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Improper Roadway Worker Protection

At or Near Branch Ave., Stadium-Armory, Federal Center SW, and Rosslyn stations

January 26, 2023 – February 25, 2023 – June 8, 2023 – September 12, 2023

Document Purpose:

This WMSC written report on WMATA Metrorail's safety event investigations and review of Metrorail's findings in accordance with the WMSC Program Standard, in conjunction with the attached Metrorail investigation reports that have undergone WMSC staff review and, if necessary, feedback and revision, describes the investigation activities, identifies factors causing or contributing to the safety events, and sets forth ongoing, additional, or upcoming corrective actions and further oversight work (such as inspections and audits) as necessary or appropriate. The WMSC's ongoing oversight during the investigative process, including safety event reporting and verification, participation in investigative interviews, data review, consistent communication with the Metrorail investigations team, and feedback on Metrorail's reports leads to further improvements prior to consideration of the reports by WMSC Commissioners for adoption. The WMSC's safety event investigation oversight assures the sufficiency and thoroughness of Metrorail's investigations. The WMSC Commissioners are considering these documents (the WMSC review and Metrorail's investigation reports) as a unified item for adoption at the Washington Metrorail Safety Commission meeting on June 11, 2024.

WMSC staff recommend adoption of these investigations.

Roadway Worker Protection

The WMSC expects to require extensive improvements to Metrorail's Roadway Worker Protection Program after consideration of Metrorail's comments, if any, on the draft Roadway Worker Protection audit report currently being reviewed by Metrorail.

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

- Non-compliance with written operational rules and procedures
- Insufficient supervisory oversight including oversight to ensure compliance with safety rules and procedures
- Loss of/lack of focus and situational awareness
- Insufficient internal oversight to ensure personnel meet the training requirements to carry out their assigned duties
- Risk factors for fatigue were identified in one event

As a result of these investigations, Metrorail implemented corrective actions including:

- Metrorail conducted a Safety Stand Down to address the increase in Advanced Mobile Flagger safety events
- Metrorail issued Safety Bulletin 23-02-F: Advanced Mobile Flagger Alertness issued to all personnel
- Metrorail's Safety department developed an AMF action plan in coordination with the Office of Rail Transportation and maintenance groups to help mitigate improper RWP violations
- Metrorail developed and distributed Lessons Learned on effective communication

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

- C-0181 addresses the finding that elements of Metrorail have a culture that accepts noncompliance with written operational rules, instruction, and manuals (Scheduled completion October 2024).
- C-0120 addresses the finding that Metrorail ignores the minimum daily release period (rest period) requirements in its Fatigue Risk Management Policy (Scheduled completion July 2025).
- C-0129 addresses the finding that WMATA does not have a documented procedure for and training to carry out fitness for duty checks prior to or during shifts on a regular basis for all covered employees as specified in the APTA fitness for Duty Standard.
- C- 0130 addresses the recommendation that Metrorail does not collect fitness for duty data in a manner that allows for identification, tracking and trending of issues.

Ongoing WMSC evaluation:

- The WMSC evaluated Metrorail's training, qualification process, and procedures related to ETO-Local Signal Control as part of the recent Roadway Worker Protection Audit (draft report under Metrorail review). The WMSC communicated related issues to Metrorail during the audit as each of those issues were identified and validated.

Safety event summaries:

W-0296 – Train not briefed by AMF – Branch Avenue Station – January 26, 2023 (WMATA ID: E23063)

An Advanced Mobile Flagger (AMF) at Branch Avenue Station did not provide the required briefing and notification to a Training Instructor, operating an out-of-service train with train operator trainees aboard, that there were workers on the roadway ahead. Video footage showed that one of the two Advanced Mobile Flaggers were in place at the terminal station left the platform. There is no record that the flagger who left the platform informed the Roadway Worker In-Charge as required when leaving an assigned position. Metrorail rules require two amber lanterns (one for each platform) to be set up at a terminal station to indicate that a briefing is required. The other flagger, also a Metrorail contractor, remained on the platform but was using an electronic device. That flagger was not at the side of the platform that this train was departing from when the train left the station. The flagger therefore did not inform the Training Instructor of the required safety steps, including operating at reduced speed and sounding the train's horn, and the Training Instructor therefore departed the station at full speed. The Training Instructor stated during the investigation that they saw the AMF, but were not briefed. The Training Instructor did not inquire with the AMF about the status of the work crew. The AMF did not report this train moving toward the work crew without the required briefing as an emergency on the radio as required by Metrorail safety rules and procedures. The Training Instructor encountered the mobile work crew on the roadway, initiated emergency braking and reported this near-miss to the Radio Rail Traffic Controller in the Rail Operations Control Center.

W-0297 – Excessive Speed Past Workers – D&G Junction – February 25, 2023 (WMATA ID: E23130)

A Train Operator operated their train at excessive speed (up to 47 mph) past a mobile work crew after dropping off a separate mobile work crew onto the roadway. The Train Operator mistakenly understood the Advanced Mobile Flagger briefing they received to be in regard to the work crew they were transporting to a work location, when it was regarding

a crew that was already on the roadway. The AMF briefing includes a reminder that there may be multiple crews on the roadway. The Train Operator correctly did not receive a briefing from the second AMF for the crew being dropped off by the train. That AMF placed their amber light down at the 8-car marker as the train departed the station. Upon encountering the personnel, the Train Operator activated the road horn and braking, and reported the event to the ROCC.

W-0298 – Federal Center SW Station – June 8, 2023 (WMATA ID: E23391)

A train was improperly routed by Automatic Train Control Maintenance personnel into an area of track occupied by wayside workers who had been provided foul time protection by a Rail Traffic Controller, after the Automatic Train Control Maintenance (ATCM) Local Control Panel Operator improperly retook local control of an interlocking near Federal Center SW Station. A work crew was conducting an interlocking inspection under exclusive track occupancy protection (controlled track in which movement authority of trains and other equipment is withheld), using the local control panel, which allows a panel operator in a train control room to control an interlocking and signals instead of a Rail Traffic Controller in the ROCC. When signals are red, the crew has exclusive track occupancy protection to be on the roadway. The ROCC notified the RWIC that the ROCC needed control of the interlocking to give Foul Time protection to a Rail Supervisor to retrieve a customer's cellphone from the roadway at L'Enfant Plaza Station, and instructed personnel to standby in a place of safety. Before the Rail Supervisor relinquished Foul Time and before the ROCC gave permission for the ATC crew to take control of the panel and without instruction from the RWIC, the panel operator retook local control and allowed a train to pass through the interlocking, risking collision with the Rail Supervisor. The Local Control Panel Operator had no communication with and could not hear transmissions from the ROCC because they were using a talk around radio channel to communicate with the RWIC. This is due to the Local Control Panel Operator working under the direction of the RWIC. The RWIC and their crew were instructed to clear the roadway, and the RWIC was removed from service.

W-0299 – near Rosslyn Station – September 12, 2023 (WMATA ID: E23639)

A Communications Technician, who was part of a piggyback work crew conducting work between Foggy Bottom and Rosslyn stations, placed a shunt outside of their working limits without permission or the proper protection against train movement. Without notifying the Roadway Worker in Charge or the ROCC, the Communications Technician left their working limits, fouling an adjacent track and risking collision in violation of Metrorail safety rules, to place a shunt as an extra layer of protection due to diverging track where the Orange and Blue lines split/merge. This caused a downed track circuit indication in the ROCC. The Communications Technician later requested permission from a Rail Traffic Controller to place the shunt (which they had already placed) via cell phone. After conferring with the RWIC, the request was denied by the ROCC personnel. The Communications Technician was provided protection and instructed to remove the shunt and was removed from service.

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

FINAL REPORT OF INVESTIGATION A&I E23063

Date of Event:	January 26, 2023
Type of Event:	Improper RWP
Incident Time:	11:38 hours
Location:	Branch Avenue Station
Time and How received by SAFE:	11:45 hours, Mission Assurance Coordinator (MAC)
WMSC Notification Time:	13:11 hours
Responding Safety Officers:	WMATA: None WMSC: None Other: None
Rail Vehicle:	Train ID 896 (L7138x7139.7170x7171T)
Injuries:	None
Damage:	None
SMS I/A Incident Number:	20230204#105969

Branch Avenue Station – Improper RWP

January 26, 2023

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Abbreviations and Acronyms

AMF	Advanced Mobile Flagger
AOM	Assistant Operations Manager
CAP	Corrective Action Plan
CCTV	Closed-Circuit Television
MSRPH	Metrorail Safety Rules and Procedures Handbook
NOAA	National Oceanic and Atmospheric Administration
RTRA	Office of Rail Transportation
ROCC	Rail Operations Control Center
ROQT	Office of Rail Operations Quality Training
RTC	Rail Traffic Controller
RWIC	Roadway Worker in Charge
SAFE	Department of Safety
SMS	Safety Measurement System
TRST	Office of Track and Structures
WMATA	Washington Metropolitan Area Transit Authority
WMSC	Washington Metrorail Safety Commission

Executive Summary

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

On January 26, 2023 at 11:41 hours, an Office of Rail Operations Quality Training (ROQT) Instructor, operating Train ID 896 (L7138x7139.7170x7171T) reported to the Rail Operations Control Center (ROCC) that they observed personnel on the roadway and did not receive a briefing from an Advanced Mobile Flagger (AMF) before departing Branch Avenue Station. The Training Instructor confirmed with the Radio Rail Traffic Controller (RTC) that there was an AMF at Branch Avenue Station and they did not approach the train. The Radio RTC advised the Office of Track and Structures (TRST) Roadway Worker in Charge (RWIC) that they would be picked up from the roadway. Train ID 507 was instructed to pick up the Mobile Work Crew. There were no damages or injuries resulting from this event.

The Button RTC notified the ROCC Assistant Operations Manager (AOM) of the event. The AOM notified TRST and ROQT Management of the event. At 12:24 hours, Train ID 896 arrived at Greenbelt Station, then was dispatched into Greenbelt Yard.

A review of video playback revealed that two AMFs originally set up on tracks 1 and 2; however, one AMF left the platform, leaving one to brief trains on both tracks. When Train ID 896 moved to the eight-car marker, the amber lantern was active but the AMF was standing on the track 1 side of the platform using a tablet device. Train ID 896 did not open their operator's cab window and departed the platform without engaging with the AMF or inquiring about the amber lantern at the 8-car marker.

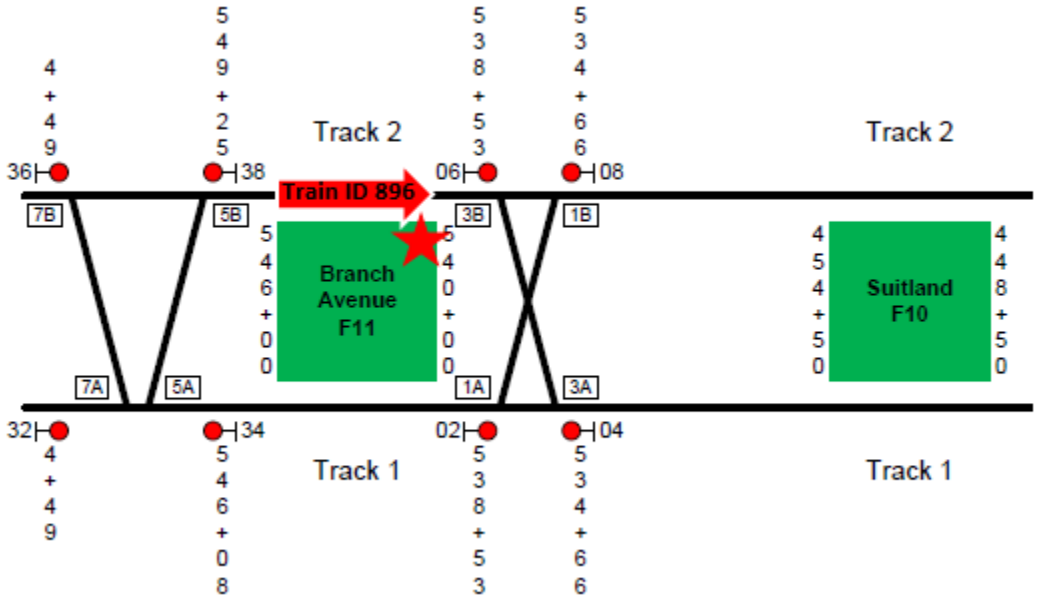
TRST removed the AMF from service for post-incident testing. ROQT removed the Training Instructor from service for posit incident testing. The train consist was removed from service for post incident inspection.

The probable cause of the Improper RWP event on January 26, 2023, was a failure to adhere to established procedures for performing AMF protection. A Contributing Factor to the event included a lack of communication by AMF #1 to notify the RWIC that they needed to leave their post. An additional contributing factor was distraction by AMF #2 when they were engaging with a tablet and failed to brief the train departing the station. Finally, the Training Instructor failed to inquire about the active amber lantern in place on track 2 prior to departing the station.

Incident Site

Branch Avenue Station

Field Sketch/Schematics



**Locations are approximate. Not to scale.*

Purpose and Scope

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

Investigation Process and Methods

Upon receiving the notification of the Improper RWP event at Branch Avenue Station on January 26, 2023, SAFE dispatched a cross-functional team to assess the scene and conduct the subsequent investigation. SAFE team members worked with relevant WMATA subject matter experts to review the incident's facts and data.

The investigative methodologies included the following:

- Physical Site Assessment

- Formal Interviews – SAFE interviewed two individuals as part of this investigation. Interview included persons present at, during, and after the incident, those directly involved in the response process, and representatives from the Washington Metrorail Safety Commission (WMSC). SAFE interviewed the following individual:
    - Training Instructor

    - Advanced Mobile Flagger

- Documentation Review – Collection of relevant work history information and process documentation contained in WMATA systems of record. These records include:
    - Employee Work History & Training Records
    - Metro Safety Rules and Procedures Handbook (MSRPH)
    - National Oceanic Atmospheric Administration (NOAA) data
    - Certifications

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

Investigation

On January 26, 2023 at 09:46 hours, a TRST RWIC with one Track Inspector and two AMF's was granted permisson to perform a track inspection between Southern Avenue and Branch Avenue Stations on track 1. At 11:28 hours, the RWIC reported to the Radio RTC that the Mobile Work Crew had arrived at Suitland Station and requested permission to continue the track inspection towards Branch Avenue Station.

The Audio Recording System (ARS) revealed that at 11:28 hours, the RWIC was instructed by the Radio RTC to confirm that AMF #1 was in place at Branch Avenue Station. AMF #1 responded that they were in place at Branch Avenue Station, tracks 1 and 2 ready to flag. The RWIC was instructed to allow one train to clear before being given permission to continue the track inspection.

At 11:34 hours, Train ID 505 arrived at Suitland Station on track 1. The Radio RTC granted foul time to the Mobile Work Crew, the RWIC instructed AMF #1 to hold trains at Branch Avenue Station and AMF #1 acknowledged and repeated the transmission.

Train ID 896 (L7138x7139.7170x7171T), a non-revenue training train with one instructor and four students aboard was located at Branch Avenue Station on track 2. The train was preparing to be dispatched back onto the mainline when the Training Instructor, who was operating the train, requested to reposition the consist to the 8-car marker at 11:36 hours. The Terminal Supervisor granted permission and instructed the Training Instructor to stand by at the 8-car due to the Mobile Work Crew utilizing foul time.

The Closed-Circuit Television (CCTV) revealed that there were a total of 3 AMFs and an AMF Supervisor located at Branch Avenue Station. One of the AMFs (#1) set up their amber lantern and flag on tracks 1 and 2 near the 8-car markers. The AMF Supervisor and third AMF departed before foul time was granted to the Mobile Work Crew, leaving two AMFs to perform flagging duties.

At 11:34 hours, AMF #1 departed the platform area. AMF #2 appeared to be engaged with a tablet device while performing their duties.

Image 1 –AMF #1 departing their post and another AMF #2 utilizing a tablet at 11:34 hours, while the Mobile Work Crew is under foul time.

At 11:37 hours, Train ID 896 adjusted to the 8-car marker and the cab window appeared to be closed. AMF #2 walked towards the train, then at mid-platform turned back towards track 1. At 11:38 hours, AMF #2 placed the tablet in a bag, then walked towards Train ID 896. Train ID 896 departed Branch Avenue Station prior to the AMF reaching them.

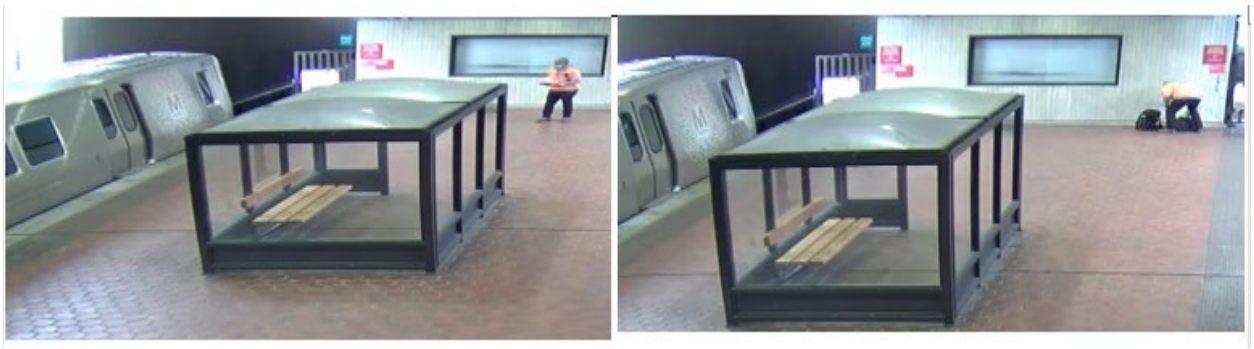


Image 2 – Depicting Train ID 896 adjusted to the 8-car marker and the AMF placed the tablet in a bag.

The RWIC relinquished Foul Time with the Radio RTC at 11:37 hours and continued their inspection. The Terminal Supervisor advised Train ID 896 that they could depart Branch Avenue Station and instructed them to contact ROCC.

At 11:40 hours, AMF #1 returned and positioned themselves to flag on track 2.

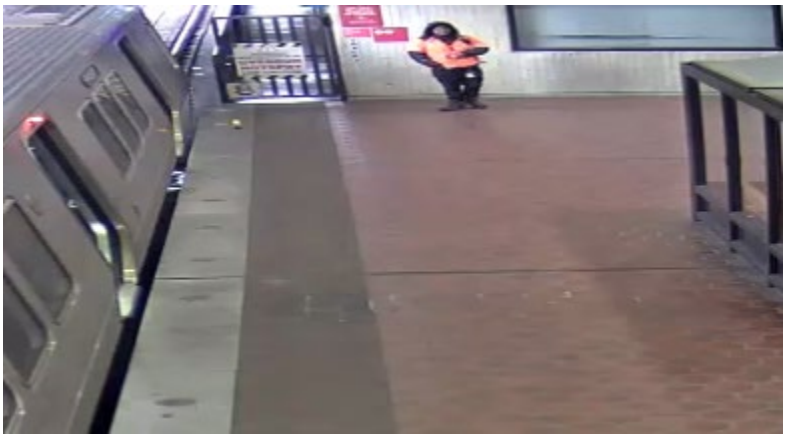


Image 3 - AMF returned and positioned themselves near the 8-car marker on track 2.

At 11:41 hours, Train ID 896 reported that they observed personnel on the roadway and did not receive a briefing from an AMF before departing Branch Avenue Station. The Training Instructor advised the Radio RTC that there was an AMF at Branch Avenue Station but they did not approach their train. The Button RTC notified the AOM of the event.

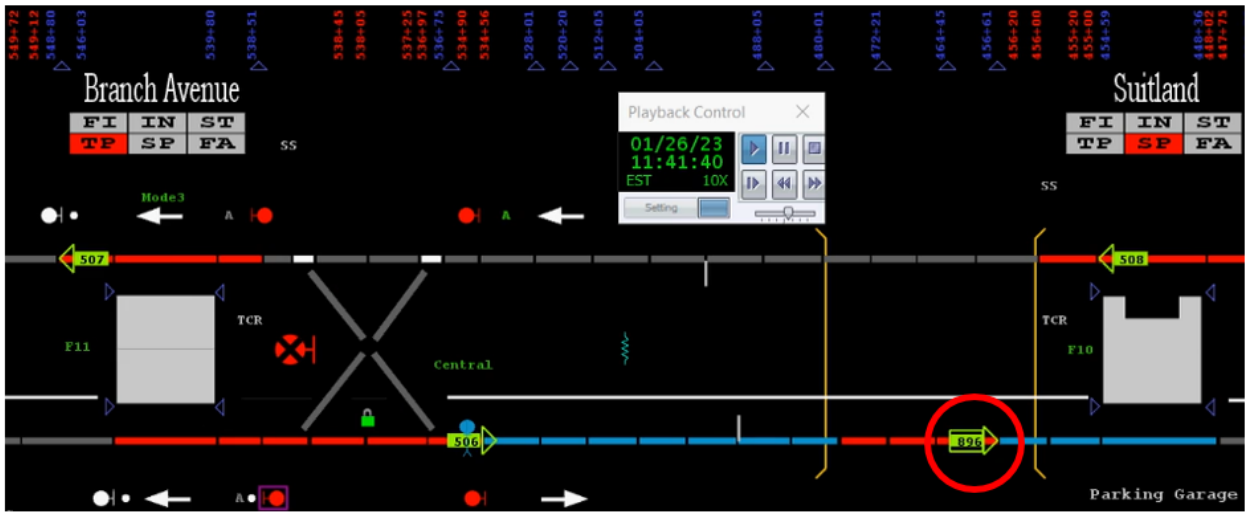


Figure 1 – AIMS depiction of Train ID 896 at 11:41 hours, as they reported observing personnel on the roadway.

The Radio RTC advised the RWIC that they would be picked up from the roadway. Train ID 507 was instructed to pick up the Mobile Work Crew.

At 12:24 hours, Train ID 896 arrived at Greenbelt Station. The Training Instructor was instructed to turn over the train and four students to the Rail Supervisor. At 12:30 hours, Train ID 896 was dispatched into Greenbelt Yard.

During the formal interview, the Training Instructor stated that Train ID 896 arrived at Branch Avenue Station, track 2 and was operated by a student operator. The training group reversed ends and the Training Instructor took over operating the train. They repositioned the train to the 8-car marker, then permission was granted to depart the station. They noticed a lantern but no AMF was present.

The Training Instructor stated that they received a lunar and permission, then departed the station. They contacted ROCC and notified them that the train was moving towards Suitland Station. The Training Instructor stated that soon after they observed personnel on the roadway in a place of safety. They contacted ROCC again and reported the event.

AMF #1 stated that the RWIC requested foul time for an inspection between Suitland and Branch Avenue Stations on track 1. They were set up and ready to flag on tracks 1 and 2. AMF #1 stated that foul time was granted to the RWIC, and they confirmed being in position.

AMF #1 stated that AMF #2had arrived and they asked them to cover their position while they went to use the restroom. AMF #1 stated that the RWIC had relinquished foul time and the track was under AMF protection. When they returned, they were questioned why they left their position without notifying the RWIC.

AMF #2 provided a written statement. “At approximately 11:34 hours, AMF #1 received a call on his radio instructing AMF #1 that foul time protection was in effect. AMF #1 then replied on his radio that he was under foul time and holding all trains at his location. AMF #1 was then relieved for a personal by AMF #2. At 11:37 hours, the RWIC then called on his radio for foul time to be relinquished and back under AMF protection. At approximately 11:40 hours, AMF #2 briefed a Train Operator that was soon leaving the platform from the 8-car marker on track 1.”

