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W-0370 – Loss of Communication near Friendship Heights Station – May 9, 2024

Document Purpose

This WMSC written report on WMATA Metrorail's safety event investigation and review of Metrorail's findings in accordance with the WMSC Program Standard, in conjunction with the attached Metrorail investigation report that has undergone WMSC staff review, feedback, and Metrorail revision, describes the investigation activities, identifies factors causing or contributing to the accident, 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 report) as a unified item for adoption at the Washington Metrorail Safety Commission meeting on May 13, 2025.

WMSC staff recommend adoption of this investigation.

Safety event summary:

On May 9, 2024, the Train Operator of Train 700 was removed from service after the Train Operator did not respond to or attempt to communicate with the Control Center for twenty-nine minutes while stopped at signal A08-02 near Friendship Heights Station.

At 3:47 a.m., Train 700 left Shady Grove yard to conduct a track test of both tracks 1 & 2 near Grosvenor-Strathmore Metrorail Station following overnight work at that station. This was a test train and therefore did not have any revenue passengers on board. After the track test was completed, the Rail Traffic Controller in the Control Center contacted the Train Operator of Train 700 to inform them that Train 700 would be rerouted to Brentwood Yard. While enroute to Brentwood Rail Yard, the train came to a stop at signal A08-02, near Friendship Heights Station, while a Rail Maintenance Machine was crossing in front of it. From 4:39 a.m. to 5:08 a.m., the Rail Traffic Controller was unable to make contact with the Train Operator on Train 700, despite over a dozen attempts. During this time, the Rail Traffic Controller instructed other train operators to sound their train horns to gain the attention of the Train Operator of Train 700.

After approximately 20 minutes, the Rail Traffic Controller dispatched a rail supervisor to check on the operator, using foul time protection to walk to the train's location. The Rail Supervisor boarded the train and the Train Operator stated that they were unaware that the Rail Traffic Controller was trying to contact them and that they had been waiting for further instructions. After making contact with the Rail Traffic Controller the Train Operator was instructed to continue operation of Train 700, contrary to Metrorail policy, which requires the Rail Supervisor or a relief operator to assume operation when fatigue is suspected. The Train Operator was relieved by relief operator at Cleveland Park Station. The Train Operator was removed from service and escorted to the Office of Occupational Health and Wellness by the Rail Supervisor for evaluation and post-event toxicology testing.

Train 700 was comprised of was 3000 Series railcars, which do not have on-board voice or image recording devices on the operating cabs, therefore there is no recorded data on the condition of the Train Operator during the 29 minutes where there was no communication.

The Metrorail Radio Communications department conducted a comprehensive radio communication system bi-directional amplifier realignment to address the loss of radio communication that was experienced initially between the control center and the Train Operator of Train 700.

Cause and contributing factors include:

- A radio infrastructure failure caused the inability of the Train Operator to receive or transmit radio communications
- The Train Operator failed to follow Metrorail Operating Rules to use the nearest emergency trip station (ETS) phone to communicate with the control center when his onboard and/or handheld radio experienced an outage
- Train operator may have been experiencing some effects of fatigue at the time of the safety event, but there is no evidence that fatigue was related to the loss of communication

WMSC staff observations

Several months after this incident, Metrorail completed the implementation of corrective actions, through CAP C-0181 to address a 2021 WMSC finding in the Audit of Rail Operations. The finding stated that elements of Metrorail have a culture that accepts noncompliance with written operational rules, instructions and provided manuals. To address this finding Metrorail implemented its new Safety Management System for the Office of Rail Operations. This included new procedures and training for all personnel within Rail Operations on the common issues and safety-related violations and risks, a new safety risk submission tool, and a new dashboard for tracking risks and instituting mitigation by various safety committees throughout Metrorail. The WMSC monitors Metrorail's actions on an ongoing basis through the review of these CAPs during our audit, inspection, and other oversight activities. As an example, the culture of noncompliance finding that resulted in CAP C-0181, that was closed in September 2024, was examined during the 2024 Control Center and Rail Operations audit, which will be issued in the coming months.

