Button RTC assumed responsibilities but performed the function from the radio side of the console due to the defective radio handset. The RTC stated that during the duration of their shift, the Radio RTC nor the Button RTC switched positions on the console due to the defective microphone.

Radio RTC [Owl Shift]

A WMATA employee with three (3) years of experience as an RTC and 22 years of service in various positions, Bus Operator, Train Operator and RTRA Supervisor.

Based on SAFE interview, the Buttons RTC reported on duty at 21:00 hrs., on July 6, 2020 to 05:00 hrs., July 7, 2020 at Carmen Turner Facility. The Radio RTC stated the handset on the radio side of the console began to experience intermittent transmissions; the RTC stated that on the Button RTC side of the console, transmissions from that handset were clear. The RTC stated at times during their duration of duty the Button RTC would transmit over the radio on the Button RTC side of the console due to the inability to transmit over the handset on the radio side of the console. The RTC stated that a notification was made to the communications department, but technicians were not dispatched to the ROCC due to a lack of personnel from the communications department. The RTC reported that when they arrived on duty at 21:30 hrs., there appeared to be

clear radio communications when transmitting with Train Operators, the communication issues began when the ROCC attempted to transmit to personnel in the field requesting access to the roadway. The RTC reported that they were able to receive and unable to transmit to personnel in the field, the Radio RTC attempted a radio check utilizing the handset on the button side of the console and was able to receive and transmit. After the Radio RTC confirmed the defective handset the Buttons RTC placed a call to the Communications department, and the Radio RTC updated the Daily Activity Log to include the issue with the handset on the radio side of the console. The RTC reported that during the turnover process to the oncoming shift, they were simultaneously dealing with an alternate incident involving a flood; The Radio RTC also stated that during the turnover to the oncoming shift they read the daily activity log and mentioned the defective handset on the radio side of the console. The Radio RTC reported after the turnover was complete, the oncoming Buttons RTC sat on the radio side of the console to have the Radio RTC sit on the button side of the console where they can utilize the handset that was not defective.

Fire Liaison

A WMATA employee with twelve (12) years of service as a Fire Life Safety Officer.

Based on SAFE interview, the ROCC Assistant Superintendent notified the Fire Liaison of the derailment at Silver Spring Station, Track 1. The Fire Liaison then notified MTPD via radio on channel 1 informing personnel of the event. Track 1 was de-energized, and a train was at the platform and in the upright position. There was a second train in the Pocket Track, and the Pocket Track was de-energized as well. Third rail power was subsequently de-energized on Track 2 and the Pocket Track [Track 3]. The Fire Liaison notified MCFRS that evacuations were underway and reviewed the CCTV system and identified one camera operational in the affected area that allowed them to see the position of the train. MCFRS called the Fire Liaison and in turn gave them all the pertinent information and advised the Fire Liaison of the radio channel and continued communication with MCFRS.

The Fire Liaison noted, there were communication issues between MCFRS and Fire Liaison. The Fire Liaison relayed incident information over the phone due to radio communication issues. Reportedly, the MCFRS radio was later inspected and repaired. The Fire Liaison notified MCFRS passengers were being evacuated, and at that time, there were no reported injuries. The passenger on the lead car was escorted off the train to the roadway by MCFRS, and OEM after third rail power was de-energized. The Train Operator and passenger were unable to exit through the bulkhead door due to the alignment of the rail cars after the derailment. The Fire Liaison did not receive information that there was a passenger who uses of a wheelchair; however, they did see a person in a wheelchair on the platform]. The Fire Liaison stated, “the ICP started somewhere on the platform, and officially relocated to Colesville Rd.” Based on limited CCTV access, from what the Fire Liaison could tell, “it was a unified command setup.”