The Office of Chief Mechanical Officer/Investigation Team (CMOR/IIT) performed an inspection of the consist and provided the following:

“VMDS and ER data along with NVR video shows Train ID 896 came into Branch Avenue Station on track 2 as a 4-Car consist and stopped 6 feet short of the Eight-Car marker. The train was keyed down and keyed back up on the opposite end, facing Suitland Station. The Train moved 295 feet to the Eight-car marker and stopped. The Train then departed Branch Avenue Station, track 2 in the direction of Suitland Station. The train crossed over from track 2 to track 1 as it exited Branch Avenue station.

As the train nears Suitland Station, the emergency brakes are initiated via the emergency position on the Master Controller. Based on NVR video, the train passes wayside workers 1,862 feet prior to Suitland Station on track 1 at a speed of 36 MPH, with the Master Controller in the emergency position and with emergency braking initiated. The train comes to a complete stop 1,615 feet before reaching Suitland Station, 247 feet, after passing wayside workers.

Once stopped, the brake pipe is recharged. The Master Controller is eventually moved to a “P1-P4” Power mode, and the train begins to move, continuing to Suitland Station, stopping at Suitland Station’s Eight-Car Marker.

Based on VMDS and ER data, along with NVR video, there was no fault observed with the train that contributed to the cause of this incident. The train responded as commanded.

In the NVR video, the AMF can be seen on the opposite side of Branch Avenue Station (track 1 side), but there is no evidence that the AMF spoke with the operator prior to Train ID 896 departing Branch Avenue.”

RailPros, the contractor to WMATA that provides AMF personnel, implemented disciplinary actions to their employees associated with the incident.

In response to the event, ROQT distributed a Staff Notice to ROQT personnel with an emphasis on Roadway Worker Protection procedures.

ROQT performed a review of the event and determined that the Training Instructor would attend Re-Instruction training utilizing the 7k Simulator with an emphasis on AMF Procedures and Station Stops. The Training Instructor also attended Practical Re-Instruction which included a review of MSRPH Section 5 - RWP Rules in relation to the event. The Training Supervisor also performed Field Training to include line familiarization.

Chronological ARS Timeline

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

Time	Description
09:46:07 hours	TRST RWIC contacted ROCC and requested to perform a track inspection between Southern Avenue and Branch Avenue Stations, track 1 utilizing AMF protection. [Ops 3]
09:49:47 hours	Radio RTC granted permission to the RWIC to perform a track inspection between Southern Avenue and Naylor Road Stations, track 1. [Ops 3]
09:49 hours to 11:28 hours	The Mobile Work Crew was performing track inspections with no significant events noted.
11:28:01 hours	RWIC: Reported arrived at Suitland Station, track 1. Requested to continue the track inspection between Suitland and Branch Avenue Stations. Radio RTC: Instructed to RWIC to communicate directly with the AMF. RWIC: Inquired if the AMF copied the transmission. AMF #1: Reported in place at Branch Avenue Station, tracks 1 and 2. Ready to flag. RWIC: Acknowledged. [Ops 3]
11:29:24 hours	One AMF located at Branch Avenue Station. Set up equipment at the 8-car marker on tracks 1 and 2. [CCTV]
11:30:12 hours	Second AMF arrived. [CCTV]
11:30:53 hours	Third AMF and AMF Supervisor arrived. [CCTV]
11:30:50 hours	Radio RTC**:** Requested chain markers for foul time area. RWIC: Responded F1 457+00 to 477+00. Radio RTC: Instructed the RWIC to standby for one train to clear. RWIC: Acknowledged and repeated. [Ops 3]
11:31:33 hours	Second AMF departs. [CCTV]
11:31:36 hours	Train departs Branch Avenue Station, track 2. [CCTV]
11:33:10 hours	AMF Supervisor departs. [CCTV]
11:34:07 hours	Train ID 896 arrived. [CCTV]

Time	Description
11:34:10 hours	RWIC: Advised train was on the platform at Suitland Station. Radio RTC: Granted permission for foul time. RWIC: Acknowledged and repeated. Advised the AMF #1 of foul time. AMF #1: Advised they were holding trains at the platform Radio RTC: Acknowledged. [Ops 3]
11:34:52 hours	First AMF departed. Remaining AMF (#2) appeared to be engaging with a tablet. [CCTV]
11:36:23 hours	Train ID 896: Requested permission to readjust to the 8-car marker. Branch Avenue Terminal: Granted permission, advised to standby at the 8-car marker for foul time. Train ID 896: Acknowledged and repeated. [BA YD-1]
11:37:36 hours	RWIC: Relinquished foul time, back under AMF protection. Radio RTC: Acknowledged. AMF: Acknowledged and repeated back under AMF protection. [Ops 3]
11:37:44 hours	Train ID 896 adjusted to the 8-car marker; cab window appeared closed. AMF walks towards the train, at mid-platform turns back towards track 1. [CCTV]
11:37:52 hours	Train ID 896: Inquired if there was time to take a personal break. Branch Avenue Terminal: Advised a lunar was set and to contact Ops 3. Train ID 896: Acknowledged and repeated. [BA YD-1]
11:38:23 hours	AMF #2 placed tablet in a bag, then walks towards Train ID 896. [CCTV]
11:38:40 hours	Train ID 896 departed Branch Avenue Station on track 2. [CCTV]
11:39:37 hours	Train ID 896: Advised the train was departing Branch Avenue Station. Radio RTC: Acknowledged and repeated. [Ops 3]
11:40:40 hours	First AMF returns, Second AMF briefs the train departing on track 1. [CCTV]
11:41:40 hours	Train ID 896: Reported personnel on the roadway, no briefing at Branch Avenue Station. Radio RTC: Inquired, no AMF at Branch Avenue. Train ID 896: Responded an AMF was at Branch Avenue, did not approach the train. Radio RTC: Inquired, did they stop to talk to the AMF. Train ID 896: Responded, negative they did not speak to anyone. Radio RTC: Acknowledged. [Ops 3]
11:43:12 hours	Button RTC advised the AOM of the event. [Phone]
11:46:15 hours	The RWIC advised the Radio RTC that two AMFs should be in place at Branch Avenue Station. [Ops 3]
11:47:59 hours	Radio RTC: Requested the location of the RWIC. RWIC: Responded, F1 482+00. Radio RTC: Advised, standby and clear for a train pick up. RWIC: Acknowledged and repeated. Radio RTC: Instructed Train ID 507 to pick up personnel. Train ID 507: Acknowledged and repeated. [Ops 3]
11:51:28 hours	Train ID 507: Performed a radio check. Radio RTC: Advised the transmission was loud and clear. Instructed the RWIC to advise when aboard the train.

Time	Description
	RWIC: Reported aboard the train. Radio RTC: Acknowledged and repeated. Instructed Train ID 507 to continue. [Ops 3]
11:53:33 hours	AMF #1 removed equipment from the 8-car marker on tracks 1 and 2. [CCTV]
12:24:23 hours	Train ID 896 arrived at Greenbelt Station. [GB YD1]
12:30:56 hours	Train ID 896 was dispatched into Greenbelt Yard. [GB YD1]

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

Office of Radio Communications (COMR)

The Office of Radio Communications (COMR) performed radio testing at Branch Avenue Station and provided the following:

All radio checks are loud and clear. Radio checks were performed on Mezzanine, Kiosk, Escalator and Platform levels. Radio checks performed with Ops 3 Radio were loud and clear.

Office of Chief Mechanical Officer (CMOR) Investigation Team (IIT)
Adopted from CMOR-IIT Report:

"IIT completed download and analysis of data retrieved from Train ID 896, cars 7138-39 and 7170-71. Based on IIT CMOR analysis of the downloaded VMDS and ER, details from the data analysis are as follows:

VMDS and ER data along with NVR video Train ID 896 came into Branch Avenue Station on track 2 as a 4-Car consist and stopped 6 ft. short of the Eight-Car marker. The train was keyed down and keyed back up on the opposite end, facing Suitland Station. The Train moved 295 ft. to the Eight-car marker and stopped. The Train then departed Branch Avenue Station track 2 in the direction of Suitland station. The train crossed over from track 2 to track 1 as it exited Branch Avenue station.

As the train nears Suitland Station, the emergency brakes are initiated via the emergency position on the Master Controller. Based on NVR video, the train passes wayside workers 1,862 ft. prior to Suitland Station on track 1 at a speed of 36 MPH, with the Master Controller in the emergency position and with emergency braking initiated. The train comes to a complete stop 1,615 ft. before reaching Suitland Station, 247 ft., after passing wayside workers.

Once stopped, the brake pipe is recharged. The Master Controller is eventually moved to a "P1-P4" Power mode, and the train begins to move, continuing to Suitland Station, stopping at Suitland Station's Eight-Car Marker.

Based on VMDS and ER data, along with NVR video, there was no fault observed with the train that contributed to the cause of this incident. The train responded as commanded.

In the NVR video, the AMF can be seen on the opposite side of Branch Avenue Station (track 1 side), but there is no evidence that the AMF spoke with the operator prior to Train ID 896 departing Branch Avenue."

Figure 2: AMF at the platform track 1 side

See timeline of events below:

Time	Description of Events
11:34:34.500	Train ID896 arrived at Branch Avenue Station on Track #2 at 6ft. short of the 8-Car Marker, with Car 7170 as the lead Car.
11:35:54.080	Train Reverses ends on Track # 2 keying up in Car 7138.
11:37:05.150	Master Controller placed in a P1-P4 Power Mode and Begins moving towards the Entry of the Station on Track #2, towards Greenbelt.
11:37:43.410	Train comes to a complete stop at the 8-car Marker at the entry of Track #2, after traveling 295 ft., facing in the direction of Suitland.
11:38:32.890	Master Controller placed in a P5 Power Mode.
11:38:34.270	Train begins moving towards in the direction of Suitland Station crossing over from Track 2 to Track #1 after departing Branch Ave. Station.
11:40:43.900	Master Controller placed in B5 Braking Mode, Train speed was 50 MPH, 2,225 ft. from Suitland Station.
11:40:45.220	Master Controller placed in Emergency position, De-Activating Emergency Brake Trainline and initiating emergency Braking. Train speed was 49 MPH, 2,132 ft. from Suitland Station
11:40:49.604	***Train ID896 passes wayside workers at a speed of 36 MPH, with a ATP Speed limit and ADU Regulated Speed limit of 55 MPH, 1,862 ft. from Suitland Station, with the Master Controller in the Emergency position.***
11:41:00.810	Train comes to a complete stop, 247 ft. after passing wayside workers, 1,615 ft. before Suitland Station.
11:41:04.860	Brake Pipe Recharge pushbutton activated and Brake Pipe begins to recharge.
11:41:13.880	Master Controller placed in P1-P4 Power Mode.
11:41:15.500	Train again begins to move towards Suitland Station
11:42:32.000	Train came to a complete stop at the 8-Car marker at Suitland Station.
11:43:06.430	Road Horn Activated.
11:43:11.420	Master Controller placed in P1-P4 Power Mode.
11:43:13.080	Train begins to move towards Naylor Rd.

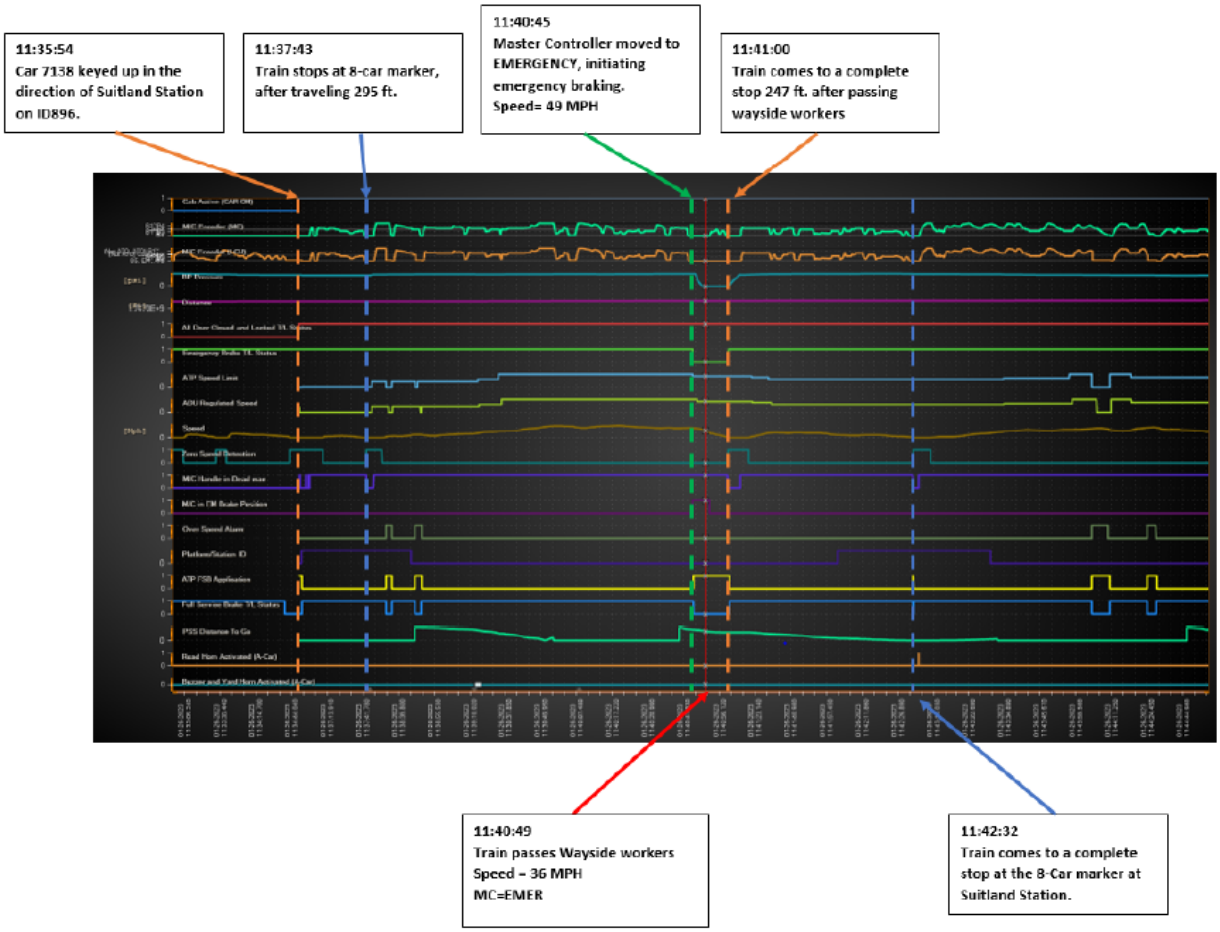


Figure 3: Car 7138 ER Data Analysis

Interview Findings

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

Training Instructor

- The Training Instructor stated that Train ID 896 arrived at Branch Avenue Station, track 2 and was operated by a student operator.
- The training group reversed ends and the Training Instructor took over operating the train.
- They repositioned the train to the 8-car marker, then permission was granted to depart the station.
- They noticed a lantern, but no AMF was present.
- The Training Instructor stated that they received a lunar and permission, then departed the station.
- They contacted ROCC and notified them that the train was moving towards Suitland Station.
- The Training Instructor stated that soon after they observed personnel on the roadway in a place of safety.

- They contacted ROCC again and reported the event.

Advanced Mobile Flagger

- The Advanced Mobile Flagger (AMF) stated that the RWIC requested foul time for an inspection between Suitland and Branch Avenue Stations on track 1.
- They were set up and ready to flag on tracks 1 and 2.
- The AMF stated that foul time was granted to the RWIC, and they confirmed being in position.
- The AMF stated that a second AMF had arrived, and they asked the second AMF to cover their position while they went to use the restroom.
- The AMF stated that the RWIC had relinquished foul time and the track was under AMF protection.
- When they returned, they was questioned why they left their position without notifying the RWIC.

Weather

On January 26, 2023, at the time of the incident, NOAA recorded the temperature as 44° F, with partly cloudy skies. Weather was not a contributing factor in this incident. (Weather source: NOAA – Location: Suitland, MD)

Related Rules and Procedures

MSRPH Section 1 – General Rules 1.46
MSRPH Section 3 – Operating Rules 3.91
MSRPH Section 5 – RWP Rules 5.13.6 Advanced Mobile Flagging – Mobile Work Crew

Human Factors

Evidence of Fatigue

Conditions were evaluated at the time of the incident to distinguish whether evidence of fatigue was present. The Training Instructor reported feeling fully alert at the time of the incident. The Training Instructor reported experiencing no symptoms of fatigue in the time leading up to the incident.

Conditions were evaluated at the time of the incident to distinguish whether evidence of fatigue was present. The Advanced Mobile Flagger reported feeling fully alert at the time of the incident. The Advanced Mobile Flagger reported experiencing no symptoms of fatigue in the time leading up to the incident.

Fatigue Risk

The incident data was evaluated for fatigue risk factors for the Training Instructor. Risk factors for fatigue were not present. Since fatigue evidence and risk factors were not present, the biomathematical fatigue modeling application (SAFTE-FAST Web SFC) was not applied.

The incident data was evaluated for fatigue risk factors for the Advanced Mobile Flagger. Risk factors for fatigue were not present. Since fatigue evidence and risk factors were not present, the biomathematical fatigue modeling application (SAFTE-FAST Web SFC) was not applied.

Post-Incident Toxicology Testing

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

Work History

The Training Instructor has not had any safety violations in the last three years. The 30-Day work history did not reflect any indications of fatigue risk.

Findings

- AMF #1, located at Branch Avenue platform, left their post to go to the restroom while the Mobile Work Crew was under foul time, leaving AMF #2 to brief both track 1 and 2.
- The remaining AMF appeared to be engaging with a tablet device while on post.
- Train ID 896 adjusted to the 8-car marker; the cab window appeared to be closed.
- The Training Instructor acknowledged the Terminal Supervisor when they said the crew had foul time.
- The Training Instructor admitted to observing the AMF set up at the 8-car marker but did not report the AMF was not in place before departing the station.
- The AMF did not contact the RWIC after observing Train ID 896 depart without a briefing.
- The RWIC did not report the train passed at excessive speed.
- The Training Instructor did not report initiating emergency braking.

Immediate Mitigation to Prevent Recurrence

- The Training Instructor was removed from service.
- The AMFs were removed from service.
- The four Student Train Operators were placed with a Rail Supervisor.

Probable Cause Statement

The probable cause of the Improper RWP event on January 26, 2023, was a failure to adhere to established procedures for performing AMF protection. A Contributing Factor to the event included a lack of communication by AMF #1 to notify the RWIC that they needed to leave their post. An additional contributing factor was distraction by AMF #2 when they were engaging with a tablet and failed to brief the train departing the station. Finally, the Training Instructor failed to inquire about the active amber lantern in place on track 2 prior to departing the station.

SAFE Recommendations/Corrective Actions

Corrective Action Code	Description	Responsible Party	Estimated Completion Date
105969_SAFECAPS_TRST_001	Disciplinary Action taken by Contractor for employees associated with the incident.	RailPros	Completed
105969_SAFECAPS_ROQT_001	Training Instructor to attend Re-Instruction training utilizing the 7k Simulator with an emphasis on AMF Procedures and Station Stops. Practical Re-Instruction to include review of MSRPH Sec. 5 - RWP Rules in relation to the event. Perform Field Training including line familiarization.	ROQT	Completed
105969_SAFECAPS_ROQT_002	Distribute a Staff Notice to ROQT personnel with an emphasis on Roadway Worker Procedures.	ROQT	Completed

Appendices

Appendix A – Interview Summaries

The narrative below summarizes the statements made by the personnel involved. As such, times and details may conflict with the data contained in systems of record.

Training Instructor

The Training Instructor is a WMATA employee with 10 years of service. The Training Instructor holds a Roadway Worker Protection (RWP) Level 4 certification that expires in October 2023. The Training Instructor successfully completed Train Operator's Certification on August 22, 2022 with a Quality Level (QL) 1 rating.

During the formal interview, the Training Instructor stated that Train ID 896 arrived at Branch Avenue Station on track 2 and was operated by a student operator. The training group reversed ends and they took over operating Train ID 896. The Training Instructor stated that they received permission to reposition the train at the Eight-Car Marker from the Terminal Supervisor.

The Training Instructor stated that they noticed a lantern at the Eight-Car Marker, but no AMF present. They received lunar and permission to depart the station. The Training Instructor stated that they contacted ROCC and notified them that Train ID 896 was moving towards Suitland Station.

The Training Instructor stated that soon after departing the station, they observed the personnel in a place of safety and immediately reported the event to ROCC.

Advanced Mobile Flagger #1

The Advanced Mobile Flagger (AMF) is a RailPros employee with 2 years of service. The Advanced Mobile Flagger holds a Roadway Worker Protection (RWP) Level 2 certification that expires in June 2023.

During the formal interview, the AMF #1 stated that they were briefed by the RWIC and remembered that they requested foul time for an inspection between Suitland and Branch Avenue Stations, track 1. The AMF #1 stated that they advised that they were in position and ready to flag on both tracks 1 and 2. Foul time was granted, and the AMF #1 confirmed their position with the RWIC.

The AMF #1 stated that there was a second AMF that arrived. The AMF #1 stated that they needed to use the facilities and asked the second AMF (#2) to cover their position during the absence. The AMF #1 left to use the restroom.

The AMF #1 stated that the RWIC relinquished the foul time and was back under AMF protection. The AMF #1 stated that they returned to their assignment and was questioned why they left their position without notifying the RWIC.

Advanced Mobile Flagger #2 (written statement)

AMF #2 provided a written statement. “At approximately 11:34 hours, the AMF #1 received a call on his radio instructing the AMF #1 that foul time protection was in effect. The AMF #1 then replied on his radio that he was under foul time and holding all trains at his location. The AMF #1 was then relieved for a personal by AMF #2. At 11:37 hours, the RWIC then called on his radio for foul time to be relinquished and back under AMF protection. At approximately 11:40 hours, AMF #2 briefed a Train Operator that was soon leaving the platform from the 8-car marker on track 1.”

Appendix B – Train Operator Training Certification

TRAIN OPERATOR AND ROAD SUPERVISOR
JOB TASK PROFICIENCY EVALUATION

RTRA

Name: [redacted]	Emp. No: [redacted]	Division: Training Dept	Date: 8-17-22

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

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

Training Time Received: *Please record training time in an area below.*

Rail Training: Weeks: ____ Days: ____ Hours: ____ O/T: ____
Division Training: Weeks: ____ Days: ____ Hours: ____ O/T: ____
NOTE: O/T time is not separate from Work/Duty hours.