The WMSC is currently conducting a special study of the ongoing Metrorail Radio Infrastructure replacement and modernization project. WMATA has been working on launching an entirely new radio system – a project that it initiated in 2017. The project is intended to increase reliability and performance of the radio system, and to improve the quality of radio communications throughout the Metrorail system. The WMSC Audit report of Emergency Management and Life Safety that was issued in January 2025 noted that the current radio communication system at Metrorail is unreliable for operations or emergencies. During this audit the WMSC gathered evidence of radio dead spots where the ability to communicate via radio is either intermittent or even non-existent. Radio communications difficulties featured prominently in the NTSB's investigation of the L'Enfant Plaza Station electrical arcing and smoke accident that occurred on January 12, 2015. Radio communication issues have been identified in 60 WMSC safety event investigations that have been adopted as of late October 2024. The inability for personnel in the field to communicate with personnel in the control center and for first responders to communicate with one another during emergencies poses a safety risk to the safety of all who interact with the Metrorail system. The radio

replacement project has now been underway for more than seven years. The WMSC special study of the Project will assess the overall status of the project and when and if the anticipated safety benefits of the project will be realized.

In February 2024, WMSC's submitted an initial document requests to perform the 2024 Fitness for Duty and Occupational health Programs Audit. Since that time Metrorail refused to provide any documents related to worker safety. In October 2024 the WMSC filed a petition in the U.S. District Court in the District of Columbia. In mid-December 2024, the assigned District Court Judge referred the case to a Magistrate Judge. The WMSC has been unable to perform this audit as a result of Metrorail's refusals to produce all of the WMSC requested documents. The WMSC is prepared to conduct the Audit, once this matter is resolved, or when Metrorail provides the WMSC requested documents. Evaluation of various programs that are central to Metrorail personnel fitness for duty including employee drug and alcohol programs would have been a component of the 2024 Fitness for Duty and Occupational Health Programs audit including Metrorail fatigue management programs that would be central to monitoring employee fatigue indicators.

Washington Metropolitan Area Transit Authority
Department of Safety (SAFE)
Office of Safety Investigations (OSI)
FINAL REPORT OF INVESTIGATION A&I E24361

Date of Event:	May 9, 2024
Type of Event:	O-12 (b) Operator Removed from Service (Fatigue)
Incident Time:	04:55 Hours
Location:	Signal A08-02, Chain Marker A1 311+00
Time and How received by SAFE:	05:07 Hours, Safety Information Officer
WMSC Notification Time:	06:18 Hours
Responding Safety Officers:	None
Rail Vehicle:	Train ID 700 (L3281-80x3144-45x3170-71T)
Injuries:	None
Damage:	None
Emergency Responders:	None
SMS I/A Number	20240515#116972

Signal A08-02 – Operator Removed from Service (Fatigue)

May 9, 2024

Table of Contents

Abbreviations and Acronyms

AIMS	Advanced Information Management System
AOM	Assistant Operation Manager
ARS	Audio Recording System
BDA	Bi-Directional Amplifier
CAP	Corrective Action Plan
CCTV	Closed-Circuit Television
CMOR	Chief Mechanical Officer
CRCS	Comprehensive Radio Communication System
DAP	Discipline Administration Program
DCFEMS	District of Columbia Fire and Emergency Medical Services
ETS	Emergency Trip Station
IIT	Incident Investigation Team
IO	Interlocking Operator
MICC	Metro Integrated Command and Communications Center
MTPD	Metro Transit Police Department
MOR	Metrorail Operating Rulebook
NOAA	National Oceanic and Atmospheric Administration
OAP	Operations Administrative Policy
OHAW	Occupational Health and Wellness
OM	Operation Manager
RMM	Roadway Maintenance Machine
RTC	Rail Traffic Controller
RTRA	Office of Rail Transportation
RVO	Rail Vehicle Operator
SAFE	Department of Safety
SMS	Safety Measurement System
TRST	Office of Track and Structure
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 Thursday, May 9, 2024, the Metro Integrated Command and Communications Center (MICC) Radio Rail Traffic Controller (RTC) lost communication with Train ID 700 (L3281-80x3144-45x3170-3170-71T) for twenty-nine (29) minutes while it was stopped at red signal A08-02 due to Roadway Maintenance Machine movement ahead of the train.