The Fire Liaison stated SOP 1A was fluid during the early part of the event. However, the Fire Liaison added, there were communication issues regarding train movement. The different request of planning was to terminate service prior to Silver Spring Station, service Silver Spring on Track 2 if approved by MCFRS [declined by MCFRS], bypass Silver Spring by way of single-tracking were the potential options. The Fire Liaison stated, the ROCC Assistant Superintendent provided accurate real-time information with no significant gaps in time. Based on the Fire Liaison experience, the Fire Liaison does not have Incident Commander experience; however, has taken

part in incident emergency events initiating SOP 1A. The Fire Liaison stated, “the time stamp process is a valuable waste of time during an emergency” [but agreed its important], did not have a timeline of the event or checklist [just a dated document used for note-taking in events], did not recall who hot stick and confirmed Third rail power was de-energized or when the initial call was made to MCFRS and by whom. Additionally, the Fire Liaison stated, there are no work-instructions detailing the process for Fire Liaison position. Note: The Fire Departments have documentation outlining roles and responsibilities for Fire Liaison and should be available to OEM.

In closing, the Fire Liaison stated there is an OJT process for fan control, fire alarms, etc., and there is a playbook for the ROCC but never actually seen one.



RTRA OPERATIONS PERSONNEL NOTICE

Wednesday, July 22, 2020

UPDATE: Stop and Proceed Mode on 7000 Series Railcars

All Train Operations personnel shall adhere to MSRPH Operating Rule 3.79 when the rail vehicle they are operating displays zero speed commands on the operating console:

MSRPH Operating Rule 3.79:

Train Operators shall not move trains with zero speed commands except after notifying ROCC and being given 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.

Upon losing speed commands on the platform, the operator may adjust the train in the same direction of traffic to service the station without contacting ROCC for permission. After servicing the station, the operator must keep their train doors open, until such time when the operator has received speed commands, a proper signal aspect (Lunar or Flashing Lunar), along with contacting ROCC for permission to leave and an absolute block for the move if speed readouts do not return.

If speed commands are lost on the mainline and the consist comes to a stop with the ADU displaying the code number, the Operator **MUST** contact ROCC to obtain either a Permissive or Absolute block **BEFORE** pressing the corresponding number on the ADU Touchpad to enter Stop and Proceed Mode. ROCC **MUST** also be contacted, even within the platform limits, **BEFORE** entering Stop and Proceed Mode.

Note: An update to MSRPH OR 3.79 in the form of a Permanent Order will be forthcoming shortly.

As a reminder, Stop and Proceed mode enables Train Operators to take a point of power in the absence of speed commands with the ATP System enforcing a maximum speed of up to 15 MPH. The procedure for entering Stop and Proceed mode has been modified on the 7000 Series railcars to reduce the risk of accidentally overrunning a red signal.

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 the master controller in B4/B5. Once stopped, the Operator must use the ADU touchpad to enter the code number shown on the Regulated Speed display before the train can be moved in Stop and Proceed mode.

I acknowledge the receipt of and understanding of this RTRA Operations Personnel Notice, **"UPDATE: Stop and Proceed Mode on 7000 Series Railcars."**

Print Name/Payroll#


Signature

Date Received

Supv. Print Name / Signature

Attachment 1 – Updated: RTRA Operations Personnel Notice - Stop and Proceed Mode on 7000 Series Railcars

Appendix C - ROCC Daily Safety Briefing

**ROCC**
Rail Operations Control Center

ROCC Daily Safety Briefing
DATE: Tuesday, July 28, 2020

- o Safety Contact
- o Customer Service Contact
- o Values Contact

Discussion Items

- Emergency Transmissions Notice
- Power Restoration Verification Record
- Have a plan when notifying the Assistant Superintendent!!!
- No Track Inspections With Customers Aboard!!!!
- CHECK YOUR RAILROAD!! Interlockings, Power, Fans
- Allow Auto Signals To Do Their Job!!! Take Auto Off If You Must Set. Do Not Race The Signal
- NOTIFICATIONS: Notify On Duty Asst. Supt. First of any fire, smoke, sparks, arcing, gas smells
- Utilize Checklist During Incidents!!!
- OTP – Place Supervisors at Timepoints
- Monitor Headway and Performance Chart
- Hold Hot Trains/Dispatch Supervisors For Down Trains
- Open/Defective Breakers – Power mode restriction and spacing
- Disabled Train – Dispatch Help (CMNT, RTRA SUPV) IMMEDIATELY!!!!
- Mitigating Emergencies / Line Delays – GAP Trains / Turn Trains - MAINTAIN HEADWAY AT ALL TIMES!!!!
- Professionalism
- Radio Etiquette

Attachment 1 - ROCC Daily Safety Brief.