Exam Administered	Score	Date Taken
MSRPH version #:	91 %	8-17-22
TVOIM/TOIM	90 %	8-17-22
Supervisor Combination	%	
Practical attempt #: 1	QL- 1	8-17-22

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

Corrective Actions Required	Date Due	Complete	Initials
Forwarded to:		Date:	

Certification Information: *To be completed by QA/OC Staff*

Emp. No: [redacted] Date of Birth:
Date Last Qualified: Certification Class:
Due Date Next Qualification: Corrective Lenses: Yes
Date Qualification Expires: Restrictions:

Signatures:	Date:
Employee: [redacted]	8-17-22
	8-17-22

Rev. June 5, 2020 - RTRA QA/QC TRAIN OPERATOR AND ROAD SUPERVISOR JOB TASK PROFICIENCY EVALUATION Page 1

Document 1 – Train Operator's Certification Evaluation, Page 1 of 2

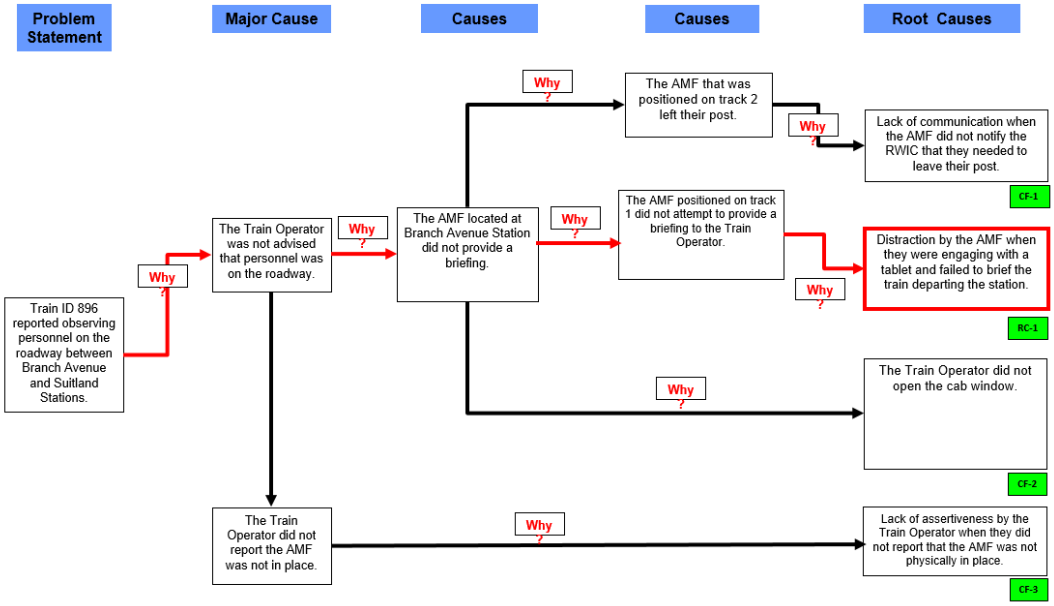
TRAIN OPERATOR AND ROAD SUPERVISOR JOB TASK PROFICIENCY EVALUATION (continuation sheet) Emp No.: [redacted] Date: 8-17-22

CATEGORIES / SUBCATEGORIES	QUALITY LEVEL	REMARKS (Remarks are required for a quality level score of 2 or 3) – ALL TIMES (are in minutes)
I. Preparation for Service	/	Cars Used: 7298X 7293
1. Exterior Inspection	/	Truck @ 7293 Car Barn 7298 Rotor Switch down 7299
2. Interior Inspection - Trailing Cab	/	Radio 118 7298
3. Interior Inspection - Each Car	/	Emergency Car Road 7298 Horn @ 7293
4. Interior Inspection - Oper. Cab	/	Door Interlocking no seal 7292
5. Rolling Test / Rolling Brake Test	/	Time Allotted: 25:00 / Actual Time: 29:00
II. Mainline Operation	/	
6. Communications	/	
7. Door Oper. & Station Stopping	/	
8. Use of Horn	/	
9. Speed Adherence/Manual Oper.	/	
10. Turn Back Moves	/	Location: Rollston Time Allotted: 02:00 / Actual Time: 02:00
11. Manual Route Selection	/	Location: WFC
12. EV Shutoff	/	Time Allotted: 00:30 (01:00) / Actual Time: :07
III. Yard Operation	/	
13. Communications	/	
14. Yard Movements	/	
15. Coupling	/	Time Allotted: 08:00 (12:00) / Actual Time: 06:00 Cars Used: 7385+ 7269
16. Uncoupling	/	Time Allotted: 05:00 (07:30) / Actual Time: 03:00 Cars Used: < 7268 > 7298
17. Isolation (Self-Recovery)	/	Time Allotted: 15:00 (22:30) / Actual Time: 12:00 Cars Used: 7384X 7266X 7298X 7293
18. Manual Switch Operation	/	Switch #137
IV. Miscellaneous	/	
19. Recovery Train Operation	/	Time Allotted: 12:00 (18:00) / Actual Time: 10:00 Cars Used: 7298+ 7268
20. Troubleshooting Problem #1	/	Stuck Hobby Brake Cars Used 7384X 7266X 7298X 7293
Problem 2	/	Pipe door open
Problem #3	/	Friction Brake 118

Rev. June 5, 2020 - RTRA GAVOC TRAIN OPERATOR AND ROAD SUPERVISOR JOB TASK PROFICIENCY EVALUATION Page 2

Document 2 - Train Operator's Certification Evaluation, Page 2 of 2

Appendix C – Root Cause Analysis



Root Cause Analysis

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

FINAL REPORT OF INVESTIGATION A&I E23130

Date of Event:	February 25, 2023
Type of Event:	O-12(e): Train Passed Personnel at Excessive Speed
Incident Time:	10:05 hours
Location:	D&G Junction, Chain Marker (CM) D2 251+00
Time and How received by SAFE:	10:11 hours Mission Assurance Coordinator (MAC) Desk
WMSC Notification Time:	10:26 hours
Responding Safety Officers:	None
Rail Vehicle:	Train ID 607 (7510-11**x**7547-46**x**7547-7546**x**7070-7071)
Injuries:	N/A
Damage:	N/A
Emergency Responders:	RTRA
SMS I/A Number	20230226#106433

D & G Junction – Train Passed Personnel at Excessive Speed

February 25, 2023

Table of Contents

Abbreviations and Acronyms

ADU	Aspect Display Unit
AMF	Advanced Mobile Flagger
ARS	Audio Recording System
ATP	Automatic Train Protection
CAP	Corrective Action Plan
CCTV	Closed-Circuit Television
CM	Chain Marker
CMOR	Office of the Chief Mechanical Officer
ER	Event Recorder
FSB	Full-Service Braking
IIT	Incident Investigation Team
MSRPH	Metrorail Safety Rules and Procedures Handbook
NOAA	National Oceanic and Atmospheric Administration
RTC	Rail Traffic Controller
RTRA	Office of Rail Transportation
ROCC	Rail Operations Control Center
RWIC	Roadway Worker in Charge
SAFE	Department of Safety
SMS	Safety Measurement System
VMDS	Vehicle Monitoring and Diagnostic System
WMATA	Washington Metropolitan Area Transit Authority
WMSC	Washington Metrorail Safety Commission

Executive Summary

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

On February 25, 2023, at 08:45 hours, a Roadway Worker in Charge (RWIC) contacted the Radio RTC to request permission to enter the roadway at Potomac Avenue Station to conduct a portal and electrical inspection using Advanced Mobile Flagger (AMF) protection. The Radio Rail Traffic Controller (RTC) granted the RWIC permission to enter the roadway to perform their work. At 10:00 hours, Train ID 607 entered Benning Road Station. A separate work crew requested a train drop off at Chain Marker (CM) D2 285+00. At 10:02 hours, the Train Operator of Train ID 607 contacted the Radio RTC to request permission to conduct the train drop-off, which was approved.

While Train ID 607 was at the 8-car marker, the AMF assigned to the work crew in the roadway briefed the Train Operator. Closed-Circuit Television (CCTV) showed that after the AMF wearing a green high visibility jacket briefed the Train Operator, a two-person work crew spoke to the Train Operator and requested a drop off to the roadway. A second AMF was wearing an orange vest near the 8-car marker, but they placed their strobe light down after Train ID 607 was leaving the station. The second AMF began operations for the work crew to be dropped off after the train departed the station.

After dropping off the two-member work crew, Train ID 607 passed the first mobile work crew on the aerial structure at 47 MPH, with the Master Controller in the B5 Braking position, 9,168 feet after departing Benning Rd. Station. The RWIC contacted the Radio RTC and informed them that a train had passed their work crew at an excessive speed.

The Radio RTC contacted the Train Operator of Train ID 607 and asked if they were briefed by an Advanced Mobile Flagger (AMF) at Benning Road Station and if they tapped their horn and reduced their speed when they passed the work crew. The Train Operator affirmed they tapped their horn and reduced speed when they passed the work crew. Data confirmed Train ID 607 activated their road horn and decreased speed and operated between 19-33 MPH on approach to Stadium-Armory Station.

The Train Operator reported mistaking that the AMF that briefed them at Benning Road was speaking about the crew that they were dropping off on the roadway and not the second crew closer to the D&G Junction. After dropping off the crew on the roadway, the Train Operator began operating normally and did not expect to encounter a second work crew.

The Radio RTC contacted an Office of Rail Transportation (RTRA) Supervisor to meet Train ID 607. RTRA removed the Train Operator from service per Standard Operating Procedure (SOP) 102-01, *Removing An Employee From Service* at Federal Center Station, and the RTRA Supervisor to resumed train operations.

The probable cause for this excessive speed passed work personnel violation was a failure to follow established Roadway Worker Protection (RWP) procedures for AMF operations. A Contributing Factor to the event was the Train Operator's lack of awareness in understanding that they were briefed by the AMF for the crew that was already in the roadway. Believing that they had dropped off the only work crew in the area, the Train Operator took a shortcut and failed to maintain half the regulated speed to the next station.

Incident Site

Track 2, inbound on an aerial structure.

Field Sketch/Schematics

Figure 1 - Figure 1: The green star indicates where Train ID 607 made the work crew drop off. The red star indicates the location of the work crew that reported that Train ID 607 passed them at an excessive speed. The above depiction is not to scale.

Purpose and Scope

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

Investigative Methods

The investigative methodologies included the following:

- Physical Site Assessment through document review

- Formal Interviews – SAFE interviewed two individuals as part of this investigation. Interviews included persons present at, during, and after the incident, those directly involved in the response process, and representatives from the Washington Metrorail Safety Commission (WMSC). SAFE interviewed the following individuals:
    - Train Operator
    - RWIC

- Documentation Review – Collection of relevant work history information and process documentation contained in WMATA systems of record. These records include:
    - Train Operator Training Records
    - Train Operator Certifications
    - Train Operator 30-Day Work History Review
    - Metrorail Safety Rules and Procedures Handbook (MSRPH)
    - National Oceanic and Atmospheric Administration (NOAA)
    - Rail Operations Control Center (ROCC) Incident Report

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

Investigation

On February 25, 2023, at 08:45 hours, a RWIC contacted the Radio RTC to request permission to enter the roadway at Potomac Avenue Station to conduct a portal and electrical inspection. They would use an AMF located at Stadium-Armory Station for their protection. The Radio RTC granted the RWIC permission to enter the roadway to perform their work. At 10:00 hours, Train ID 607 entered Benning Road Station. A two-person work crew needed a train drop-off at CM D2 285+00. At 10:02 hours, the Train Operator of Train ID 607 contacted Radio RTC to request permission to conduct the train drop-off.

While Train ID 607 was at the 8-car marker, the AMF assigned to the work crew in the roadway briefed the Train Operator. Distractions occurred as the Train Operator communicated with the two-person work crew. CCTV showed another AMF near the 8-car marker, but they placed their strobe light down when Train ID 607 was leaving the station. The second AMF wearing an orange vest, stood back from the platform edge and set their equipment when the train left the station.

During the interview, the Train Operator stated they only saw one AMF at Benning Road Station, and they thought that AMF was for the work crew they were about to drop off. The Train Operator stated that after they completed the drop-off, another train was coming in the opposite direction in a curved area of the track, preventing them from seeing the work crew ahead. The Train Operator knew the proper AMF procedures but failed to follow them. The Incident Investigation Team (IIT) data showed that Train ID 607 traveled at 47 mph when it passed the work crew. This was over half the regulated speed, and the Train Operator did not activate their road horn until after passing the work crew.

At 10:06 hours, the RWIC contacted the Radio RTC and informed them that a train had passed their work crew at an excessive speed. The Radio RTC contacted the Train Operator of Train ID 607 and asked if they were briefed by an AMF at Benning Road Station and if they tapped their horn and reduced speed when they passed the work crew. The Train Operator affirmed that they tapped their horn and reduced speed when they passed the work crew. The Radio RTC contacted an RTRA Supervisor to meet Train ID 607. The Train Operator was removed from train operations at Federal Center Station, and an RTRA Supervisor took over train operations.

Chronological Event Timeline

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

Time	Description
08:45:02 hours	RWIC: Requested permission to enter roadway at D07 Potomac Ave, Track 2. [Ops. 2]
08:46:04 hours	Radio RTC: Acknowledged the RWIC. Grants permission to enter roadway for purposes of portal inspection. [Ops. 2]
08:46:19 hours	RWIC: Contacted AMF #1 at Stadium-Armory D08. AMF in position at 8 car marker. [Ops. 2]
08:46:33 hours	AMF #1: Contacted the RWIC and affirmed radio communication. [Ops. 2]
08:47:28 hours	RWIC: Verified with the ROCC that trains were clear of their location D07 Potomac Ave, Track 2. Proceeded to roadway. [Ops. 2]
08:48:00 hours	Radio RTC: Made area wide announcement to all trains of roadway workers on the right-of-way; reduce speed in vicinity. [Ops.2]
09:07:19 hours	RWIC: Notified the ROCC that they were clear of Track 2 at D08 Stadium-Armory. [Ops. 2]
09:07:47 hours	RWIC: Contacted the Radio RTC to request permission to continue their inspection from D08 Stadium-Armory to D98 D&G Junction. [Ops. 2]
09:24:06 hours	RWIC: Radioed the ROCC. [Ops. 2]
09:27:5540 hours	RWIC: Informed the ROCC that AMF #1 was in place at G01 Benning Road and AMF #2 was at D09 Minnesota Ave. [Ops. 2]

Time	Description
09:28:26 hours	Radio RTC: Acknowledged the RWIC that they verified the positions of the AMFs at G01 Benning Road and D09 Minnesota Ave. [Ops. 2]
09:29:01 hours	Radio RTC: Contacted the RWIC and advised that one train needed to clear through the area before granting permission onto the roadway. [Ops. 2]
10:02:51 hours	Train Operator: Contacted the Radio RTC to request permission to drop off a 2-person work crew at CM D2 285+00. They would key down to let them exit and key back up to continue. Radio RTC: Gave a repeat back and granted permission. [Ops. 2]
10:03:41 hours	Train Operator: Gave the Radio RTC and radio check on their handheld radio and informed them they keyed down the train. Radio RTC: Gave a repeat back and granted the two-person work crew permission to exit the train. [Ops. 2]
10:06:55 hours	RWIC: Contacted the ROCC advising train approached at excessive speed on aerial structure of D98, D&G Junction. [Telephone]
10:08:10 hours	RWIC: Notified AOM #1 that the train passed at excessive speed on ariel structure CM D2 251+00 [Telephone]
10:13:34 hours	Radio RTC: Contacted the Train Operator of Train ID 607 and asked if they were briefed by an AMF at Benning Road Station and if they reduced their speed and lightly tapped the horn when they passed personnel in the D&G. Train Operator: Stated they thought they picked up the AMF from Benning Road Station and they reduced their speed and lightly tapped their horn in the D&G. [Ops. 2]
10:16:48 hours	ROCC AOM #2: Contacted the Division Assistant Superintendent to inform them of the Improper RWP violation. [Rail 3]
10:16:45 hours	ROCC AOM #1: Instructed the Button RTC to have Train ID 607 held for a supervisor. [Telephone]
10:16:51 hours	Radio RTC: Instructed the Train Operator of Train ID 607 to hold at Federal Center Station for an RTRA supervisor. The RTRA Supervisor took over the train operations. [Ops. 2]
10:21:37 hours	RWIC: Reported they were clear from the roadway. [Ops. 2]

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

ROCC Spots Report

Select Platform: G01-2 and/or Select ID: Leave blank to remove criteria
and/or Select 4-digit car number: Leave blank to remove criteria
Select Date: Feb 25 2023 Select Times (0-24HRS): From 10:00 To 11:00

Generate Report

ID	Platform	length	dcode	Right door open	Right door close	dwell	Left door open	Left door close	dwell	Head Arrived	Tail cleared	cars	Headway door open to door open
607	G01-2	8	68				10:01:04	10:01:28	24	10:00:30	10:02:06	7070-7071.7573-7572.7546-7547.7511-7510	-
407	G01-2	6	16				10:04:46	10:05:08	22	10:04:15	10:05:36	3210-3211.3119-3118.3159-3158	3:42
608	G01-2	6	68				10:15:56	10:16:28	32	10:15:23	10:16:55	6149-6148.6004-6005.6044-6045	11:10
408	G01-2	6	16				10:19:47	10:20:20	33	10:19:13	10:20:47	6103-6102.6017-6016.6154-6155	3:51
609	G01-2	8	66				10:31:16	10:31:32	16	10:30:40	10:32:00	7594-7595.7605-7604.7736-7737.7589-7588	11:29
409	G01-2	6	16				10:34:24	10:34:46	22	10:33:51	10:35:08	6170-6171.6122-6123.6152-6153	3:08
610	G01-2	8	68				10:46:19	10:46:37	18	10:45:45	10:47:06	7478-7479.7401-7400.7144-7145.7077-7076	11:55
610	G01-2	8	68							10:47:07	10:47:15	7478-7479.7401-7400.7144-7145.7077-7076	-
410	G01-2	6	16				10:51:53	10:52:13	20	10:51:00	10:52:41	3259-3258.3221-3220.3202-3203	5:34
896	G01-2	4	99							10:53:11	10:54:00	7432-7433.7495-7494	-

Figure 2: This image shows the time Train ID 607 departed Benning Road Station.

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

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

"Based on the vehicle monitoring diagnostic system (VMDS) and event recorder (ER) data, there were no faults with the train that contributed to the cause of this incident. The train performed as commanded.

Train ID 607 departed Benning Rd with car 7510 as the Lead Car. Station with the Master Controller in a P1-P4 Power position. The Automatic Train Protection (ATP) and Aspect Display Unit (ADU) regulated speed limits decreased from 50 MPH to 0 MPH, initiating an overspeed alarm and full-service braking (FSB), 217 feet. after departing Benning Rd. The train was traveling at a speed of 31 MPH at the time. The ATP Limiting Speed and ADU regulated speed limit returned to 50 MPH 349 feet. after departing Benning Rd. and the train continued reaching speeds up to 54.5 MPH.

Train ID 607 came to a stop and Car 7510 was keyed down and back up and continued towards Stadium Armory. ATP limiting speed and ADU Regulated speed limits again dropped 0 MPH, initiating an overspeed alarm and FSB, 6,543 feet. after departing Benning Rd. The train speed at this time was 18 MPH. ATP limiting Speed and ADU regulated speed increased to 65 MPH and 49 MPH respectively and the train continued towards Stadium Armory reaching speeds up to 54.9 MPH.

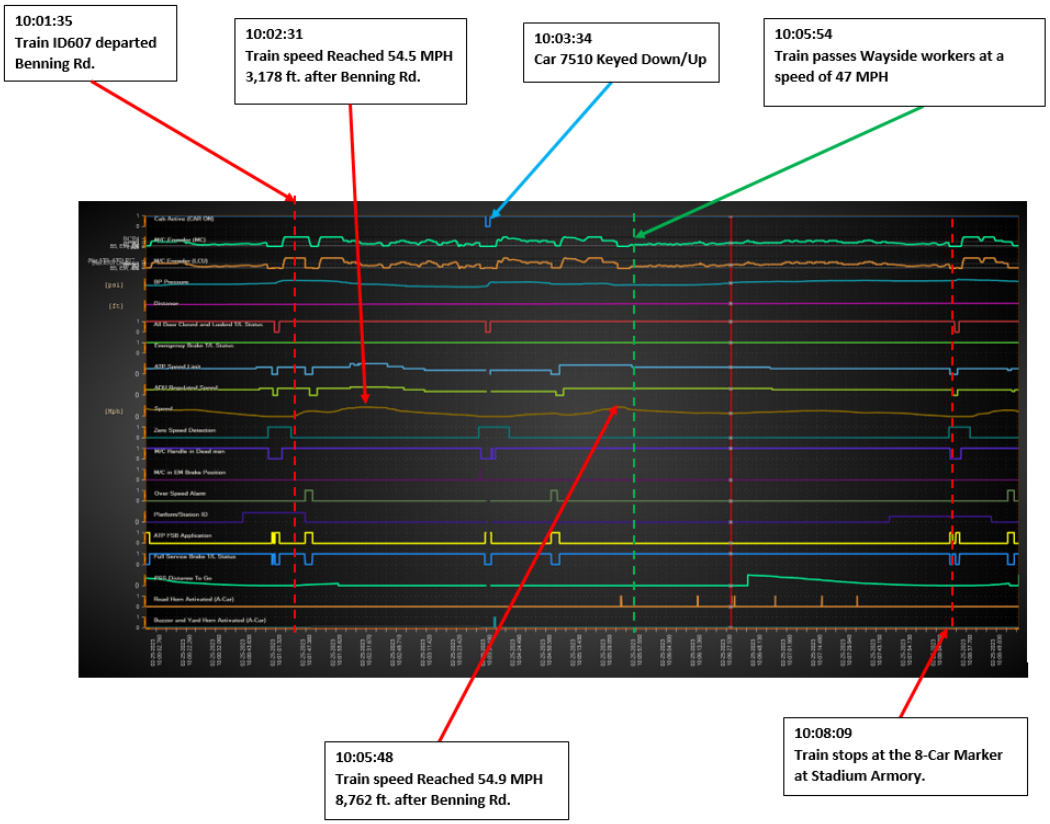
8,852 feet after departing Benning Rd, the Master Controller was placed in B1-B3 braking mode, then moved to B5 with the train traveling 54 MPH. The Train activated the road horn and passed wayside workers at a speed of 47 MPH, 9,168 feet after leaving Benning Rd. The train eventually slowed to 18 MPH before continuing to Stadium Armory."