Train ID 700 departed from Shady Grove Rail Yard to conduct a track test after overnight track work was completed at Grosvenor Station on tracks 1 & 2. Train ID 700 was directed to pick up Track and Structures (TRST) personnel from the platform at Grosvenor Station to assist with the track test. After the TRST personnel boarded Train ID 700, the Rail Vehicle Operator (RVO) was informed that the train would be rerouted to Brentwood Rail Yard instead of returning to Shady Grove Rail Yard. The TRST personnel confirmed a successful track test and disembarked at the Medical Center Station.

Train ID 700 proceeded toward Brentwood Rail Yard and was stopped at red signal A08-02 due to a Roadway Maintenance Machine (RMM) movement ahead.

The Radio RTC attempted to contact Train ID 700 for approximately twenty-nine (29) minutes. A train single-tracked around Train ID 700 and attempted to contact the RVO by sounding its train horn. During this time, a Rail Transportation Supervisor was dispatched from the vicinity of Medical Center Station to Friendship Heights Station via a work utility vehicle. The train was unsuccessful in contacting Train ID 700 due to a tunnel wall separating both tracks.

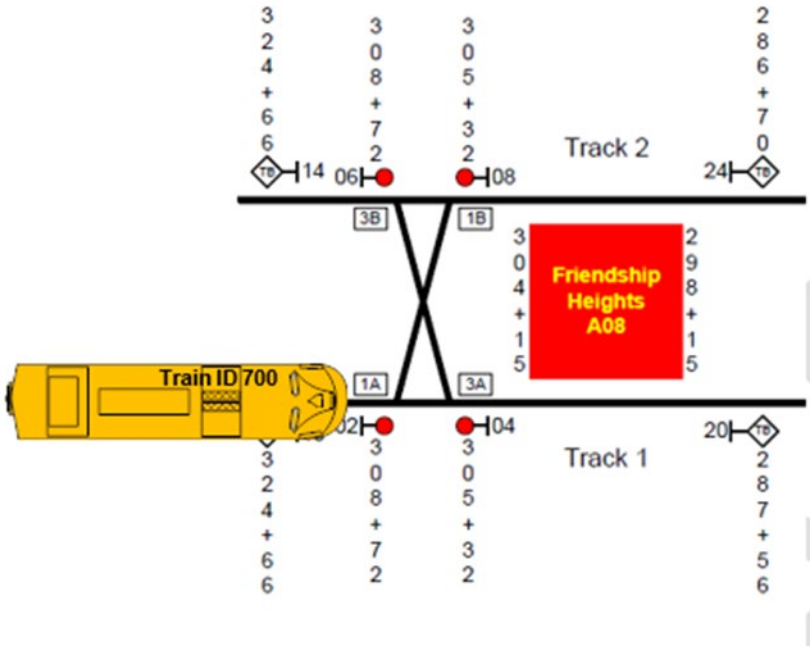
Upon the arrival of the Rail Transportation Supervisor, they were dispatched to the roadway and boarded Train ID 700 while it was at red signal A08-02. The Rail Transportation Supervisor established radio communication from Train ID 700, and the train was brought to the station platform by the RVO.

The probable cause of the communication loss was a lack of communication. Specifically, the RVO failed to utilize alternate sources of communication, such as the Emergency Trip Station (ETS) phone, to contact the MICC. Additionally, operator fatigue likely contributed to the initial probable cause of the communication loss and a failure in the radio communication.

Incident Site

Signal A08-02, Chain Marker A1 311+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:

- Physical Site Assessment through document review.