Table Top Discussion

Train Derailment



MSRPH

- 1.4.1 states that the ROCC Supervisors shall be in charge of and responsible for all mainline operations and all ROCC functions during their tour of duty.
- 1.4.4.1 Initiate and establish train routes at the intermediate interlocking locations and terminals; establish other interlocking functions at interlocking locations from the Rail Operations Control Center;
- 1.4.7.1 The safe operation of revenue trains in accordance with approved headways and modifications of them when necessary

On Tuesday, July 7, 2020, ROCC removed the automatic from B08-26 signal and canceled the lunar signal to establish routing for non-revenue Train 880 to enter the pocket track. After Train 880 entered the pocket track, routing from B08-26 to B08-28 was never established and switch 5 was still in the reverse position. Train 108 operator continued on from Silver Spring track one; passing B08-26 signal red, with switch 5A was in the reverse position. This caused the second car in the consist (7053) to derail. At 11:24 Train 108 derailed.

ROCC Responsibilities:

Allow the automatic signals to work. If a train does not automatically receive a lunar signal at a diverging route.

Radio Controller:

- Positively verify the train's ID and destination by ascertaining the needed information and providing a 100% repeat back

Train Controller:

- Once the Radio Controller has positively identified the train's ID and destination, the Train Controller must establish the correct routing.

Attachment 1 - ROCC Tabletop Discussion.



RTRA OPERATIONS PERSONNEL NOTICE

Monday, July 27, 2020

Enhanced Radio Communications During Emergencies

The Office of Rail Transportation (RTRA) is implementing the following communication enhancements when employees communicate, via radio, to the Rail Operations Control Center (ROCC) when an emergency is occurring or has occurred.

Emergency: Any condition which can or has resulted in harm to customers or employees; damage to equipment or property; a service disruption; or any combination of these circumstances.

As defined above, when an employee is involved in or is witnessing an emergency and needs to communicate immediately with ROCC via radio, the employee shall immediately make the following transmission: **"Emergency, Emergency, Emergency!"**

"Emergency, Emergency, Emergency!" shall be stated prior to providing identifying information to ROCC. (i.e., train/unit number or name/title and location) ROCC shall instruct all other employees to **"clear the air"** once an emergency communication has been received.

Example Emergency Radio Communications

Fire on the Roadway:

"Emergency, Emergency, Emergency! Central, this is Train one-zero-nine, track 1, Grosvenor, there is a cable fire on the roadway directly ahead of my train, over."

Red Signal Overrun:

"Emergency, Emergency, Emergency! Central, this is Train one-zero-nine, track 2, Grosvenor, my train has passed A11-42 signal Red, over."

Derailment:

"Emergency, Emergency, Emergency! Central, this is Train one-zero-nine, track 2, Grosvenor, my train may have derailed after passing A11-42 signal, over."

All RTRA employees are also reminded to adhere to the following MSRP General Rules when communicating during emergencies:

GR 1.74: Emergency messages shall be transmitted over the most expedient means of communication consistent with clear understanding.

GR 1.75: Employees shall give priority to emergency communications, keeping communications channels clear until the emergency is over.

GR 1.76: Employees shall use plain language when describing emergency situations.

I acknowledge the receipt of and understanding of this RTRA Operations Personnel Notice, **"Enhanced Radio Communications During Emergencies."**

Note: A Permanent Order regarding language used to report an emergency will be forthcoming.