See timeline of events:

Time	Description of Events	Train Speed	Master Controller	ATP Speed Limit	ADU Regulated Speed Limit
10:01:35	Train ID607, Master Controller placed in P1-P4 Power position and departed Benning Rd Station, Track #2, Regulated speed limit was 50 MPH	***0 MPH***	***P1-P4***	***50 MPH***	***50 MPH***
10:01:47	ATP Speed Limit drops to 0 MPH. Over speed Alarm activates and ATC Applies Full-Service Brake(B4). Train speed was 29 MPH. 217 feet after departing Benning Rd. Station	***29 MPH***	***P5***	***0 MPH***	***50 MPH***
10:01:48	ADU Regulated Speed limit drops to 0 MPH. 268 feet after departing Benning Rd. Station	***31 MPH***	***B1-B3***	***0 MPH***	***0 MPH***
10:01:48	ATP Speed Limit increases from 0 MPH to 50 MPH, Over Speed Alarm de-activates and Full-Service Brake Releases, 300 feet after departing Benning Rd. Station	***31 MPH***	***B5***	***50 MPH***	***0 MPH***
10:01:50	ADU Regulated Speed limit increases from 0 MPH to 50 MPH, 349 feet after departing Benning Rd. Station	***31 MPH***	***B5***	***50 MPH***	***50 MPH***
10:01:50	Master Controller moved to the P5 Power position.	***28 MPH***	***P5***	***50 MPH***	***50 MPH***
10:02:09	ATP Speed limit and ADU Regulated speed both increase to 75 MPH and 59 MPH, Respectively. 1,462 feet after departing Benning Rd. Station	***49 MPH***	***Coast***	***75 MPH***	***59 MPH***
10:02:31	Train reaches a speed of **54.5** MPH, 3,178 ft, after departing Benning Rd.	***54.5 MPH***	***B1-B3***	***75 MPH***	***59 MPH***
10:02:41	ATP Speed limit and ADU regulated speed limit decrease to 55 MPH, 3,385 feet after departing Benning Rd. Station	***46 MPH***	***B4***	***55 MPH***	***55 MPH***
10:02:57	ATP Speed limit and ADU regulated speed limit decrease to 40 MPH, 4,742 feet after departing Benning Rd. Station	***31 MPH***	***P1-P4***	***40 MPH***	***40 MPH***
10:03:10	ATP Speed limit and ADU regulated speed limit decrease to 28 MPH. 5,316 feet after departing Benning Rd. Station	***21 MPH***	***Coast***	***28 MPH***	***28 MPH***
10:03:32	Train came to a complete stop, 5,658 ft after departing Benning Rd. Station.	***0 MPH***	***B5***	***28 MPH***	***28 MPH***
10:03:34	Car 7510 keyed Down	***0 MPH***	***B5***	***28 MPH***	***28 MPH***
10:04:04	Car 7510 Keyed back up	***0 MPH***	***B5***	***28 MPH***	***28 MPH***
10:04:19	Master Controller placed on P5 power mode and train continues towards Stadium Armory.	***0 MPH***	***P5***	***28 MPH***	***28 MPH***
10:05:05	ATP Speed Limit decreases to 0 MPH, Overspeed alarm activates and Full-Service Brake Applies B4 Braking Rate, 6,543 feet after departing Benning Rd.	***18 MPH***	***Coast***	***0 MPH***	***28 MPH***
10:05:06	ADU Regulated speed limit decreases to 0 MPH, 6,575 feet after Departing Benning Rd. Station	***17 MPH***	***B4***	***0 MPH***	***0 MPH***

Time	Description of Events	Train Speed	Master Controller	ATP Speed Limit	ADU Regulated Speed Limit
10:05:08	ATP Limiting speed increases to 65 MPH, over speed alarm de-activates, FSB releases, 6,624 feet after Departing Benning Rd. Station	***13 MPH***	***B4***	***65 MPH***	***0 MPH***
10:05:09	Master Controller placed on P1-P4 power position and train continues towards Stadium Armory.	***12 MPH***	***P1-P4***	***65 MPH***	***0 MPH***
10:05:09	ADU Regulated speed limit increases to 49 MPH	***11 MPH***	***P1-P4***	***65 MPH***	***49 MPH***
10:05:09	Master Controller placed in P5 Power Mode	***11 MPH***	***P5***	***65 MPH***	***49 MPH***
10:05:48	Train speed reached a speed of 54.9 MPH, 8,762 feet after departing Benning Rd. Station	***54.9 MPH***	***Coast***	***65 MPH***	***49 MPH***
10:05:50	Master Controller moved to a B1-B3 Braking position, 8,852 feet after departing Benning Rd.	***54 MPH***	***B1-B3***	***65 MPH***	***49 MPH***
10:05:50	Master Controller placed in the B5 Braking position, 8,868 feet after departing Benning Rd.	***54 MPH***	***B5***	***65 MPH***	***49 MPH***
10:05:51	Road Horn activated, 8,936 feet after Departing Benning Rd. Station	***54 MPH***	***B5***	***65 MPH***	***49 MPH***
10:05:54	***Train passes wayside workers at a speed of 47 MPH, with the Master Controller in the B5 Braking position, 9,168 feet after departing Benning Rd. Station.***	***47 MPH***	***B5***	***65 MPH***	***49 MPH***
10:05:55. - 10:08:06	Master controller cycled back and forth between P1-P4 Power Modes, Coast and B1-B3 Braking Modes.	***VAR***	***VAR***	***VAR***	***VAR***
10:05:56	ATP Speed limit decreased to 50 MPH	***40 MPH***	***B1-B3***	***50 MPH***	***49 MPH***
10:06:14	Road Horn activated	***19 MPH***	***B1-B3***	***50 MPH***	***49 MPH***
10:06:30	Road Horn activated	***18 MPH***	***B1-B3***	***50 MPH***	***49 MPH***
10:06:52	ATP Regulated Speed decreased to 40 MPH, 2,025 feet from Stadium Armory	***26 MPH***	***B1-B3***	***40 MPH***	***49 MPH***
10:06:53	ADU Regulated Speed limit decreased to 40 MPH	***26 MPH***	***B1-B3***	***40 MPH***	***40 MPH***
10:06:55	Road Horn Activated 1,896 feet from Stadium Armory platform.	***26 MPH***	***B1-B3***	***40 MPH***	***40 MPH***
10:07:17	Road Horn Activated 903 feet from Stadium Armory platform.	***33 MPH***	***P1-P4***	***40 MPH***	***40 MPH***
10:07:35	Road Horn Activated 135 feet from Stadium Armory platform.	***24 MPH***	***B1-B3***	***40 MPH***	***40 MPH***
10:07:49	ADU Regulated speed decreased to 39 MPH	***21 MPH***	***B1-B3***	***40 MPH***	***39 MPH***
10:08:08	ATP Speed limit drops to 0 MPH	***<1 MPH***	***B5***	***40 MPH***	***39 MPH***
10:08:09	Train comes to a complete stop at Stadium Armory 8-Car Marker.	***0 MPH***	***B5***	***40 MPH***	***39 MPH***

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



Office of Rail Transportation (RTRA)
Adopted from RTRA report: See Appendix D

During the investigation, the Train Operator subsequently retired and RTRA was unable to complete their investigation.

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

During the interview, the Train Operator was open about what occurred. The Train Operator acknowledged they committed a safety violation by not traveling at half the regulated speed when they passed the work crew. The Train Operator picked up a work crew at Benning Road Station and dropped them off at CM D2 285+00. The Train Operator thought the AMF that briefed them at the 8-car marker was the AMF for the work crew they were dropping off because they only saw one AMF at the 8-car marker. The Train Operator stated that when they dropped the work crew off, they didn't immediately see the other crew because another train was passing their location and blocking their view. The Train Operator attempted to decrease their speed once they saw the other work crew.

Weather

On February 25, 2023, at the time of the incident, NOAA recorded the temperature as 39° F, with cloudy skies. Weather was not a contributing factor in this incident (Weather source: NOAA) – Location: Washington, DC.)

Related Rules and Procedures

Rail Vehicle Operator Procedures during AMF numeral 3: The Rail vehicle operator will depart the station at half the regulated speed until the operator reaches the next station, staying alert for multiple work crews.

AMF Script: “There may be multiple work groups ahead. Proceed at half your regulated speed until you reach the next station. Continuously blow your horn. Reduce speed to 15 mph when observing and passing all work crews. Current AMF procedures govern you.”

Human Factors

Fatigue

Evidence of Fatigue

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

Fatigue Risk

SAFE evaluated incident data for fatigue risk factors. No significant risk was identified. The incident time of day did not suggest an increased risk of fatigue-related impairment. The Train Operator reported keeping a regular sleep schedule in the days leading up to the incident. The Train Operator worked day shift in the days leading up to the incident. The Train Operator was awake for 5.5 hours at the time of the incident. The Train Operator reported 8.5 hours of sleep in the 24 hours preceding the incident. The off-duty period was 15 hours, an opportunity for 7-9 hours of sleep. This was a comparable amount compared to the employee's usual workday sleep durations. The Train Operator reported no issues with sleep.

Post-Incident Toxicology Testing

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

Findings

- The Train Operator was completing their third-round trip at the time of the incident.
- There were no mechanical issues with Train ID 607 that could have contributed to this incident.
- The Train Operator was briefed by an AMF at Benning Road Station.
- A two-person work crew also spoke with the Train Operator at Benning Road Station and requested a drop-off at CM D2 285+00.
- The Train Operator was distracted when they were talking to the work crew while being briefed by the AMF.
- The Train Operator thought the AMF that briefed them was for the crew that they were dropping off at CM D2 285+00.
- The second AMF placed their strobe light at the 8-car marker as Train ID 607 was leaving the station.
- CCTV confirmed that the Train Operator was only briefed by one AMF.
- The Train Operator was traveling at 47 MPH when they passed the work crew.

- The Train Operator did not activate their road horn when they left Benning Road Station.
- The first time the Train Operator activated their road horn was 8,936 feet after departing Benning Road Station.

Immediate Mitigation to Prevent Recurrence

- The Train Operator was removed from service for post incident testing.
- The incident train was removed from service for post incident data downloads.
- Safety Bulletin 23-02-F: Advanced Mobile Flagger Alertness issued to all personnel

Probable Cause Statement

The probable cause for this excessive speed passed work personnel violation was a failure to follow established Roadway Worker Protection (RWP) procedures for AMF operations. A Contributing Factor to the event was the Train Operator's lack of awareness in understanding that they were briefed by the AMF for the crew that was already in the roadway. Believing that they had dropped off the only work crew in the area, the Train Operator took a shortcut and failed to maintain half the regulated speed to the next station.

Recommended Corrective Actions

Corrective Action Code	Description	Responsible Party	Estimated Completion Date
106433_SAFE CAPS_RTRA_ 001	The Train Operator will have to complete RWP Level 2 refresher training.	RTRA	Completed
106433_SAFE CAPS_RTRA_ 002	SAFE will develop an AMF action plan in coordination with RTRA and maintenance groups to help mitigate improper RWP violations.	SAFE	Completed

Appendices
Appendix A – Interview Summary

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

The Train Operator is a WMATA employee with twenty-three and a half (23.5) years of experience; 17 years as a Train Operator. The Train Operator previously worked as a Bus Operator and Station Manager. The Train Operator is RWP Level 2 certified and must recertify in June 2023. The Train Operator mentioned feeling fully alert when they started operating Train ID 607. The Train Operator stated there were no non work-related circumstances effecting their opportunity to get good sleep. The Train Operator did not experience any mechanical issues while operating Train ID 607. The Train Operator was completing their third-round trip when this event occurred.

During the interview, the Train Operator stated it was a normal workday for them. The Train Operator said they were familiar with operating the 7k series trains and had to complete refresher training when they were placed back into revenue service. The Train Operator stated they may have passed one or two mobile work crews during the round trips they completed prior to the safety violation. The Train Operator felt the training and information they received from the various RWP Safety Standdowns have been sufficient. The Train Operator mentioned they were briefed by an AMF at the 8-car marker at Benning Road Station. While being briefed, the Train Operator was slightly distracted because they were talking to the work crew members that they had to drop off at CM D2 285+00.

The Train Operator said they only saw one AMF, so they thought that was the AMF for the work crew they were about to drop off. The Train Operator stated when there are multiple work crews in a particular area there is typically 2 AMFs. Once the Train Operator dropped off the work crew at CM D2 285+00, there was another train coming their direction on track 1 and the train blocked the view of the mobile work crew that was ahead. The Train Operator acknowledged that the Radio RTC was giving periodic announcements of track personnel in the roadway. The Train Operator admitted they were traveling faster than half the regulated speed when they passed the work crew. The Train Operator stated it would help if the AMFs provided a CM for where the work crew is located when they give the train operators the briefing.

Appendix B – ROCC Incident Report

View Approved Incident Report

INCIDENT ID: 2023056SILVER1

DATE	TIME	LINE	ITEM
2023-02-25	1009	Silver	1

LOCATION (STATION/YARD)
D&G Junction

LOCATION/CHAIN MARKER (If Applicable)
D2-251+00

REPORTED BY [redacted]

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

CAR NUMBERS (XXXX-XXXX)
Lead Car

7510-7511	7547-7546	7572-7573	7070-7071
Caused Issue ☑	Caused Issue ☐	Caused Issue ☐	Caused Issue ☐

TRBL CODE	RESP CODE
RWPV-RWP VIOLATION	RTR

TYPE INCIDENT
Report Of RWP Violation

ACTION PLAN
Dispatch RTRA Supervisor, Remove Operator From Service, Remove Train From Revenue Service

DELAYS IN MINUTES

LINE	INCIDENT	TRAIN	TOTAL DURATION
0	0	0	0

TRIPS MODIFIED

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

FIVE PRIMARY CONSOLE INDICATIONS

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

INCIDENT CHRONOLOGY

TIME	DESCRIPTION
1009	[redacted] walking track two D98 reported train 607, Operator [redacted], passing their work crew at excessive speed at D2-251+00. RTRA Supervisors dispatched. ROCC Assistant Operations Manager, ROIC, CMNT, MTPD, SAFE, and all concerned personnel were notified.

Attachment 1 – ROCC Report page 1 of 2.

View Approved Incident Report

0000	NOTE: Operator [redacted] was removed from service pending post incident analysis and investigation. The train consist was removed from revenue service at Ashburn station pending investigation. Operator [redacted] did report speaking with the AMF stationed track two Benning Road.

MAXIMO TICKET#
8655095

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

SUPERINTENDENTS OR ASSISTANTS SECTION	
ADDITIONAL FOLLOW-UP CORRECTIVE ACTIONS OR REMARKS	
FOLLOW-UP INFORMATION OBTAINED FROM SUPPORT DEPARTMENTS	
NOTIFICATIONS/PAGE GROUPS	#1/CEO ☐ #2/DGM &BELOW ■
ADDITIONAL NOTIFICATIONS MADE BY PHONE	MAC

APPROVED BY	NAME	CLICK TO SIGN
REPORT APPROVED BY SUPT. OR ASST SUPT.	[redacted]	✓

Attachment 1 – ROCC Report page 2 of 2.

Appendix C – Safety Bulletin 23-02-F: Advanced Mobile Flagger Alertness

SAFETY BULLETIN RAIL **SB 23-02-F** Version #: 1 Issue Date: 2/25/23

Advanced Mobile Flagger Alertness

OVERVIEW/DESCRIPTION

Roadway Worker Protection (RWP) provides personnel with a uniform method of establishing on-track protection while minimizing dangers and hazards associated with working on the roadway. It is important that all personnel involved in RWP, including Roadway Workers, Rail Vehicle Operators (RVO), and Rail Traffic Controllers (RTC), know and understand the various forms of RWP being provided.

There were **two significant RWP violations today (Saturday, February 25) involving AMF:**
(The following briefs are based on a preliminary review of the events)

- **Event 1 – 10:11 AM**: A revenue train passed a roadway crew at high speed on the aerial structure CM 251+00. There were two AMFs posted at Benning Road Track 2. Before departing, the Train Operator received an AMF brief regarding the first work crew ahead. As the Operator received this AMF brief, a two-person crew boarded the train and reportedly requested a drop-off. As the Train Operator closed the cab window, the second AMF activated and installed their strobe (now two strobes for two crews). The preliminary contributing factor was confusion over which crew was being protected by the initial AMF brief.
- **Event 2 – 11:07 AM**: An AMF was posted at College Park Track 2, providing protection for a crew between that station and Hyattsville Crossing. The AMF left their post with no replacement. An RVO reported the unprotected crew to the ROCC upon encountering them on the roadway. The preliminary contributing factor was the AMF's loss of situational awareness and potentially miscommunication with the Roadway Worker in Charge (RWIC) to verify protections.

DETAILS AND ACTIONS

Advanced Mobile Flagger (AMF) Procedures

- If in doubt, RVOs should verify the AMF protection being briefed at the 8-car marker.
- If the AMF needs to leave their position, the RWIC must be notified and clear the crew from the roadway before the AMF leaves their assigned position. The AMF must never leave their position while the Mobile Work Crew is still on the roadway.
- AMFs must be placed at the station immediately ahead of the direction the work crew is traveling. The RWIC must verify that the AMF is in place before entering the roadway.
- AMFs must brief every rail vehicle (*revenue and non-revenue*) approaching their location. It is the RVO's responsibility to ensure they receive/verify all necessary instructions before proceeding.

Roadway Job Safety Briefings (RJSB)

- All roadway personnel must be present for the RJSB before entering the roadway.
- The RWIC must ensure the RJSB includes, but not be limited to, the type of on-track safety being provided, the limits of protection, and the predetermined place of safety.

All RWP rules and procedures can be found in their entirety in Section 5 of the Metrorail Safety Rules and Procedures Handbook (MSRPH), available on MetroDocs.

For questions regarding this Safety Bulletin or other safety-related issues, contact the Safety Hotline at 202-249-SAFE (7233).

M metro SAFE Department of Safety

Attachment 1 – Safety Bulletin SB 23-02-F page 1 of 1.

Appendix D – RTRA Incident Report

Washington Metropolitan Area Transit Authority

Incident Number
20230226#106433

OVERVIEW

Department	Rail Station West Falls Church
Incident Date	02/25/2023 10:04 AM
Incident Report Date	02/26/2023 04:30 AM
Maximo #	8655095
Was anyone transported from the scene for medical attention?	No
Was the facility or vehicle evacuated as a result of the incident?	No
Incident Type	15 MPH Violation
Incident Description	The RWIC and track presonnel encontered a train traveling to fast while walking D08 to D & G junction chain marker (D2 261+00 track 2). AMF protection was in affect and the train was traveling at a high rate of speed. The location is outside staight track, clear day and the RWIC believes the train operator should have seen them.
People Impact	None
Asset Impact	None
Preferred Phone	
Response Level	Level 3
Recommended Response	Supervisor conducts investigation. Must identify interfaces with other work groups. Other work groups may be ad hoc participants.

DETAILS

Environmental Factors

Immediate Mitigation Response	
Lighting	
Light Conditions	
Weather	

Location Information

Rail Station/Yard	WEST FALLS CHURCH S & I YARD
Address/Nearby Address	7251 IDLYWOOD RD
Region	FALLS CHURCH
State	VA
Latitude	38.90262899
Longitude	-77.19258923

Attachment 1 – RTRA Incident Report page 1 of 3.

PEOPLE

WMATA Personnel - [redacted]

Name	[redacted]
Employee #	[redacted]
Department Code	33570
Department Name	Power High Voltage
Email	[redacted]
Age Range	Adult (19 – 60)
Was this person injured?	No
Was a drug test required?	No
Reason for not testing	No need
Is this person a witness?	No
What happened before the incident?	Amf protection walking on the roadway.
What happened after the incident?	Amf protection continued walking on the roadway.
Was this person driving?	No
Occupant of Vehicle	None
Personal Protective Equipment (PPE) Usage	
OSHA Recordable	
OSHA Injury Code	
Job Title	
Where Event Occurred	
OSHA Location	
Days Away from Work	
Days Restricted	
Private	No

FATIGUE INFORMATION

What was the employee's bed time, for the sleep period preceding the incident?	02/24/2023 08:30 PM
What time did the employee's wake up?	02/25/2023 04:30 AM
Was this the employee's sleep schedule in the last seven days, including days off?	Yes
How alert was the employee's	Fully Alert

Attachment 1 – RTRA Incident Report page 2 of 3.

immediately prior to the incident?	
Were there any behaviors suggestive of fatigue?	None Observed

SUMMARY OF FATIGUE FACTORS

Length of employee's last sleep	8 hours 0 minutes
Short prior sleep	No
Hours spent awake at time of incident	5 hours 34 minutes
Long wake period	No
Circadian effects on alertness at time of incident (incident between 02:00 am and 05:00 am?)	No
Circadian effects on time of sleep in week before incident	Yes
Employee alertness at incident	No
Observed fatigue behaviours	No

INVESTIGATION

General

Equipment Involved	
Known Facts	
DriveCam Event #	
Key Factors	Rule Violation Procedure Not Followed
Root Causes	Human Performance Difficulty/Individual Performance Complication/Should the person have had and used a written procedure but did not?

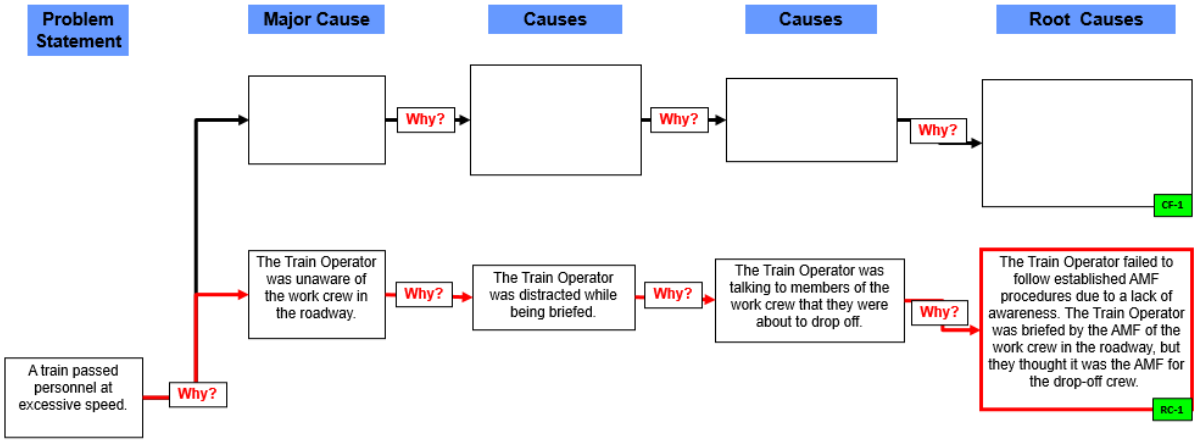
CORRECTIVE ACTIONS

Level II Safety/Operational Violation

Incident	20230226#106433
Priority	(2) Normal
Status	In Progress
% Complete	50
Start Date	02/25/2023
Management System	Rules and Procedures
Corrective Action Title	Level II Safety/Operational Violation
Corrective Action(s)	6 points, written warning and refresher training
Target Date	03/21/2023
CAP Closure Category	In Progress

Attachment 1 – RTRA Incident Report page 3 of 3.

Appendix E – Why-Tree Analysis



Root Cause Analysis

Attachment 1 – Why Tree Analysis page 1 of 1.

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

FINAL REPORT OF INVESTIGATION A&I

Date of Event:	June 8, 2023
Type of Event:	Improper Roadway Worker Protection (RWP)
Incident Time:	20:12 hours
Location:	Federal Center SW Station, track 2
Time and How received by SAFE:	20:54 hours Mission Assurance Coordinator (MAC)
WMSC Notification Time:	20:27 hours
Responding Safety Officers:	7700-01x7737-36x7652-53x7089-88
Rail Vehicle:	N/A
Injuries:	None
Damage:	None
Emergency Responders:	None
SMS I/A Incident Number:	20230608#109072MX

Federal Center SW – Improper RWP

Table of Contents

Abbreviations and Acronyms

AIMS	Automated Information Management System
ARS	Audio Recording System
ATCM	Automatic Train Control Maintenance
CAP	Corrective Action Plan
CCTV	Closed-Circuit Television
ETO	Exclusive Track Occupancy
FT	Foul Time
LCP	Local Control Panel
LCPO	Local Control Panel Operator
LSC	Local Signal Control
MSRPH	Metrorail Safety Rules and Procedures Handbook
NOAA	National Oceanic and Atmospheric Administration
PMI	Preventative Maintenance Inspection
RTC	Rail Traffic Controller
RTRA	Office of Rail Transportation
ROCC	Rail Operations Control Center
ROIC	Rail Operation Information Center
RWIC	Roadway Worker In-Charge
SAFE	Department of Safety
SMS	Safety Measurement System
WMATA	Washington Metropolitan Area Transit Authority
WMSC	Washington Metrorail Safety Commission

Executive Summary

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

On June 8, 2023, a Roadway Worker In-Charge (RWIC) and four members of an Automatic Train Control Maintenance (ATCM) crew were conducting a scheduled Preventative Maintenance Inspection (PMI) of the interlocking at Federal Center SW Station track 1 & 2. At 19:03 hours, the RWIC contacted the Office of Rail Operations Control Center (ROCC) Rail Traffic Controller (RTC) to request permission to access the roadway under Exclusive Track Occupancy (ETO) Local Signal Control (LSC) protection at Federal Center SW. At 19:04 hours, the RWIC was granted permission to take over the control of the Local Control Panel (LCP).