- Formal Interview – The Department of Safety (SAFE) interviewed one individual as part of this investigation. The 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:
    - Rail Vehicle Operator

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

    - Rail Transportation Supervisor

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- Documentation Review – Collection of relevant work history information and process documentation contained in WMATA systems of record. These records include:
    - Rail Vehicle Operator Training Records
    - Rail Vehicle Operator Certifications
    - Rail Vehicle Operator 30-day work history review
    - Metrorail Operating Rulebook (MOR)
    - National Oceanic and Atmospheric Administration (NOAA)
    - Maximo Data

- System Data Recording Review – Collection of information contained in Metro Data Recording Systems. This data includes:
    - ARS (Audio Recording System) playback [Radio OPS 1 and Landline Communications]

Investigation

On Thursday, May 9, 2024, the MICC Radio RTC lost communication with Train ID 700 (L3281-80x3144-45x3170-71T) for twenty-nine (29) minutes while it was stopped at red signal A08-02 due to RMM movement ahead of the train.

According to the ARS, at 03:53 hours, Train ID 700 departed from Shady Grove Rail Yard to conduct a track test after overnight track work was completed at Grosvenor Station on tracks 1 & 2. The RVO was notified that they would be held at North Bethesda Station due to power being down at that work location. The RVO was directed to pick up TRST personnel from the platform at Grosvenor Station to assist with the track test.

At 04:09 hours, the TRST personnel boarded Train ID 700, and the RVO was informed by the Radio RTC that the train would be rerouted to Brentwood Rail Yard instead of returning to Shady Grove Rail Yard.

At 04:15 hours, the TRST personnel confirmed a successful track test and disembarked at the Medical Center Station.

At 04:13, the RVO contacted the Shady Grove Interlocking Operator (IO) via the radio to confirm whether they were transporting Train ID 700 to Brentwood Rail Yard. The IO advised that they would consult with the MICC for confirmation.

At 04:18 hours, Train ID 700 proceeded toward Brentwood Rail Yard and was stopped at red signal A08-02 due to an RMM movement ahead.

According to the Advanced Information Management System (AIMS), at 04:38 hours, signal A08-02 was lunar.

At 04:39 hours, the Radio RTC began making several attempts to contact Train ID 700 for approximately twenty-nine minutes.

At 04:41, a Rail Transportation Supervisor near Medical Center Station was dispatched to Friendship Heights Station via a work utility vehicle to respond to Train ID 700.

At 04:46 hours, Train ID 122 was rerouted from Medical Center Station A10-02 via Track 2 in an attempt to make contact with Train ID 700 by sounding their train horn, but the attempt was unsuccessful.

At 04:48 hours, the Radio RTC attempted to contact Train ID 700 seven times but was unsuccessful.

According to AIMS, at 04:50 hours, signal A08-02 was red.

At 04:53, the Rail Transportation Supervisor arrived at Friendship Heights Station and was instructed to stand by as Train ID 122 would be single tracking around Train ID 700 and attempt to contact the RVO. Train ID 122 was unsuccessful in contacting the RVO of Train ID 700 and could not see the train's lead cab due to the concrete wall.

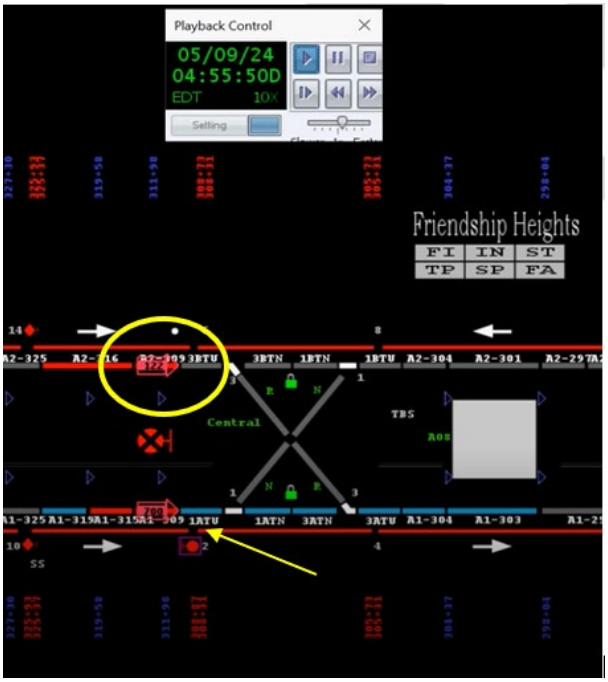


Figure 1 - Yellow circle Train 122 as it passed (arrow) Train ID 700

At 04:57 hours, the Rail Transportation Supervisor was given foul time to enter the roadway to investigate Train ID 700, which was at red signal A08-02.