Print Name/Payroll#


Signature

Date Received

Supv. Print Name / Signature

Attachment 1- RTRA Operations Personnel Notice.

Appendix F – Fire Liaison Worksheet.

 ROCC Liaison Worksheet		Office of Emergency Management
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY		
INCIDENT DETAILS		
Date of Incident:	Time Received Notification Of Incident:	Time Notified MPTD Communication:
Fire Department Notified: <input type="checkbox"/> Yes <input type="checkbox"/> No	Watch Commander Notified: <input type="checkbox"/> Yes <input type="checkbox"/> No	
Incident Train Number:	Passengers On Board? <input type="checkbox"/> Yes <input type="checkbox"/> No	Approximate # Of Passengers:
LOCATION:		
<input type="checkbox"/> Station Name	Upper/Line	Lower/Line
<input type="checkbox"/> Tunnel Between	And	Chain Marker:
<input type="checkbox"/> Surface Between	And	Chain Marker:
Track #: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3		
TYPE OF INCIDENT:		
<input type="checkbox"/> Fire/Smoke <input type="checkbox"/> Derailment <input type="checkbox"/> Arcing Insulator <input type="checkbox"/> HAZMAT/CB-EMIS <input type="checkbox"/> Suspicious Package <input type="checkbox"/> BIE <input type="checkbox"/> Door Problem <input type="checkbox"/> Sick/Injured Customer <input type="checkbox"/> Sick/Injured Employee <input type="checkbox"/> Other Mechanical/Disruption (Explain)		
		Car Number
Disabled Train <input type="checkbox"/> Power <input type="checkbox"/> No Power	LOCATION: Platform? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Surface <input type="checkbox"/> Aerial <input type="checkbox"/> Tunnel	
TRAIN MOVEMENT		
<input type="checkbox"/> Full Service:	<input type="checkbox"/> Track # 1 <input type="checkbox"/> Track # 2	
<input type="checkbox"/> Single Tracking:	<input type="checkbox"/> Track # 1 From	To
	<input type="checkbox"/> Track # 2 From	To
Turn backs - Station:	Off loads - Station:	
Traffic flow - Direction # of trains	Express trains - Direction	Station
<input type="checkbox"/> No Service <input type="checkbox"/> Track # 1 <input type="checkbox"/> Track # 2	Bus Bridge: <input type="checkbox"/> Requested <input type="checkbox"/> Implemented	
Rescue Train #	Recovery Train #	Bus Bridge between stations:
Crowds – <input type="checkbox"/> Light <input type="checkbox"/> Normal <input type="checkbox"/> Moderate <input type="checkbox"/> Heavy <input type="checkbox"/> Over-Crowding		
Bus Bridge shuttle stop stations:	Impacted Station(s) Inbound:	Impacted Station(s) Outbound:
3RD RAIL POWER STATUS:		
Track # 1 <input type="checkbox"/> Up <input type="checkbox"/> Down	Track # 2 <input type="checkbox"/> Up <input type="checkbox"/> Down	Track # 3 <input type="checkbox"/> Up <input type="checkbox"/> Down <input type="checkbox"/> Supervisory <input type="checkbox"/> Red Tag
Between Chain Marker:	To	
Fan Status <input type="checkbox"/> On <input type="checkbox"/> Off	<input type="checkbox"/> Supply / <input type="checkbox"/> Exhaust	Fan Shaft(s)
RTRA SUPERVISORS (2)		
Name	Unit ID	Telephone
Name	Unit ID	Telephone
ROCC's Intital OSC	Location	Location of Incident Command post
51.062 03/14		

Attachment 1- Fire Liaison Worksheet.

Date: 7/7/2020 Time: 11:20 hrs.
Final Report – Derailment
E20244

Drafted By: SAFE 702_703_705 – 08/14/2020
Reviewed By: SAFE 704 – 09/03/2020
Approved By: SAFE 701 – 09/08/2020
Final Version Approved by: SAFE 701 – 12/11/2020

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