At 19:51 hours, the Rail Operations Information Control Center (ROIC) Specialist requested a Rail Supervisor respond to L'Enfant Plaza Station, track 2, to retrieve a cell phone from the roadway. At 20:05 hours, the Rail Supervisor at L'Enfant Plaza Station requested Foul Time (FT) to retrieve the cell phone from the roadway. The RTC notified the RWIC that the ROCC would need control of the LCP and for all personnel to stand by in a place of safety.

According to the Advanced Information Management System (AIMS) playback at 20:09 hours, the ROCC had control of the LCP. At 20:10 hours, the Rail Supervisor was granted FT on track 2 at L'Enfant Plaza Station.

At 20:13 hours, the Rail Supervisor relinquished FT, and simultaneously, Train ID 404 passed Lunar Signal D04-08 into the FT area. At the time of that incident, the LCP control message was displaying invalid. The RWIC and LCP Operator were removed from service. No injuries or damage was reported as a result of this incident.

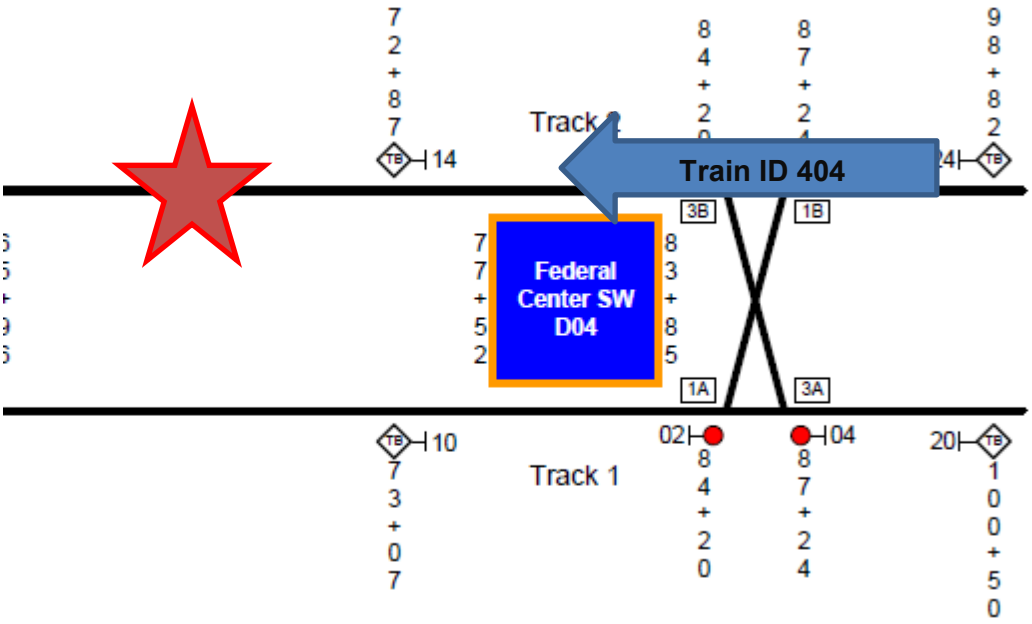
The probable cause of the Improper Roadway Worker Protection (RWP) event on June 8, 2023, at Federal Center SW Station, track 2, can be attributed to a failure in adhering to established procedures during the scheduled PMI of the interlocking. The premature takeover of the LCP by the Automatic Train Control Maintenance (ATCM) Local Control Panel Operator (LCPO) from the ROCC led to the incident.

The LCPO switched the control panel to the off position and returned it to the ROCC without ensuring that all personnel were in a place of safety, as they were still on the roadway under FT protection. This action resulted in the invalid status of the LCP control message when Train ID 404 passed the lunar signal D04-08 into the FT area, allowing the train to proceed through the interlocking unexpectedly.

Incident Site

Federal Center SW, interlocking track 1 & 2 center platform station.

Field Sketch/Schematics



The above depiction is not to scale.

Purpose and Scope

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

Investigative Methods

The investigative methodologies included the following:

- Site Assessment through document review]
- Formal Interviews – SAFE interviewed two individuals as part of this investigation. Interview included persons present at, during, and after the incident, those directly involved in the response process, and representatives from the Washington Metrorail Safety Commission (WMSC). SAFE interviewed the following individuals:
  - ATCM - LCPO
  - Button RTC
- Informal Interviews – Collected through conversations with individuals during the investigation to provide background and supporting information. Written statements were reviewed from personnel present during the event.
- Documentation Review – Collection of relevant work history information and process documentation contained in WMATA systems of record. These records include:

- Employee Training Procedures & Records
- Metrorail Safety Rules and Procedures Handbook (MSRPH)
- National Oceanic and Atmospheric Administration (NOAA)
- Rail Operations Control Center (ROCC) Incident Report

- System Data Recording Review – Collection of information contained in Metro Data Recording Systems. This data includes:
  - ARS (Audio Recording System) playback, including OPS 2 Radio & Phone OPS 2
  - Advanced Information Management System (AIMS)
  - Closed-Circuit Television (CCTV)

Investigation

On June 8, 2023, an RWIC and a four-member crew of ATCM workers were conducting a scheduled PMI of the interlocking at Federal Center SW Station tracks 1 & 2. At 19:03 hours, the RWIC contacted the ROCC RTC to request permission to access the roadway under ETO protection at Federal Center SW. At 19:04 hours, the RWIC was granted permission to take over the control of the LSC.

At 19:51 hours, the Office of ROIC Specialist requested a Rail Supervisor respond to L'Enfant Plaza Station, track 2, to retrieve a cell phone from the roadway. At 20:05 hours, the Rail Supervisor at L'Enfant Plaza Station requested FT to retrieve the cell phone from the roadway. The RTC notified the RWIC that the ROCC would need control of the LCP and for all personnel to stand by in a place of safety.

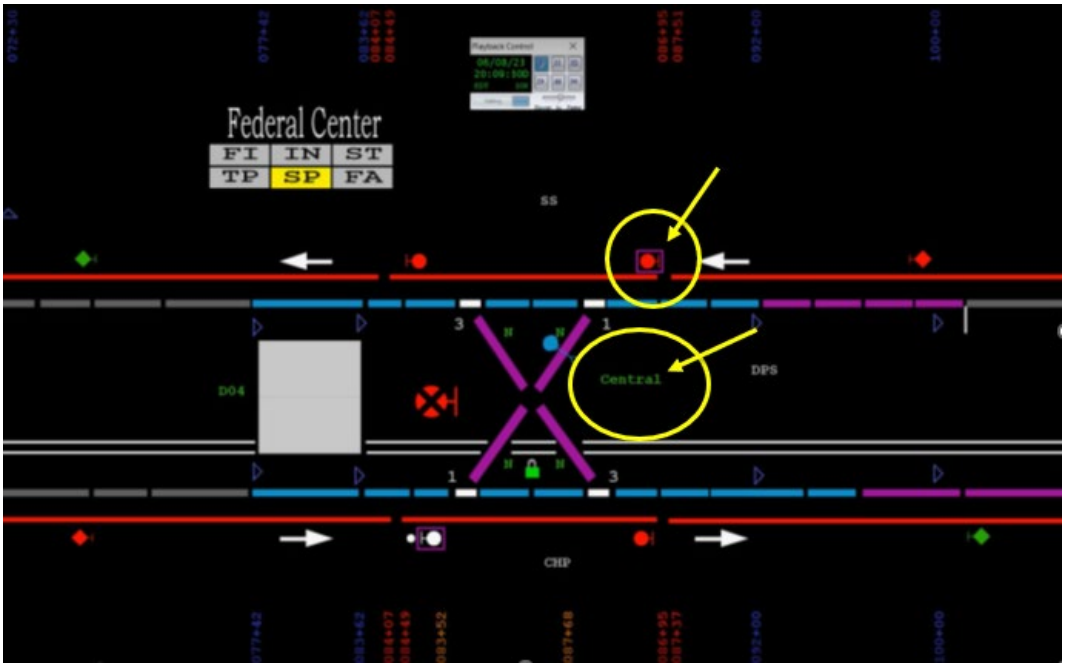


Figure 1 - AIMS depicting LCP in Central position and D04-08 signal is red protecting the FT area at 20:09 hours.

According to the AIMS playback at 20:09 hours, the ROCC had control of the LCP. At 20:10 hours, the Rail Supervisor was granted FT on track 2 at L'Enfant Plaza Station.

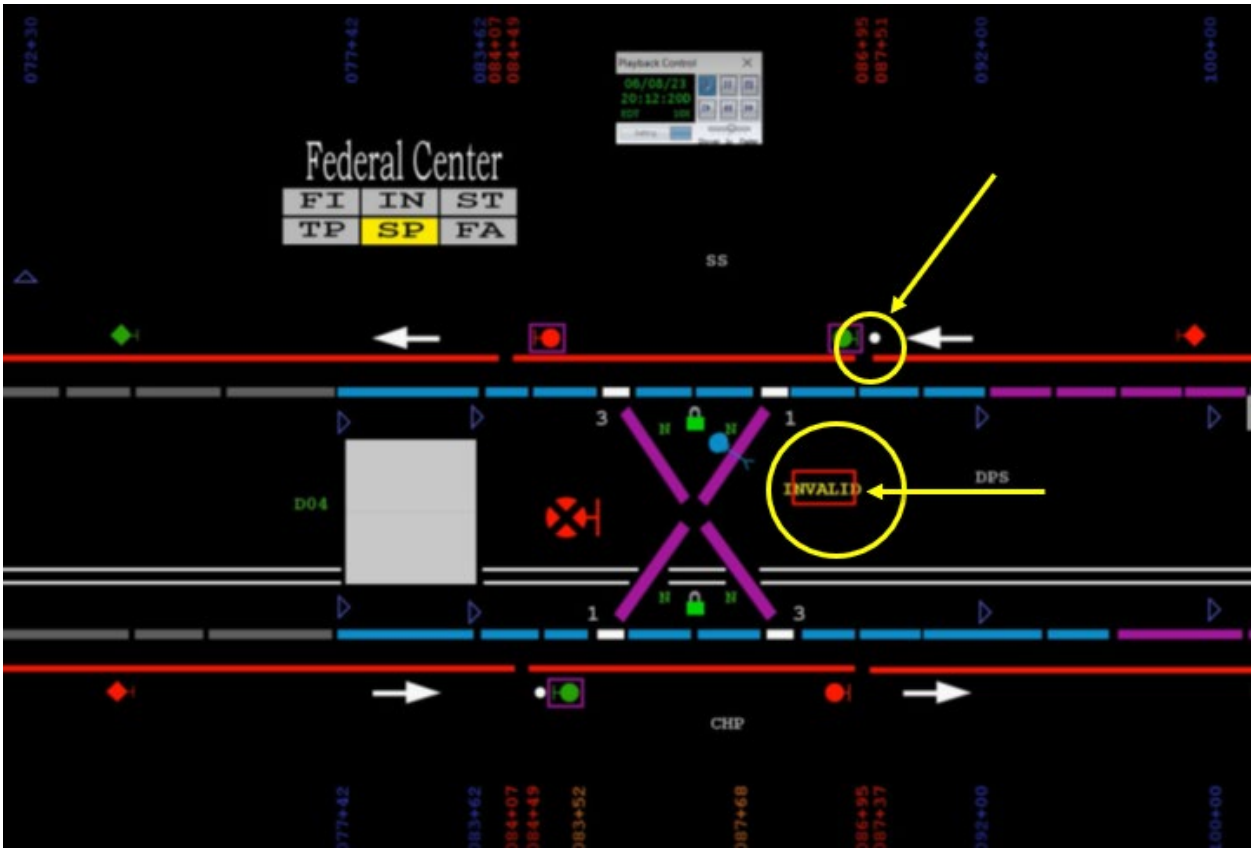


Figure 2 - AIMS depicting LSC in an Invalid Status and D04-08 signal is Lunar while the area is under FT and signals are at 20:12 hours.

According to the CCTV at 20:12 hours, the RTRA Supervisor is seen entering Track 2 roadway at L'Enfant Plaza to retrieve a cellphone.

Figure 3 - RTRA Supervisor on the roadway at 20:12 hours.

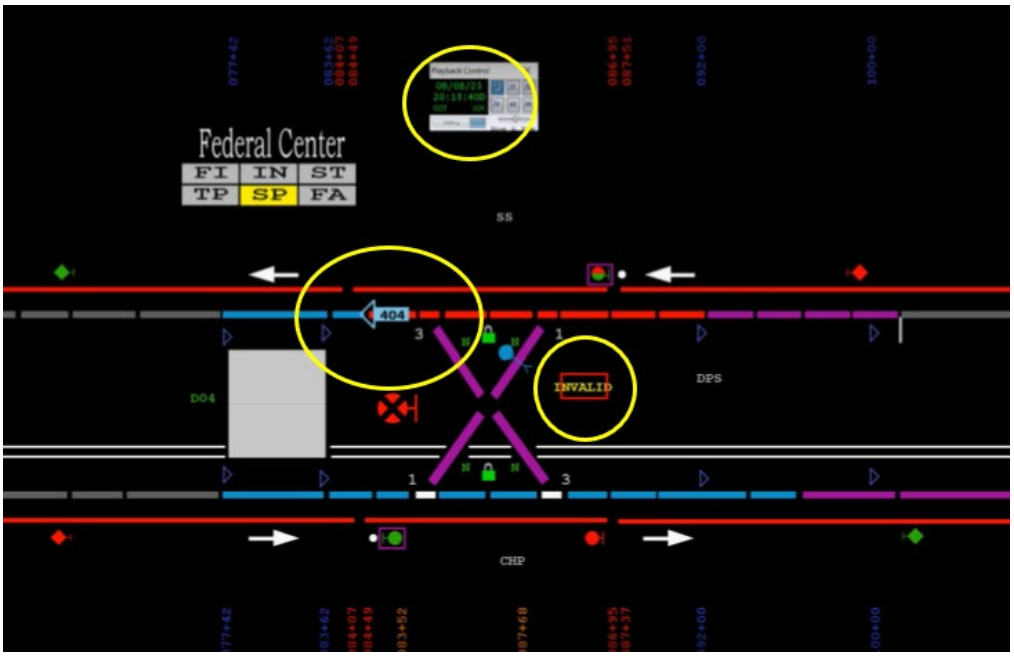


Figure 4 - AIMS depicting LCP in an Invalid Status as Train ID 404 passes through the FT area at 20:13 hours.

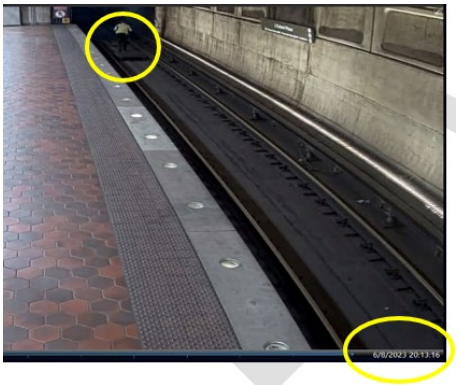


Figure 5 - RTRA Supervisor on the roadway at 20:13 hours.

Figure 6 - RTRA Supervisor clear from the roadway at 20:13:33 hours.

At 20:13 hours, the Rail Supervisor relinquished FT, and simultaneously, Train ID 404 passed D04-08 signal lunar into the FT area. At the time of that incident, the Control Panel indication on

AIMS displayed “invalid.” The RWIC and Local Control Panel Operator were removed from service. No injuries or damage were reported as a result of this incident.

Chronological Event Timeline

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

Time	Description
19:03:59 hours	RWIC: Requested permission to access the roadway for PMI of the interlocking at Federal Center SW Station with a crew of four. Radio RTC: Acknowledged and granted permission to take control of the panel. [Radio Ops 2]
19:04:45 hours	AIMS Event Log depicted D04 Interlocking Control CURRENT STATE = Local. [AIMS Event Log]
19:51:52 hours	ROIC: Requested a Rail Supervisor to respond to L’Enfant Plaza, track 2, to retrieve a cell phone from the roadway. [Phone ROIC/Ops2]
20:05:49 hours	Rail Supervisor: Requested FT to retrieve a cell phone from the roadway. Radio RTC: Notified RWIC that ROC needed control of the panel for FT that would last for five minutes. Requested all personnel to stand clear in a place of safety once the control panel was turned to ROC. RWIC: Acknowledged and confirmed with 100% repeat back. [Radio Ops 2]
20:07:57 hours	Rail Supervisor: Notified Buttons RTC that they needed a vest and five minutes to retrieve one from the kiosk before they could go wayside under their FT. [Phone Ops2]
20:08:04 hours	Radio RTC: Requested confirmation that RWIC and crew are standing in a safe location. RWIC: Acknowledged and confirmed with 100% repeat back. [Radio Ops 2]
20:08:07 hours	AIMS Event Log depicted D04 Interlocking Control CURRENT STATE = Central. [AIMS Event Log]
20:09 hours	AIMS Playback depicted LCP in ROCC’s control, and the D04-08 signal is red, protecting the FT area. [AIMs]
20:10:46 hours	Rail Supervisor: Reported they were standing by, ready for FT. Radio RTC: Granted FT to the Rail Supervisor on track 2 only at L’Enfant Plaza Station. Rail Supervisor: Acknowledged and confirmed with 100% repeat back. Radio Ops 2]
20:12:00 hours	CCTV depicted RTRA Supervisor on the roadway. [CCTV]
20:12:04 hours	AIMS Event Log depicted D04 Interlocking Control CURRENT STATE = Invalid 11. [AIMS Event Log]
20:12:05 hours	AIMS Event Log depicted D04 Interlocking Control CURRENT STATE = Local. [AIMS Event Log]
20:12:09 hours	AIMS Event Log depicted D04 Interlocking Control CURRENT STATE = Invalid 00. [AIMS Event Log]
20:13 hours	AIMS depicted Train ID 404 entering the Federal Center SW platform and FT area. [AIMS]
20:13:19 hours	Rail Supervisor: Relinquished FT. Radio RTC: Acknowledged and confirmed with 100% repeat back. [Radio Ops 2]
20:13:33 hours	CCTV depicted RTRA Supervisor clear from the roadway. [CCTV]
20:13:36 hours	Buttons RTC: Requested Assistant Operations Manager to report the Ops 2 console. [Phone Ops2/Rail3]

Time	Description
20:20:02 hours	Radio RTC: Requested the RWIC to return the speed couplers to normal speeds. [Radio/Ops 2]
20:18:00 hours	Buttons RTC: Notified MOC Controller that the RWIC needs to clear the roadway and return to the LCP to the ROC due to an RTRA Supervisor being granted FT at L'Enfant Plaza Station, track 2 to retrieve a phone from the roadway. The AIMS control displayed "Central then Invalid," followed by a lunar signal at D04 08, allowing a train to pass through the interlocking. [Phone Ops2/ MOC]
20:21:48 hours	MOC Controller: Confirms that the RWIC has turned to the control panel to the ROC and requested further instructions once the train has cleared their location. Buttons RTC: Request the RWIC and crew to clear the work area. [Phone Ops2/MOC]

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

Automated Information Management System (AIMS)

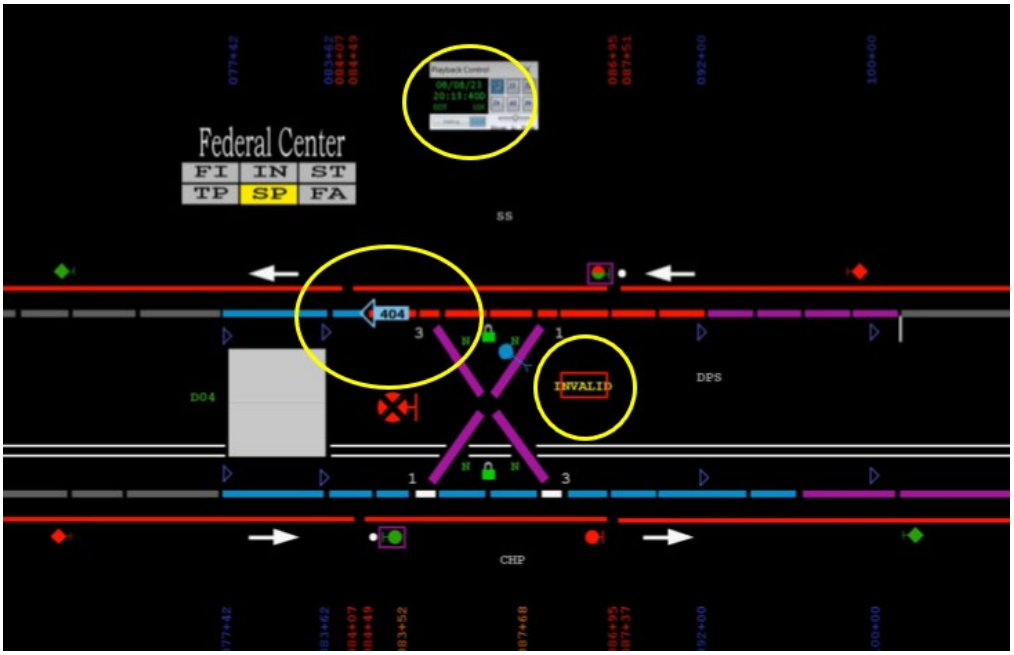
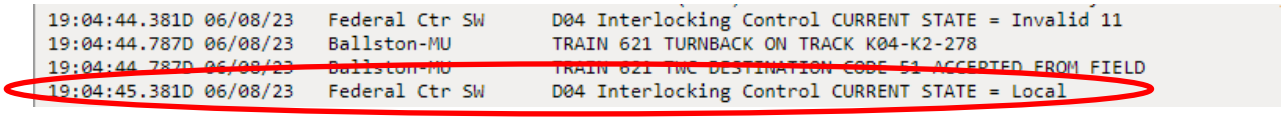
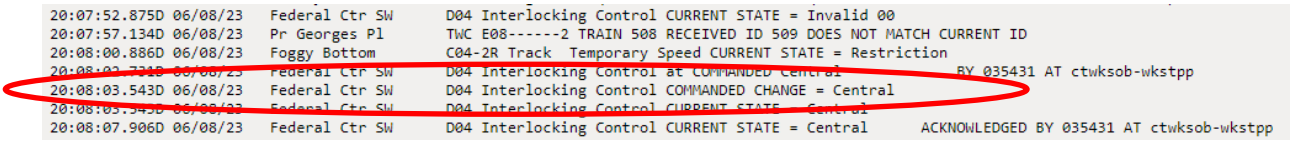


Figure 7 - AIMS depicting LCP in an Invalid Status as Train ID 404 passes through the FT area at 20:13 hours

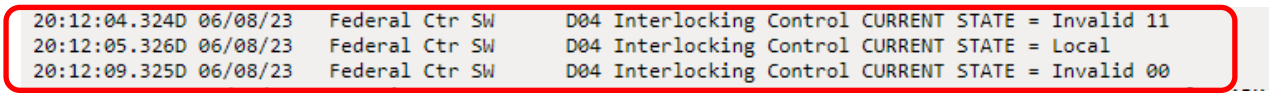
AIMS Event Logs



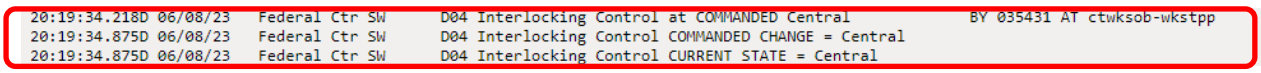
```
19:04:44.381D 06/08/23   Federal Ctr SW      D04 Interlocking Control CURRENT STATE = Invalid 11
19:04:44.787D 06/08/23   Ballston-MU         TRAIN 621 TURNBACK ON TRACK K04-K2-278
19:04:44.787D 06/08/23   Ballston-MU         TRAIN 621 TWC DESTINATION CODE 51 ACCEPTED FROM FIELD
19:04:45.381D 06/08/23   Federal Ctr SW      D04 Interlocking Control CURRENT STATE = Local
```



```
20:07:52.875D 06/08/23   Federal Ctr SW      D04 Interlocking Control CURRENT STATE = Invalid 00
20:07:57.134D 06/08/23   Pr Georges Pl       TWC E08------2 TRAIN 508 RECEIVED ID 509 DOES NOT MATCH CURRENT ID
20:08:00.886D 06/08/23   Foggy Bottom        C04-2R Track  Temporary Speed CURRENT STATE = Restriction
20:08:03.543D 06/08/23   Federal Ctr SW      D04 Interlocking Control COMMANDED CHANGE = Central
20:08:07.906D 06/08/23   Federal Ctr SW      D04 Interlocking Control CURRENT STATE = Central      ACKNOWLEDGED BY 035431 AT ctwksob-wkstpp
```



```
20:12:04.324D 06/08/23   Federal Ctr SW      D04 Interlocking Control CURRENT STATE = Invalid 11
20:12:05.326D 06/08/23   Federal Ctr SW      D04 Interlocking Control CURRENT STATE = Local
20:12:09.325D 06/08/23   Federal Ctr SW      D04 Interlocking Control CURRENT STATE = Invalid 00
```



```
20:19:34.218D 06/08/23   Federal Ctr SW      D04 Interlocking Control at COMMANDED Central          BY 035431 AT ctwksob-wkstpp
20:19:34.875D 06/08/23   Federal Ctr SW      D04 Interlocking Control COMMANDED CHANGE = Central
20:19:34.875D 06/08/23   Federal Ctr SW      D04 Interlocking Control CURRENT STATE = Central
```

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

The Office of Radio Communication technicians conducted a comprehensive radio transmission and receive operational check from Federal Center SW to L'Enfant Plaza Station on tracks 1 & 2. COMR Technicians reported loud and clear radio checks. Radio coverage does not go out of range at any time from Federal Center SW to L'Enfant Plaza Station. However, both tracks did have uplink issues in the tunnel and on the tracks. A recommendation to scan or Preventative Maintenance Inspections (PMI) initiated and completed.[1]

Interview Findings

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

ATCM Local Control Panel Operator (LCPO)

- LCPO was responsible for the panel in the Train Control Room (TCR) during the incident.
- They received a request from ROCC to give the panel back around 19:45 hours.
- LCPO switched the panel to the off position and returned it to ROCC.
- They did not hear radio communication between ROCC and the RWIC; they only used the talk around radio channel to communicate with RWIC.
- No trains continued through the area after the incident.
- LCPO confirmed that the automatic lunar signal setting does not occur when control is transferred from LCPO to ROCC.
- LCPO canceled all the auxiliary calls and returned the panel to ROCC before they were instructed to do so.

[1] Completed Work Order #18003197

Weather

On June 8, 2023, at the time of the incident, NOAA recorded the temperature at 73 ° F. Weather was not a contributing factor in this incident (Weather source: NOAA – Location: Washington, D.C.

Related Rules and Procedures

MSRPH RULE - 5.13.7

Exclusive Track Occupancy (ETO) Exclusive Track Occupancy (ETO) may be issued only by the Rail Traffic Controller to employees who holds a current Level 4 RWP qualification. ETO may be used as a method of establishing working limits on controlled track where the track within working limits shall be placed under the control of one RWIC by either:

a. Authority issued to the RWIC by the RTC who controls train movements on the track, or
b. The RWIC causing fixed signals at each entrance to the working limits to display an aspect indication “Stop.” (Local Signal Control)

Human Factors

Fatigue

SAFE evaluated conditions at the time of the incident to distinguish whether evidence of fatigue was present. No sign of fatigue was indicated by the available data. The LCPO reported feeling fully alert at the time of the incident. The LCPO reported experiencing no symptoms of fatigue in the time leading up to the incident.

Fatigue Risk

SAFE evaluated incident data for fatigue risk factors. Risk factors for fatigue were not present. The incident time of day did not suggest an increased risk of fatigue-related impairment. The LCPO did not report any variation in the sleep schedule in the days leading up to the incident. The LCPO worked the evening shift in the days leading up to the incident. The LCPO was awake for 10 hours and 18 minutes at the time of the incident. The LCPO reported 9 hours of sleep in the 24 hours preceding the incident. The off-duty period was 15 hours which provided an opportunity for 7-9 hours of sleep. This was more than the employee's usual workday sleep durations. The LCPO reported no issues with sleep. The employee worked the evening shift in the days leading up to the incident.

Post-Incident Toxicology Testing

WMATA's Drug and Alcohol Program determined that the LCPO and RWIC complied with and was not in violation of the Drug and Alcohol Policy and Testing Program 7.7.3/6.

Findings

- ATCM personnel were operating under ETO-LSC prior to the incident.
- LCPO was RWP Level 2 certified when the incident occurred and became RWP Level 4 certified on 6/16/2023.
- The Rail Supervisor received authorization at L'Enfant Plaza to retrieve a cell phone from the track area.
- At the moment when the RTRA Supervisor released FT, Signal D04-08 exhibited a Lunar Signal indication, and the LCP showed an Invalid status.
- All personnel involved in the operation confirmed their understanding of instructions by providing a complete and accurate repeat back of the information.
- No communications were found indicating for the RWIC to retake control of the LCP after the authorization for FT was granted.

Immediate Mitigation to Prevent Recurrence

- The RWIC and LCPO were removed from service.
- The LCP was transferred to ROCC.

Probable Cause Statement

The probable cause of the Improper RWP event on June 8, 2023, can be attributed to the ATCM failure to adhere to established procedures. Specifically, the LCPO prematurely took control of the LCP from ROCC while personnel were still on the roadway under foul time protection.

Recommended Corrective Actions

Corrective Action Code	Description	Responsible Party	Estimated Completion Date
109072MX _SAFECAPS _ATCM_001	Develop Lessons Learned on effective communication and this incident.	ATCM/SRC	Completed
109072MX _SAFECAPS _ATCM_002	Ensure ATC Maintenance personnel are made aware of the reported violation.	ATCM/SRC	Completed

Appendices

Appendix A – Interview Summaries

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

ATCM Local Control Panel Operator

On June 8th, at approximately 8:11 PM, a Safety Investigator conducted an interview with the ATCM Local Control Panel Operator (LCPO) to gather pertinent information regarding the incident that transpired during the interlocking PMI. The ATCM LCPO was specifically queried about their assigned responsibilities during the incident and the sequence of events preceding it.

The ATCM LCPO stated that they were in the TCR room and in charge of the panel while the crew was working on the switches wayside. They mentioned that they started working around 19:10 hours. The Safety Investigator inquired if they were instructed to switch the panel over to central, to which the ATCM LCPO responded that they usually received permission from central before making the switch. On that day, they received a request from the RWIC asking to give the panel back to central.

The ATCM LCPO explained that they followed the normal procedure and switched the key to the off position, returning the panel to central. They did not hear any radio communication between central and the RWIC, as their only communication was with the RWIC.

When asked if they knew the channel they were on, the ATCM stated that they believed they mostly used the talk-around channel. The Safety Investigator then asked if they were instructed to return the panel back to them after giving it to central, to which the ATCM replied no. They mentioned receiving a call from MOC asking if they still had control of the panel, to which they informed them that central had the panel.

The ATCM LCPO clarified that they did not turn the panel back over to central at any other time, and no trains continued through the area after the incident. After the incident, everyone cleared the room as they no longer had access to the panel. They changed the switch's speed couplers and left the room.

Regarding the AIM system, the Safety Investigator mentioned that ROCC reported a lunar signal issue. The ATCM LCPO was asked if it was normal for the system to fleet a lunar signal and switch to central control when turning the panel over. The ATCM LCPO replied that they usually canceled all the aux calls and fleet the traffic before returning the panel to central. They confirmed there was no time when they turned control back over to the TCR.

Appendix B – ROCC Incident Report (Redacted)

View Approved Incident Report

INCIDENT ID: 2023159BLUE4

DATE	TIME	LINE	ITEM
2023-06-08	2011	Blue	4

LOCATION (STATION/YARD)	LOCATION/CHAIN MARKER (If Applicable)	REPORTED BY
D04		Rail Traffic Controller [redacted]

TRAIN ID	DIRECTION	TRACK NUMBER	DEPTS NOTIFIED
404	O/B	2	Everbridge Alert/Messaging

CAR NUMBERS (XXXX-XXXX)
Lead Car

-	-	-	-
Caused Issue ☐	Caused Issue ☐	Caused Issue ☐	Caused Issue ☐

TRBL CODE	RESP CODE
RWPV-RWP VIOLATION	ATC

TYPE INCIDENT
RWP Violation

ACTION PLAN
Investigation Pending

DELAYS IN MINUTES

LINE	INCIDENT	TRAIN	TOTAL DURATION
0	0	0	0

TRIPS MODIFIED

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

FIVE PRIMARY CONSOLE INDICATIONS

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

Figure 8 - ROCC Incident Report (redacted) page 1 of 2.

View Approved Incident Report

INCIDENT CHRONOLOGY	
TIME	**DESCRIPTION**
2006	RTRA Supervisor [redacted] requested foul time at (D03) L'Enfant Plaza Track #2 to retrieve a customers cellphone from the roadway. ATC [redacted] was in the TCR on the panel under ETO protection and ATC [redacted] was performing an interlocking inspection at (D04) Federal Center Tracks #1 and #2. ROCC instructed ATC [redacted] and all personnel to stand by and stand clear in a place of safety and to relinquish the panel to Central for foul time. ATC [redacted] gave a 100% repeat back and followed all of ROCC's instructions. ROCC had control of the interlocking panel at (D04) Federal Triangle and canceled D04-08 signal, prohibit exits on D04-06 and D04-02.
2011	RTRA Supervisor [redacted] was granted foul time for track #2 at (D03) L'Enfant Plaza to retrieve the customers cell phone from the roadway.
2013	RTRA Supervisor [redacted] relinquished the foul time. The AIM screen displayed a lunar at D04-08 signal that permitted a train to enter into the protected foul time area. The AIM screen further displayed local control was retrieved by [redacted] in the train control room.
0000	NOTE: ATC [redacted] and all personnel were removed from service pending investigation

MAXIMO TICKET#
8675504

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

SUPERINTENDENTS OR ASSISTANTS SECTION

ADDITIONAL FOLLOW-UP CORRECTIVE ACTIONS OR REMARKS

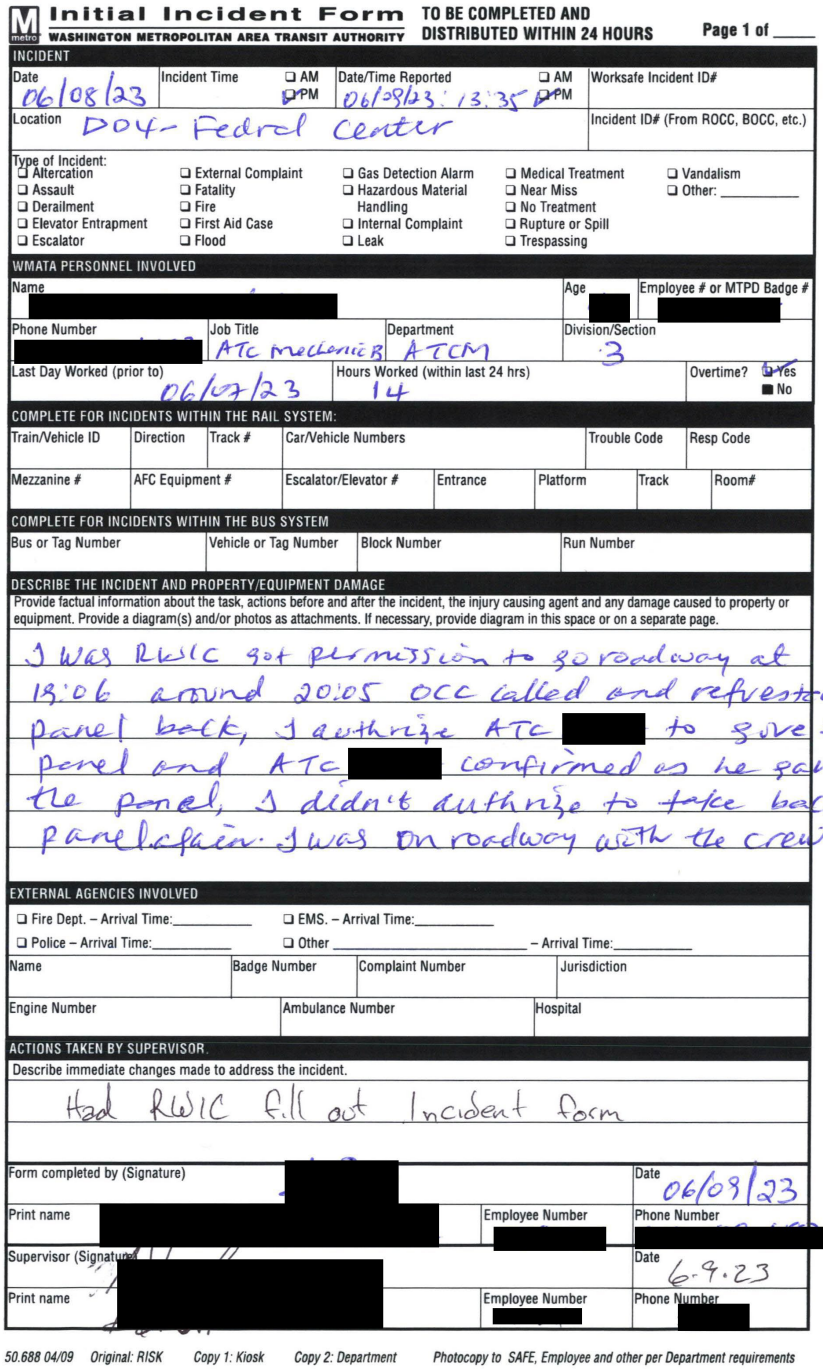
FOLLOW-UP INFORMATION OBTAINED FROM SUPPORT DEPARTMENTS

NOTIFICATIONS/PAGE GROUPS #1/CEO ☐ #2/DGM &BELOW ■

ADDITIONAL NOTIFICATIONS MADE BY PHONE

APPROVED BY	NAME	CLICK TO SIGN
REPORT APPROVED BY SUPT. OR ASST SUPT.	[redacted]	✓

Figure 9 - ROCC Incident Report (redacted) page 2 of 2.



Initial Incident Form — WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY — TO BE COMPLETED AND DISTRIBUTED WITHIN 24 HOURS — Page 1 of ____

INCIDENT

Date	Incident Time	Date/Time Reported	Worksafe Incident ID#
06/08/23	❑ AM ☒ PM	06/09/23 13:35 ☒ PM	

Location: D04- Federal Center — Incident ID# (From ROCC, BOCC, etc.)

Type of Incident:
- ❑ Altercation
- ❑ Assault
- ❑ Derailment
- ❑ Elevator Entrapment
- ❑ Escalator
- ❑ External Complaint
- ❑ Fatality
- ❑ Fire
- ❑ First Aid Case
- ❑ Flood
- ❑ Gas Detection Alarm
- ❑ Hazardous Material Handling
- ❑ Internal Complaint
- ❑ Leak
- ❑ Medical Treatment
- ❑ Near Miss
- ❑ No Treatment
- ❑ Rupture or Spill
- ❑ Trespassing
- ❑ Vandalism
- ❑ Other: _____

WMATA PERSONNEL INVOLVED

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

Phone Number	Job Title	Department	Division/Section
[redacted]	ATC Mechanic B	ATCM	3

Last Day Worked (prior to)	Hours Worked (within last 24 hrs)	Overtime?
06/07/23	14	❑ Yes ■ No

COMPLETE FOR INCIDENTS WITHIN THE RAIL SYSTEM:

Train/Vehicle ID	Direction	Track #	Car/Vehicle Numbers	Trouble Code	Resp Code

Mezzanine #	AFC Equipment #	Escalator/Elevator #	Entrance	Platform	Track	Room#

COMPLETE FOR INCIDENTS WITHIN THE BUS SYSTEM

Bus or Tag Number	Vehicle or Tag Number	Block Number	Run Number

DESCRIBE THE INCIDENT AND PROPERTY/EQUIPMENT DAMAGE

Provide factual information about the task, actions before and after the incident, the injury causing agent and any damage caused to property or equipment. Provide a diagram(s) and/or photos as attachments. If necessary, provide diagram in this space or on a separate page.

I WAS RWIC got permission to go roadway at 13:06 around 20:05 OCC called and refvested to give panel back, I authrize ATC [redacted] to give back panel and ATC [redacted] confirmed as he gave back the panel, I didn't authrize to take back the panel again. I was on roadway with the crew.

EXTERNAL AGENCIES INVOLVED

- ❑ Fire Dept. – Arrival Time:_____
- ❑ EMS. – Arrival Time:_____
- ❑ Police – Arrival Time:_____
- ❑ Other _____ – Arrival Time:_____

Name	Badge Number	Complaint Number	Jurisdiction

Engine Number	Ambulance Number	Hospital

ACTIONS TAKEN BY SUPERVISOR

Describe immediate changes made to address the incident.

Had RWIC fill out Incident form

Form completed by (Signature)		Date
[redacted]		06/09/23

Print name	Employee Number	Phone Number
[redacted]	[redacted]	[redacted]

Supervisor (Signature)		Date
[redacted]		6.9.23

Print name	Employee Number	Phone Number
[redacted]	[redacted]	[redacted]

50.688 04/09 Original: RISK Copy 1: Kiosk Copy 2: Department Photocopy to SAFE, Employee and other per Department requirements

Figure 10 - RWIC Incident Report redacted.

Initial Incident Form

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY

TO BE COMPLETED AND DISTRIBUTED WITHIN 24 HOURS

Page 1 of 1

INCIDENT

Date	Incident Time	Date/Time Reported	Worksafe Incident ID#
06/08/2023	20:30 ☐ AM ■ PM	06/09/23 14:40 ☐ AM ■ PM	

Location: D04 Federal Center SW

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

Type of Incident:

☐ Altercation	☐ External Complaint	☐ Gas Detection Alarm	☐ Medical Treatment	☐ Vandalism
☐ Assault	☐ Fatality	☐ Hazardous Material Handling	☐ Near Miss	☐ Other: _____
☐ Derailment	☐ Fire		☐ No Treatment	
☐ Elevator Entrapment	☐ First Aid Case	■ Internal Complaint	☐ Rupture or Spill	
☐ Escalator	☐ Flood	☐ Leak	☐ Trespassing	

WMATA PERSONNEL INVOLVED

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

Phone Number	Job Title	Department	Division/Section
[redacted]	ATC mechanic	Signaling	3

Last Day Worked (prior to)	Hours Worked (within last 24 hrs)	Overtime?
06/08/2023	8	☐ Yes ■ No

COMPLETE FOR INCIDENTS WITHIN THE RAIL SYSTEM:

Train/Vehicle ID	Direction	Track #	Car/Vehicle Numbers	Trouble Code	Resp Code

Mezzanine #	AFC Equipment #	Escalator/Elevator #	Entrance	Platform	Track	Room#

COMPLETE FOR INCIDENTS WITHIN THE BUS SYSTEM

Bus or Tag Number	Vehicle or Tag Number	Block Number	Run Number

DESCRIBE THE INCIDENT AND PROPERTY/EQUIPMENT DAMAGE

Provide factual information about the task, actions before and after the incident, the injury causing agent and any damage caused to property or equipment. Provide a diagram(s) and/or photos as attachments. If necessary, provide diagram in this space or on a separate page.

I was on the panel while the crew was wayside doing switch PMI. I receive a radio message from the rick asking to give panel back to Central. I proceeded to fleet traffic on both sides and took the key off the panel.

EXTERNAL AGENCIES INVOLVED

☐ Fire Dept. – Arrival Time:_____ ☐ EMS. – Arrival Time:_____

☐ Police – Arrival Time:_____ ☐ Other _____ – Arrival Time:_____

Name	Badge Number	Complaint Number	Jurisdiction

Engine Number	Ambulance Number	Hospital

ACTIONS TAKEN BY SUPERVISOR.

Describe immediate changes made to address the incident.

Form completed by (Signature)		Date
[redacted]		06/09/2023
Print name	**Employee Number**	**Phone Number**
[redacted]		
Supervisor (Signature)		**Date**
Print name	**Employee Number**	**Phone Number**

50.688 04/09 Original: RISK Copy 1: Kiosk Copy 2: Department Photocopy to SAFE, Employee and other per Department requirements

Figure 11 - LCPO Incident Report redacted.

Appendix D – Lessons Learned

RAIL, Signaling

Lessons Learned

Date 6/8/2023

Reported ATCM Safety Violation: Local Control Panel Operator gained control of the LCP without authorization

INCIDENT SUMMARY:

While the adjacent area was being protected by Foul Time, ATCM gained control of the LCP without authorization from ROCC. A train proceeded with a Lunar signal into the Foul Time protected area causing a potential near-miss situation.

There were no reported injuries or equipment damages as a result of this incident.

INVESTIGATION FOUND:

- **At 20:12, the Local Control Panel Operator had taken back control of the LCP without authorization.**
- **The Local Control Panel Operator was not monitoring radio communications between ROCC and the RWIC.**

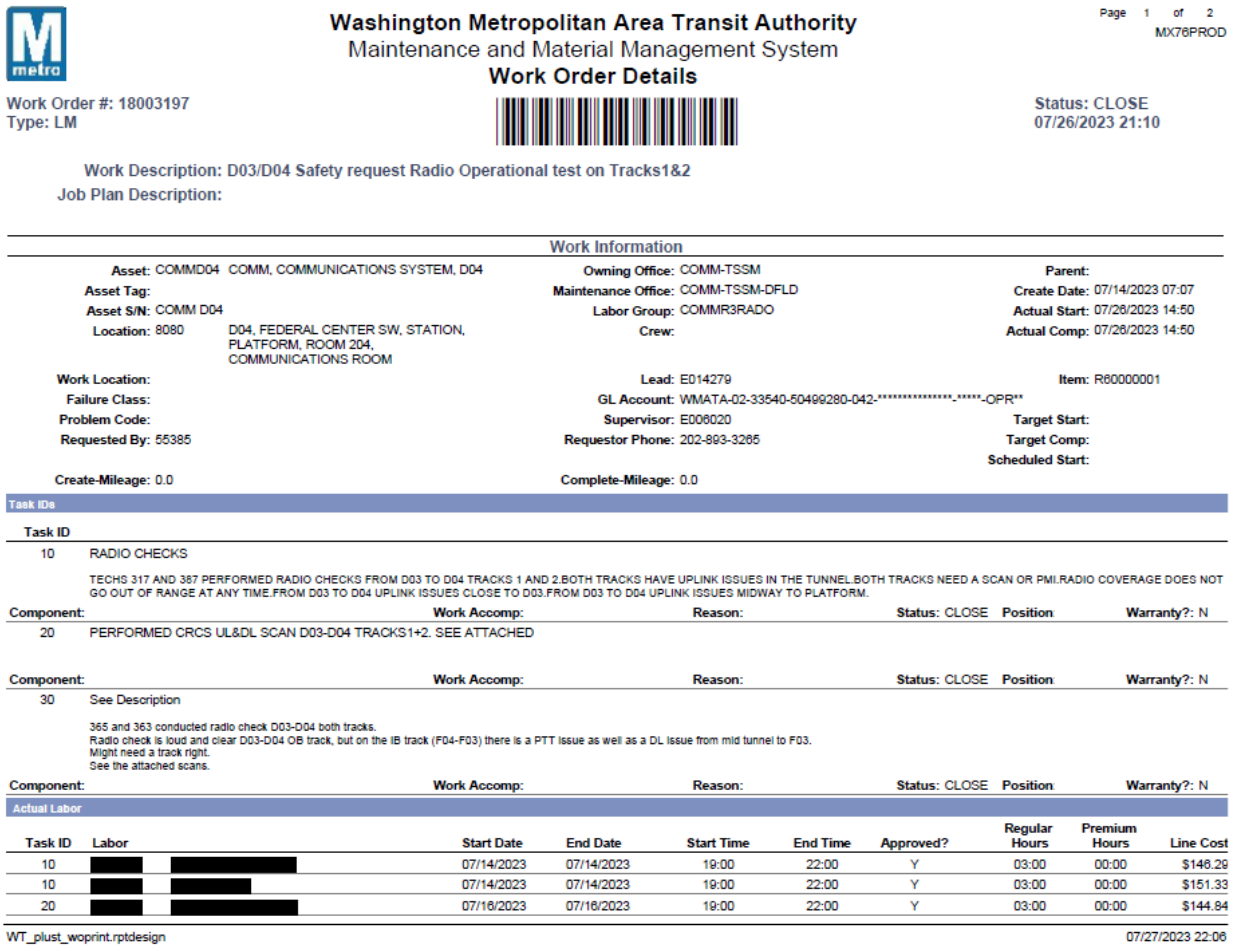
What happened…	*What should have happened…*
- On Thursday, June 8, 2023, at 19:04, an ATCM crew was granted permission to take control of the LCP from ROCC and perform a routine PMI within the interlocking. - During the performance of the PMI, ROCC requested to temporarily take back control of the LCP to grant Foul Time protection to a Rail Supervisor. - At 20:09, the ATCM crew was standing by in a place of safety and relinquished control of the LCP. - At 20:10, the Rail Supervisor at an adjacent station was granted Foul Time protection by ROCC. - At 20:13, the Rail Supervisor relinquished Foul Time, but simultaneously Train 404 crossed the interlocking with a Lunar signal into the Foul Time protected area.	1. RWIC requests ETO to control the LCP. 2. RWIC performs a repeat back word for word prior to directing the LCP Operator to take control of the panel. 3. ATC cancels all approaching signals to ensure the area is protected by RED SIGNALS (remove all Automatic Signals, if applicable). 4. ATC proceeds to the work area. 5. ATC performs work until a train approaches. 6. ATC clears up and moves to a place of safety. 7. RWIC advises the LCP Operator that the crew is in a place of safety and instructs the LCP Operator that it is safe to set a route. 8. Once a route is set and the signal is Lunar, ATC gives the train operator a proceed hand signal while standing in a place of safety. 9. ATC completes work assignments. 10. ATC clears the roadway. 11. RWIC contacts ROCC to relinquish ETO and advises that all personnel and equipments are clear of the roadway.

RECOMMENDATIONS

- ✓ Ensure ATC Maintenance personnel are made aware of the reported violation.
- ✓ Ensure this Lessons Learned regarding this event is developed and distributed to all ATCM.

Figure 12 - ATCM Lessons Leaned

Appendix E – Work Order



Page 1 of 2
MX76PROD

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

Work Order #: 18003197
Type: LM

Status: CLOSE
07/26/2023 21:10

Work Description: D03/D04 Safety request Radio Operational test on Tracks1&2
Job Plan Description:

Work Information

Asset:	COMMD04 COMM, COMMUNICATIONS SYSTEM, D04	**Owning Office:**	COMM-TSSM	**Parent:**	
Asset Tag:		**Maintenance Office:**	COMM-TSSM-DFLD	**Create Date:**	07/14/2023 07:07
Asset S/N:	COMM D04	**Labor Group:**	COMMR3RADO	**Actual Start:**	07/26/2023 14:50
Location:	8080 D04, FEDERAL CENTER SW, STATION, PLATFORM, ROOM 204, COMMUNICATIONS ROOM	**Crew:**		**Actual Comp:**	07/26/2023 14:50
Work Location:		**Lead:**	E014279	**Item:**	R60000001
Failure Class:		**GL Account:**	WMATA-02-33540-50499280-042-**********-*****-OPR**		
Problem Code:		**Supervisor:**	E006020	**Target Start:**	
Requested By:	55385	**Requestor Phone:**	202-893-3265	**Target Comp:**	
				Scheduled Start:	
Create-Mileage:	0.0	**Complete-Mileage:**	0.0		

Task IDs

Task ID	
10	RADIO CHECKS

TECHS 317 AND 387 PERFORMED RADIO CHECKS FROM D03 TO D04 TRACKS 1 AND 2.BOTH TRACKS HAVE UPLINK ISSUES IN THE TUNNEL.BOTH TRACKS NEED A SCAN OR PMI.RADIO COVERAGE DOES NOT GO OUT OF RANGE AT ANY TIME.FROM D03 TO D04 UPLINK ISSUES CLOSE TO D03.FROM D03 TO D04 UPLINK ISSUES MIDWAY TO PLATFORM.

Component:	Work Accomp:	Reason:	Status: CLOSE	Position:	Warranty?: N
20	PERFORMED CRCS UL&DL SCAN D03-D04 TRACKS1+2. SEE ATTACHED				
30	See Description				

365 and 363 conducted radio check D03-D04 both tracks.
Radio check is loud and clear D03-D04 OB track, but on the IB track (F04-F03) there is a PTT issue as well as a DL issue from mid tunnel to F03.
Might need a track right.
See the attached scans.

Actual Labor

Task ID	Labor	Start Date	End Date	Start Time	End Time	Approved?	Regular Hours	Premium Hours	Line Cost
10	[redacted]	07/14/2023	07/14/2023	19:00	22:00	Y	03:00	00:00	$146.29
10	[redacted]	07/14/2023	07/14/2023	19:00	22:00	Y	03:00	00:00	$151.33
20	[redacted]	07/16/2023	07/16/2023	19:00	22:00	Y	03:00	00:00	$144.84

WT_plust_woprint.rptdesign 07/27/2023 22:06

Figure 13 - COMR completed Work Order page 1 of 2.

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

Work Order #: 18003197
Type: LM

Status: CLOSE
07/26/2023 21:10

Work Description: D03/D04 Safety request Radio Operational test on Tracks1&2
Job Plan Description:

Actual Labor

Task ID	Labor	Start Date	End Date	Start Time	End Time	Approved?	Regular Hours	Premium Hours	Line Cost
20	[redacted]	07/16/2023	07/16/2023	19:00	22:00	Y	03:00	00:00	$147.73
30	[redacted]	07/26/2023	07/26/2023	11:00	14:00	Y	03:00	00:00	$147.01
30	[redacted]	07/26/2023	07/26/2023	11:00	14:00	Y	03:00	00:00	$145.56
						Total Actual Hour/Labor:	18:00	00:00	$882.76

Failure Reporting

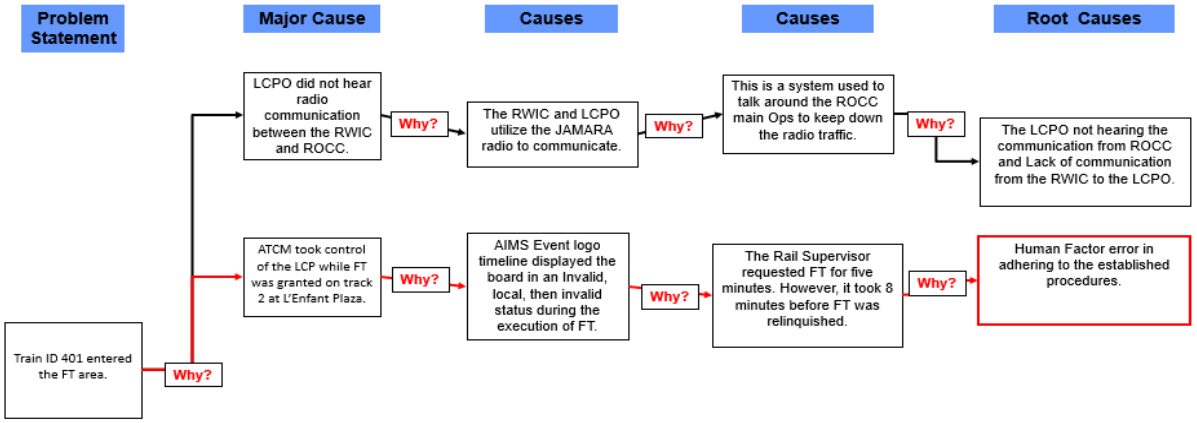
Cause	Remedy	Supervisor	Remark Date
		[redacted]	07/26/2023

Remarks: D-Route D03/D04 both tracks are loud and clear, F03/f04 has been secheduled for track rights

WT_plust_woprint.rptdesign 07/27/2023 22:06

Figure 14 - COMR completed Work Order page 1 of 2.

Appendix F – Why-Tree Analysis



Root Cause Analysis

Figure 15 - Why-Tree Analysis.

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

FINAL REPORT OF INVESTIGATION A&I E23639

Date of Event:	September 12, 2023
Type of Event:	O-23 Improper Roadway Worker Protection (RWP)
Incident Time:	01:22 Hours
Location:	Between Rosslyn Station and Court House Station – CM K2 148+00
Time and How received by SAFE:	03:00 Hours, Mission Assurance Coordinator (MAC)
WMSC Notification Time:	03:38 Hours
Responding Safety Officers:	None
Rail Vehicle:	None
Injuries:	None
Damage:	None
Emergency Responders:	None
SMS I/A Incident Number:	20230912#111329MX

Between Rosslyn Station and Court House Station (CM K2 148+00) – Improper RWP

September 12, 2023

Table of Contents

Abbreviations and Acronyms

AIMS	Advanced Information Management System
ARS	Audio Recording System
ATC	Automatic Train Control
CCTV	Closed-Circuit Television.
CM	Chain Marker
FT	Foul Time
GOTRS	General Orders & Track Rights
MOC	Maintenance Operations Center
MOR	Metrorail Operating Rulebook
NOAA	National Oceanic and Atmospheric Administration
RTC	Rail Traffic Controller
RTRA	Office of Rail Transportation
ROCC	Rail Operations Control Center
RWIC	Roadway Worker In-Charge
SAFE	Department of Safety
SMNT	Office of Systems Maintenance
SMS	Safety Measurement System
TRST	Office of Track and Structure
WMATA	Washington Metropolitan Area Transit Authority
WMSC	Washington Metrorail Safety Commission

Executive Summary

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

On Tuesday, September 12, 2023, at 01:22 hours, an Office of Systems Maintenance (SMNT) Communication Technician placed a shunt at between Rosslyn Station and Court House Station on track 2 at Chain Marker (CM) K2 148+00, outside of their established work area and without Foul Time (FT) from the Rail Operation Control Center (ROCC) Rail Traffic Controller (RTC).

The Office of Track and Structures (TRST) Roadway Worker In-Charge (RWIC) had the General Orders & Track Rights System (GTORS) rights to the work area between Foggy Bottom Station and Rosslyn Station at CM 070+00 to 150+75, tracks 1 & 2. The Communication Technician was part of a piggyback crew under a Crew Leader in the work area at Rosslyn Station (C05). While assisting with the work area set up at Rosslyn Station, the Communication Technician placed a shunt at CM K2 148+00 for additional protection due to the diverging track. Switch 3 was aligned against any approaching rail vehicles from the K-line, and prohibited exits were in place.

At 01:22 hours, the Advanced Information Management System (AIMS) display showed an occupied track circuit at CM K2 148+00.

According to the Audio Recording System (ARS) Ops 2 Radio, at 01:29 hours, the Radio RTC contacted the RWIC to confirm if a shunt was placed at K2 148+00. The RWIC verified that their work area ended at CM C2 150+75, not on the K-Line. At 01:34 hours, the Button RTC notified the Maintenance Operations Center (MOC) Automatic Train Control (ATC) Controller that a down-track circuit was at CM K2 148+00.

At 01:41 hours, the Communication Technician requested permission from the Button RTC to place a shunt on the K-Line as an added layer of protection due to the turnout near the entry point of the work area. The request was referred to the RWIC, who declined to install an additional shunt outside their work area and instructed the Communication Technician to remove it.

AIMS indicated that at 01:51 hours, the shunt was removed from the track at K2 148+00. The Communication Technician was removed from service for post-incident testing due to the RWP violation (going beyond the work area without protection).

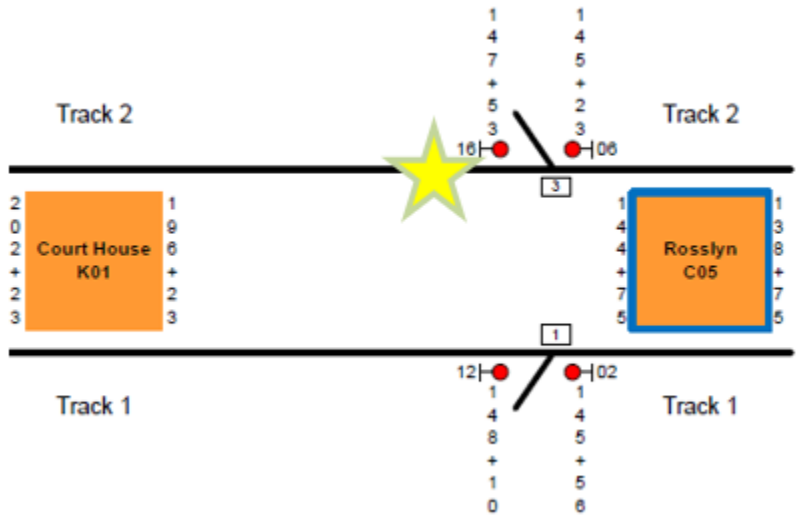
The probable cause of the Improper Roadway Worker Protection (RWP) event on September 12, 2023, was a failure to follow the established procedures. Specifically, the Communication Technician failed to receive FT protection from ROCC to enter the roadway outside the work zone's protected limits.

Additionally, the incident time of day (1:22 hours) suggests an increased risk of fatigue-related impairment. The employee reported issues with sleep, including trouble falling asleep, stress, and depression.

Incident Site

Between Rosslyn Station and Court House Station – CM K2 148+00

Field Sketch/Schematics



The above depiction is not to scale.

Purpose and Scope

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

Investigative Methods

The investigative methodologies included the following:

- Site Assessment through document review.

- Formal Interviews – SAFE interviewed two individuals as part of this investigation. The interviews included persons present at, during, and after the incident, those directly involved in the response process, and representatives from the Washington Metrorail Safety Commission (WMSC). SAFE interviewed the following individuals:
    - Communication Technician
    - Supervisor Track Maintenance (RWIC)

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

- Documentation Review – Collection of relevant work history information and process documentation contained in WMATA systems of record. These records include:
    - Communication Technician 30-day work history review
    - Metrorail Operating Rulebook (MOR)
    - National Oceanic and Atmospheric Administration (NOAA)
    - Rail Operations Control Center (ROCC) Incident Report

- System Data Recording Review – Collection of information contained in Metro Data Recording Systems. This data includes:
    - Audio Recording System (ARS) playback [Radio Ops 2 and Landline Communications]

Investigation

On Tuesday, September 12, 2023, at 01:22 hours, the SMNT Communication Technician placed a shunt at CM K2 148+00 outside of their work area without receiving foul time from the ROCC Radio RTC. This time was established by the AIMS display showing an occupied track circuit at CM K2 148+00.

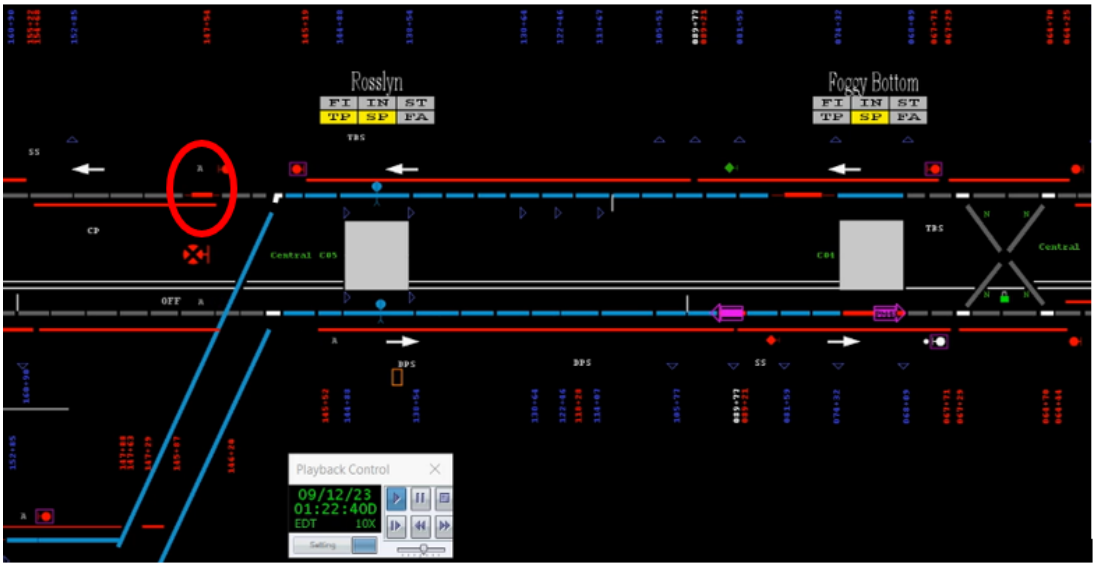


Figure 1 - AIM Playback depiction of track occupancy shunt placed at CM K2 148+00 at 01:22 hours.

The TRST RWIC received GOTRS rights to perform curve maintenance in the work area on the C–Line between CM 070+00 to 150+75 on tracks 1 & 2. The Communication Technician was working as with a piggyback crew under a Crew Leader performing platform end gate camera installations in the work area at Rosslyn Station (C05). While assisting with the work area set up at Rosslyn Station, the Communication Technician placed a shunt on the K-Line at CM K2 148+00 for added protection due to the diverging track.

According to the Roadway Job Safety Briefing (RJSB)[1] form, a safety briefing occurred on the catwalk with only the piggyback Crew Leader attending.

According to the ARS on Ops 2 Radio, at 01:29 hours, the Radio RTC contacted the RWIC to confirm if a shunt was placed at K2 148+00. The RWIC verified that their work area ended at CM C2 150+75. At 01:34 hours, the Button RTC notified the MOC/ATC Controller of a down track circuit at CM K2 148+00.

According to the ARS Ops 2 Phone at 01:41 hours, the Communication Technician contacted the Ops 2 Desk via phone and requested permission from the Button RTC to place a shunt on the K-

[1] See Appendix C for signed Roadway Job Safety Briefing form.

Line as an added layer of protection due to the turnout near the entry point of the work area. The Button RTC instructed the Communications Technician to contact the RWIC.

At 01:42 hours, the RWIC contacted the Button RTC and reported that they informed the Communication Technician that no additional protection was needed and could place a shunt on the C-Line within the work area. The Button RTC agreed and advised that the switches were in the normal position, and that there was a shunt still on the K-Line.

Figure 2 - Depicts the track occupancy cleared and shunt removed at K2 148+00 at 01:51 hours..

The AIMS event playback indicated that at 01:51 hours, the shunt was removed from the track at K2 148+00.

At 02:50 hours, the Button RTC notified the RWIC that the Communications Technician had to be removed from service.

Chronological Event Timeline

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

Time	Description
01:10:37 hours	Radio RTC: Granted the RWIC ETO protection for CM C1 & C2 070+00 to 150+75. Permission was given to place shunts in the work area. [Ops 2/Radio]
01:22:40 hours	Track occupancy observed at CM K2 148+00. [AIMS]
01:29:24 hours	Radio RTC: Requested confirmation of a shunt was placed on the K-Line. RWIC: Responded Negative; Shunts should be at C1 & C2 150+75, track 2 & 150+70, track 1. Radio RTC: Acknowledged. Advised a possible down-track circuit at K2 148+00. It shows four shunts for the work area, just one slightly outside of the work area. [Ops 2/Radio]
01:34:00 hours	Button RTC: Notified MOC/ATC of down track circuit at K2 148+00 MOC/ATC: Acknowledged [Ops 2/Phone]
01:35:12 hours	MOC/ATC: Requested confirmation if the down-track circuit was possibly a shunt. [Ops 2/Phone]
01:36:50 hours	Radio RTC: Granted the RWIC permission to hot stick and confirm third rail power was de-energized within the work area. [Ops 2/Radio]

Time	Description
01:36:56 hours	Button RTC: Advised the RWIC that their work area did not extend to the K - line. MOC/ATC: Acknowledged. [Ops 2/Phone]
01:38:52 hours	MOC/ATC: Dispatched ATC technician to K2 148+00. [Ops 2/Phone]
01:41:35 hours	COMM Technician: Reported they were setting up their work area, according to GOTRS at CM 150+75 with a turnout track in the work area. They requested permission to place a shunt on the turnout track on the K–line. Button RTC: Instructed the work crew to contact the RWIC. COMM Technician: Reported the RWIC was located at Foggy Bottom Station. [Ops 2/Phone]
01:42:38 hours	RWIC: Reported that they informed the Communication Technician that no additional protection was needed on the K-Line. Button RTC: Agreed with the RWIC. Informed the RWIC that there was still a shunt on the K-Line. RWIC: Reported that they informed the Communication Technician that they could place a shunt on the C-Line within the work area. Button RTC: Reported the switches were in the normal position with prohibited exits. [Ops 2/Phone]
01:51:40 hours	Track occupancy cleared at CM K2 148+00. [AIMS]
01:53:41 hours	Button RTC: Informed the RWIC that the shunt was removed. RWIC: Acknowledged. [Ops 2/Phone]
02:01:06 hours	Button RTC: Updated MOC/ATC that shunts were placed on the K-Line. MOC/ATC: Acknowledged. [Ops 2/Phone]
02:37:56 hours	Button RTC: Informed the RWIC that the Communication Technician must complete an incident report and be removed from service for the RWP violation at the RWIC's discretion. RWIC: Reported they briefed the Gang Leader of the work limits before the piggyback crew set up the work area. Instructed the Communication Technician to complete an incident report. [Ops 2/Phone]
02:50:01 hours	Button RTC: Notified the RWIC that the Communication Technician had to be removed from service. RWIC: Acknowledged. [Ops 2/Phone]
03:10:56 hours	COMM Technician: Requested understanding of why they were being removed from service. Button RTC: Informed the Communication Technician that they did not have track rights on the K-Line and needed to request foul time to access the roadway. COMM Technician: Responded that setting up the shunt on the K-Line was to add protection to the work area. Button RTC: Informed the Communication Technician that they should have made a good-faith challenge to stop all work if they felt unsafe. [Ops 2/Phone]

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

Advanced Information Management System (AIMS)

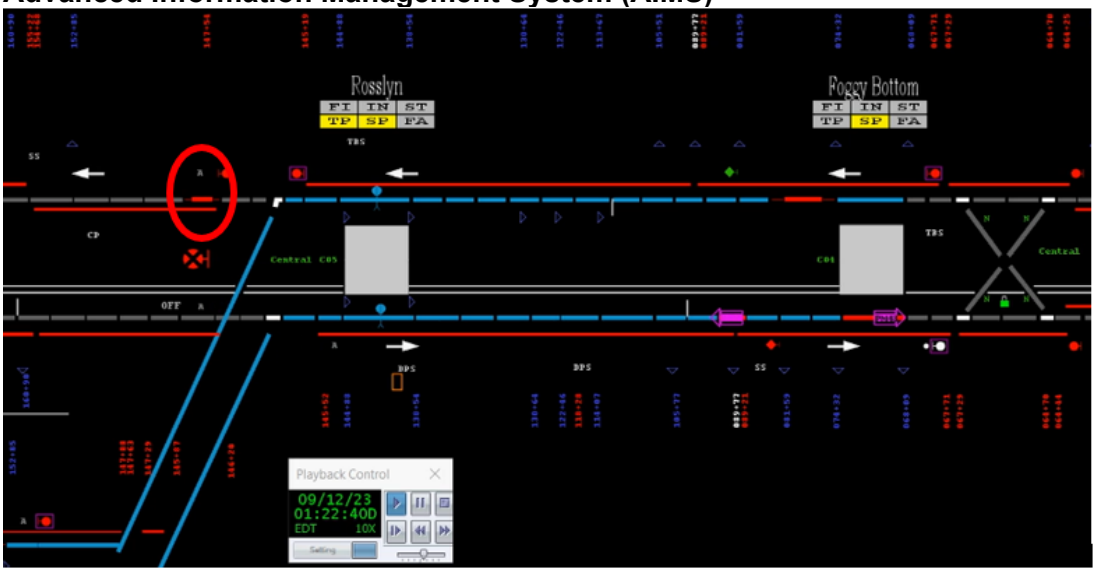


Figure 3 - AIM Playback depiction of track occupancy shunt placed at CM K2 148+00 at 01:22 hours.

Figure 4 - Depicts the track occupancy cleared shunt removed at K2 148+00 at 01:51 hours.

Office of Systems Maintenance (SMNT), Office of Communications (COMM)
Adopted from SMNT report:

An investigation was conducted regarding violating safety rules on September 13, 2023, specifically RWP rules, by fouling adjacent tracks at the C and K-line junction. The work assignment consisted of a track set up on the C–line; after setting up shunts and lights on the C–line, the Communication Technician set up shunts on the K–line, which they did not have permission to do.

When ROCC noticed the shunt on the K–line, the RWIC was informed; the Communication Technician was told to remove the shunt by ROCC, the shunt was removed, and the Communication Technician was removed from service.

On September 13, 2023, the Communication Technician failed to follow the proper procedures; per their statement, the Communication Technician stated they noticed a converging track within the safety (500 feet) buffer and felt it was a safety concern. A good faith challenge should have been issued at that time to have the RWIC resolve the safety concern.

If the Communication Technician felt that a shunt was necessary for safety reasons, this should have been communicated with the RWIC. Instead, the Communication Technician set a shunt that was not part of the work limits, thus fouling a track without permission.

Interview Findings

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

Communication Technician

- The Communication Technician stated they were given a safety briefing by the Crew Leader.
- The Communication Technician stated the Crew Leader identified the CM for the work area as CM C1/C2 132+75 to 150+75.
- The Communication Technician stated they set up the RWIC's work area at Rosslyn Station.
- The Communication Technician stated they were installing cables for video cameras.
- The Communication Technician stated they placed a shunt on the K2 and C2 lines and notified the RWIC.
- The Communication Technician stated that the RWIC informed them that they needed to remove the shunt from the K-line, and the added protection was not required due to the prohibited exits and red signals.
- The Communication Technician stated they were told to contact ROCC, who told them to remove the shunt from the K-line.

RWIC

- The RWIC stated they had GOTRS rights to a work area between Foggy Bottom Station and Rosslyn Station between CM C1/C2 150+75.
- The RWIC stated they provided a safety briefing to the Crew Leader and had them set up the work location protection at CM C1/C2 150+75.

Weather

On September 12, 2023, at the time of the incident, NOAA recorded the temperature as 75°F, with mostly cloudy skies, calm winds, and 82% humidity. The incident occurred inside a tunnel. Weather did not contribute to this incident (Weather source: NOAA) – Location: Arlington, VA.

Related Rules and Procedures

Metrorail Operating Rulebook (MOR)

1.1.10 – Employees shall not enter upon the roadway or cross the tracks except when necessary in performing their duties and permission has been granted by the Rail Traffic Controller.

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

17.1.5 – All roadway personnel can request additional layers of protection via the Roadway Worker in Charge (RWIC).

17.2 – **Roadway Worker Protection Cardinal Rules**

5. - There shall be no fouling of the WMATA's roadway unless it is necessary to perform your job.

Human Factors

Fatigue

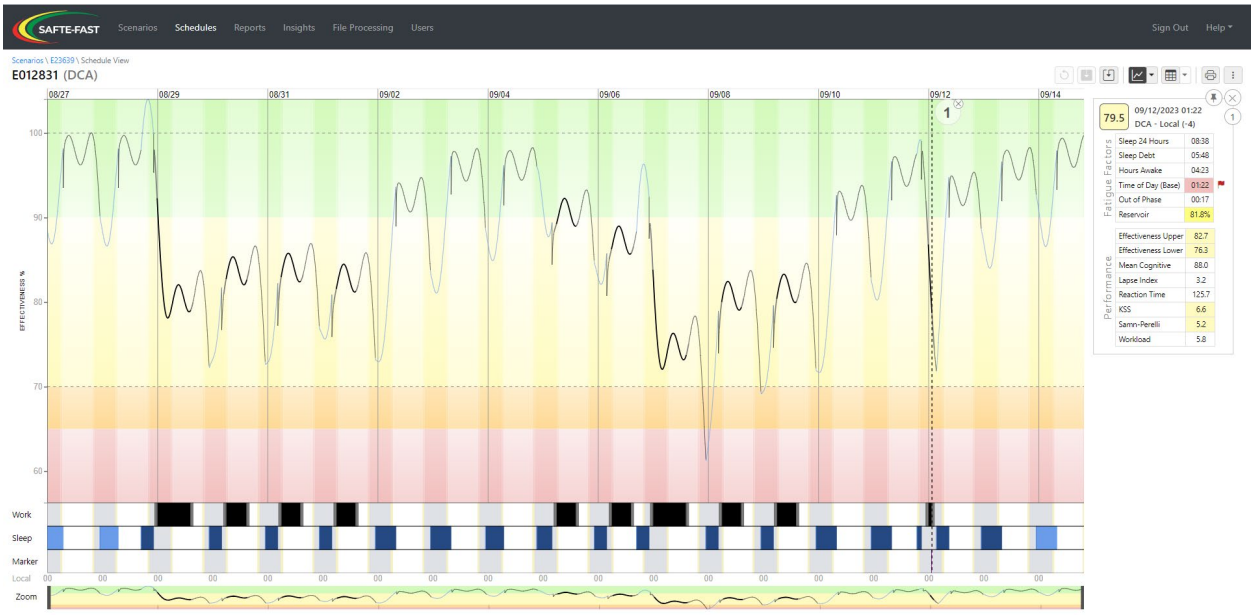
Signs and Symptoms of Fatigue

Conditions at the time of the incident were evaluated to distinguish whether evidence of fatigue was present. The video of the incident was reviewed for behaviors suggesting fatigue. No signs or symptoms of fatigue were evident from the video. The employee reported feeling drowsy at the time of the incident and reported experiencing symptoms of fatigue, specifically yawning and feeling sluggish, in the time leading up to the incident.

Fatigue Risk

Incident data was evaluated for fatigue risk factors. Risk factors for fatigue were identified. The incident time of day (1:22 hours) suggests an increased risk of fatigue-related impairment. The employee worked day and night shifts leading up to the incident. The employee reported 2 hours of sleep in the last sleep period preceding the incident and was awake for 4.3 hours at the time of the incident. The off-duty period preceding the incident was 57.5 hours, which provided the opportunity for 7-8 hours of sleep. The employee reported usual workday sleep durations of 5 to 6 hours. The employee also reported issues with sleep, including trouble falling asleep, stress, and depression.

A biomathematical fatigue modeling application (SAFTE-FAST WebSFC) was used to evaluate further fatigue risk factors that may have been present in the Technician's schedule. The analysis was based on the Technician's work schedule, reported sleep from the day before the incident, and reported habitual sleep durations. The estimated performance effectiveness at the time of the incident was 79.5%. Specifically, the analysis identified the circadian effects of night work as a factor contributing to an increased risk of fatigue during the incident.



Modeling analysis output shows estimated performance effectiveness during the incident work shift and for the week leading up to the work shift, based on the employee work and reported sleep schedule. Estimates were based on the Technician's work schedule, reported sleep from the day preceding the incident, and reported habitual sleep durations (5.5 hours a day). Bold portions of the modeled curve show work (in black) and sleep times (in blue). Effectiveness is shown on the vertical axis, with colored fields in the chart background signifying ranges of effectiveness scores including high effectiveness (>90%) in green, and low effectiveness (<65%) in red. Time is shown on the horizontal axis. Markers for work and sleep times are shown in the lanes above the time of day on the horizontal axis.

Post-Incident Toxicology Testing

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

Findings

- The work area for the RWIC was C1 & C2 CM 070+00 to 150+75.
- The Communication Technician was a part of a piggyback crew.
- The Crew Leader of the piggyback crew was the only employee briefed by the RWIC.
- The piggyback crew was asked to set up the work area at CM C2 150+75.

Immediate Mitigation to Prevent Recurrence

- The shunt was removed from K2 148+00.
- The Communication Technician was removed from service for post-incident testing.

Probable Cause Statement

The probable cause of the Improper Roadway Worker Protection (RWP) event on September 12, 2023, was a failure to follow the established procedures. Specifically, the Communication

Technician failed to receive FT protection from ROCC to enter the roadway outside the work zone's protected limits.

Additionally, the incident time of day (1:22 hours) suggests an increased risk of fatigue-related impairment. The employee reported issues with sleep, including trouble falling asleep, stress, and depression.

Recommended Corrective Actions

Corrective Action Code	Description	Responsible Party	Estimated Completion Date
SAFE_CAPS_ 111329_01	The Communication Technician is RWP Refresher training emphasizing good faith challenge.	SRC SMNT	Completed

Appendices

Appendix A – Interview Summaries

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

Communication Technician

The Communication Technician has been a WMATA employee for twelve (12) years and in their current position for twelve (12) years. The Communication Technician is currently RWP Level 2 certified with an expiration date of February 29, 2024.

The Communication Technician stated they were given a safety briefing by the Crew Leader identifying the track rights and purpose of the work. The Communication Technician stated that they were installing video cameras. The Communication Technician stated they had previous experience dealing with the converging track at the work location and notified the Crew Leader of the converging track.

The Communication Technician stated they placed a shunt at K2 150+75 on the blind spot of the curve, and the crew lead placed a shunt at C2 145+00. After shunts were placed on the C2 & K2 line, they retreated to the platform for switch movement. The crew lead spoke with the RWIC on the cell phone (speaker), and the Communication Technician stated they informed the RWIC that a shunt was placed on the C2 & K2 line. The RWIC told them that they could not have a shunt on the K2 line. The Communication Technician stated they requested the additional protection by using the shunts on the K line, to which the RWIC denied it because the prohibited exits and red signals were in place, so shunts are not needed. The Communication Technician stated they were instructed to contact ROCC to request the additional protection.

The Communication Technician stated the contact ROCC and informed them that they placed shunts on the K - line, and the ROCC requested the shunts to be removed.

The Communication Technician stated the crew lead identified the work area CM as C1 & C2, 132+75 to 150+75.

Supervisor Track Maintenance (RWIC)

The RWIC has been a WMATA employee for nine (9) years and in their current position for three (3) years. The RWIC is currently RWP Level 4 certified with an expiration date of June 30, 2023.

The RWIC stated their work area was from Foggy Bottom Station to Rosslyn Station CM C1 & C2 150+75. The RWIC said they briefed the crew lead on the job safety briefing and informed them to set up the work area at C1 & C2 150+75 while they set up the Foggy Bottom end.

The RWIC stated ROCC contacted them via radio requesting confirmation of shunts on the K line. The RWIC said they were unaware of shunts on the K line. The RWIC stated they contacted the crew lead inquiring about the K line stunt and informed them they had to be removed.

The RWIC stated ROCC set up prohibited exits in the work area. The RWIC said that the piggyback crew did not present a good faith challenge.

Appendix B – ROCC Incident Report

View Approved Incident Report

INCIDENT ID: 2023255ORANGE1

DATE	TIME	LINE	ITEM
2023-09-12	0122	Orange	1

LOCATION (STATION/YARD)	LOCATION/CHAIN MARKER (If Applicable)	REPORTED BY
Rosslyn (C05)	K2 147+54	AIM Display

TRAIN ID	DIRECTION	TRACK NUMBER	DEPTS NOTIFIED
N/A	O/B	2	Everbridge Alert/Messaging

CAR NUMBERS (XXXX-XXXX)
Lead Car

-	-	-	-
Caused Issue ☐	Caused Issue ☐	Caused Issue ☐	Caused Issue ☐

TRBL CODE	RESP CODE
RWPV-RWP VIOLATION	COM

TYPE INCIDENT
RWP Violation

ACTION PLAN
Dispatched COMM Supervisor, Remove COMM Personnel From Service

DELAYS IN MINUTES

LINE	INCIDENT	TRAIN	TOTAL DURATION
0	0	0	0

TRIPS MODIFIED

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

FIVE PRIMARY CONSOLE INDICATIONS

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

INCIDENT CHRONOLOGY

TIME	DESCRIPTION
0122	AIM displayed track circuit K2-148 exhibiting occupancy adjacent to TRK 620 work location.
0129	ROCC questioned TRK 620 ([redacted]) to ascertained if he placed a shunt outside his work location at chain marker K2-147+54. TRK 620 responded he did not place a shunt at chain marker K2-147+54 and insisted his shunts were within his working limits; ATC personnel were dispatched to investigate the down track circuit.

Figure 2 - ROCC Incident Report (page 1 of 2)

View Approved Incident Report

0134	COMM Unit 3129 ([redacted] contacted ROCC via landline to informed he was the person whom placed the shunt at chain marker K2-147+54 as an added protection because he did not feel safe walking through the Rosslyn turnout. COMM Unit 3129 was informed placing shunts outside of TRK 620 working limits was a safety violation due not having any form of protection when placing the shunts.
0000	Note: TRK 620 was made aware of COMM 3129 safety violation; TRK 620 agreed COMM 129 actions were indeed a safety violation and had him removed from service. COMM 3129 was removed from service and transported by a COMM supervisor from a post incident analysis and interview SAFE.

MAXIMO TICKET#
8694876

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

SUPERINTENDENTS OR ASSISTANTS SECTION	
ADDITIONAL FOLLOW-UP CORRECTIVE ACTIONS OR REMARKS	
FOLLOW-UP INFORMATION OBTAINED FROM SUPPORT DEPARTMENTS	
NOTIFICATIONS/PAGE GROUPS	#1/CEO ☐ #2/DGM &BELOW ☐
ADDITIONAL NOTIFICATIONS MADE BY PHONE	

APPROVED BY	NAME	CLICK TO SIGN
REPORT APPROVED BY SUPT. OR ASST SUPT.	[redacted]	✓

Figure 3 - ROCC Incident Report (page 2 of 2)

Appendix C – Roadway Job Safety Briefing (redacted)

WMATA Roadway Job Safety Briefing Form

This form must be completed legibly and accurately and be retained and made available for inspection for a period of 90 days.

Part 1: General Job Briefing

1	Date: 9/11/23	Time: :	RWIC: [redacted]
	RWIC Call #: [redacted]		RWIC Cell Phone #: [redacted]
2	Safety Contact: MSRCPH: ~~4:26~~ 4:17		
	RWP Rule: RWT: ~~2:10~~ 4:4-4:5		
3	Work Location: Co4-Co5 Trk.1		
	Job Task(s): Fasteners Renewal		
4	Worksite, Electrical, Chemical, or Environmental Hazards: N/A		
5	PPE Inspected: ☐	Electronic Device Policy Reviewed: ☐	Radio Certification Date Inspected: ☐
	RWP Stickers Inspected: ☐	Tools and Equipment Inspected: ☑	Radio Checks Performed: ☐
	What Specialized PPE Will Be Used? N/A		
6	Emergency Response Plan: Cleared to the Platform and Rebriefed		

Part 2: RWP Briefing: This section must be filled out before any Roadway Workers enter the Roadway.

Track Time On/Off: __:__/__:__, __:__/__:__, __:__/__:__

7	Rail Line: C	Track Number(s): 1 & 2	Track Access Guide (TAG) Speed: 45MPH
	Working Limits Chain Markers: 075+00 - 145+75		
	OPS Radio Channel: 2	OPS Phone Number: 2-962-1542	
	Place of Safety: Catwalk	Time Needed to Reach Place of Safety:	
	Are There Red Hot Spots Within Your Working Limits? Yes ☐ No ☐		
	Red Hot Spot Chain Markers: 138+75 - 144+75	Red Hot Spot Hazard(s): Platform	
8	Form of RWP: IT ☐ ETO Authority ☑ Local Signal Control ☐ AMF ☐ FT ☐		
	RWP Notes: 20232557 13-S		
9	Advanced Mobile Flagger Call #(s) or Last Name(s): N/A		
	Advanced Mobile Flagger Placement: N/A		
	Watchman/Lookout Placement: N/A		
	Required Site Distance: N/A	Watchman/Lookout Rotation Schedule: N/A	
10	Will There be a Speed Restriction on the Adjacent Track? Yes ☐ No ☑		
	How Will the Speed Restriction be Implemented? N/A		
11	Will Class 2 Vehicles be Part of the Working Limits? Yes ☑ No ☐		
	# of Class 2 Vehicles: 1	Type of Class 2 Vehicles: PM43	

FORM-SAFE-SRM-001-00 52.002 06/22

Figure 4 - RWIC Roadway Job Safety Briefing (redacted) page 1 of 2.

WMATA Roadway Job Safety Briefing Form

This form must be completed legibly and accurately and be retained and made available for inspection for a period of 90 days.

Part 2: RWP Briefing, continued:

12	Power Outage: Red Tag D Supervisory		Hot Sticking Chain Markers:	
	Red/Supervisory Tag#: •2£)23 2_ I'-713-5		80100 JQ,o-/..09	
	Red/Supervisory Tag Holder: 6za			
	Insulated Mat(s) Color Blue ☐ Red ☐ Green D Orange D Yellow ☐			
	WSAD Certification Due	WSAD Serial #/Asset ID	WSAD Certification Due	WSAD Serial #/Asset ID
	03 /24/ 24 I /	T0002NTR	Bd r201 2:4 I I	T000 2NKN
13	Will a Piggyback Crew(s) be Working Within Your Working Limits? Yes B*** No ☐			
	Crew Leader/EIC Call #(s): [redacted]		Piggyback Work Area Chain Markers: 132+75-145+75	
	Piggyback Work Assignment(s): Camera Installation			

Part 3: Good Faith Challenge: The following must be read aloud by the RWIC to the Roadway Workers.

"WMATA guarantees each Roadway Worker the right to challenge, in good faith, the effectiveness of the Roadway Worker Protection being provided. The Roadway Worker making the challenge, and those that are sympathetic to the challenge, shall remain clear of the roadway until the challenge has been resolved."

RWP Issues:	Worker Name(s):
	Was the GFC Issue Resolved? Yes D No ☐

Part 4: Roadway Worker Acknowledgement

"I understand and agree with all aspects of the Roadway Job Safety Briefing I just received. I am adequately protected from any train movement or roadway hazards. I understand I have a responsibility to conduct myself in a safe manner at all times."

ROADWAY WORKERS HAVE THE RIGHT AND RESPONSIBILITY TO INITIATE A GOOD FAITH CHALLENGE WHEN NECESSARY

Roadway Worker Signature	Employee ID #	Roadway Worker Signature	Employee ID#	Crew Leader/EIC Signature	Crew Leader/EIC Employee ID #
[redacted]				[redacted]	

Part 5: RWIC Signature(s)

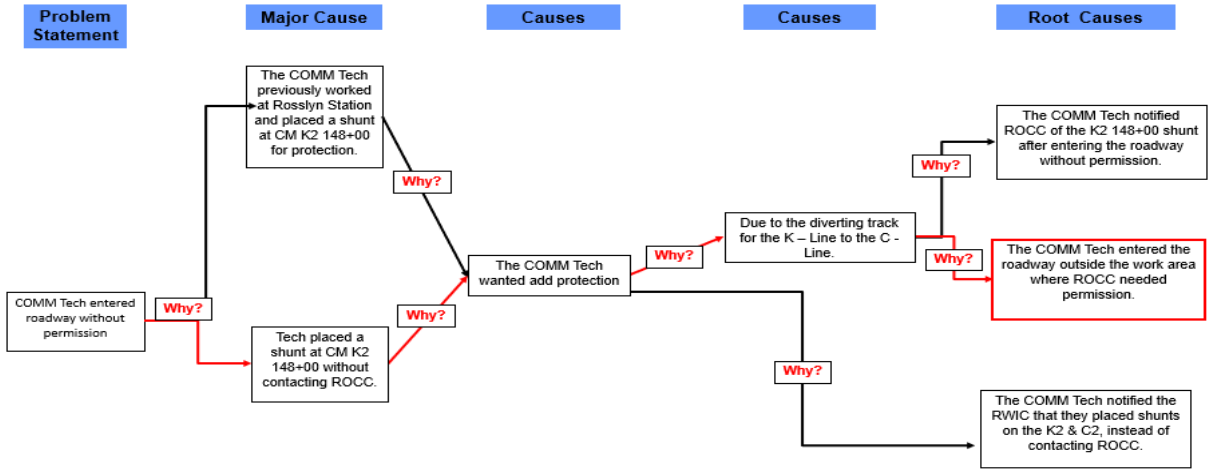
Additional RWIC Comments:

Nearest Hospital G.W. Hospital

RWIC Signature: [signature]	RWIC Employee ID #: 620	Date: 9 III I
Relieving RWIC Name:	Relieving RWIC Employee ID#:	
Relieving RWIC Signature:	Date/Time: / I , :	
Relieving RWIC Call#:	Relieving RWIC Cell Phone#:	

Figure 5 - RWIC Roadway Job Safety Briefing (redacted) page 2 of 2

Appendix D – Why-Tree Analysis



Root Cause Analysis

Figure 6 - Root Cause Analysis