At 05:00 hours, the Operations Manager (OM) contacted the Metro Transit Police Department (MTPD) to respond to Friendship Heights Station.

At 05:02 hours, the Assistant Operations Manager (AOM) contacted the District of Columbia Fire and Emergency Medical Services (DCFEMS) to request medical assistance for the RVO at Friendship Heights Station.

At 05:07 hours, the Rail Transportation Supervisor reached the lead car of Train ID 700 and spoke with the RVO. The Rail Transportation Supervisor established radio communication from Train ID 700, relinquished foul time, and the train was brought to the station platform by the RVO.

At 05:12 hours, the Button RTC instructed the Rail Transportation Supervisor to remove the RVO from service upon arrival at Cleveland Park Station and assigned an additional RVO to continue with Train ID 700.

Chronological Event Timeline

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

Time	Description
03:47:50 hours	Interlocking Operator: Dispatched Train ID 700 to the A15-32 signal and instructed them to contact the RTC at that location. [Radio, YD]
03:48:43 hours	Train ID 700: Requested confirmation from the Interlocking Operator that the RTCs were aware that the train was only going to Grosvenor Station and back to Shady Grove Yard. IO: Confirmed and advised that Train ID 700 was a test train for work that was performed at Grosvenor. [Radio, YD]
03:53:54 hours	Train ID 700: Notified the RTC they were standing by at the A15-32 signal as a test train to Grosvenor Station. Radio RTC: Acknowledged and informed them that they will be held at North Bethesda Station due to power being down. Train ID 700: Acknowledged. [Radio, Ops 1]
04:04:27 hours	Radio RTC: Instructed Train ID 700 to continue down the line and pick up personnel at Grosvenor Station. Train ID 700: Acknowledged. [Radio, Ops 1]
04:09:11 hours	Train ID 700: Advised that personnel were onboard and requested to continue. Radio RTC: Acknowledged and instructed the RVO that the train would go to Brentwood Yard. [Radio, Ops 1]
04:13:36 hours	Train ID 700: Requested confirmation from the IO if the train was being transported to Brentwood Yard. IO: Responded that they would consult with the MICC. They were under the impression that tracks 1 & 2 needed testing. [Radio, YD]
04:15:02 hours	TRST: Advised the Radio RTC that it was a good track test, and they were clear from Train ID 700. Radio RTC: Instructed Train ID 700 to continue to Brentwood Yard [Radio, Ops 1]
04:16:19 hours	IO: Advised Train ID 700 that they are to transport that train to Brentwood Yard and cushion back to Shady Grove Yard. [Radio, YD]
04:18:29 hours	Train ID 700: Advised the Radio RTC that they had a red signal. Radio RTC: Advised Train ID 700 to stand by as track units were moving ahead. [Radio, Ops 1]
04:39:36 hours 04:41:20 hours	Radio RTC #2: Began contacting Train ID 700 to move on a lunar signal at A08-02. (Seven attempts were made). [Radio, Ops 1]
04:41:38 hours	Radio RTC #2: Dispatched a mobile Rail Transportation Supervisor from the Medical Center Station. [Radio, Ops 1]
04:41:43 hours 04:44:15 hours	Radio RTC #2: Made several attempts to contact Train ID 700. Radio RTC #1 took over, making attempts to contact Train ID 700. [Radio, Ops 1]
04:46:49 hours	Radio RTC #1: Advised Train ID 122 that they will single track by way of track 2 from Medical Center Station A10-02 signal to make contact with Train ID 700. [Radio, Ops 1]
04:48:00 hours 04:49:21 hours	Radio RTC #1: Made seven attempts to contact Train ID 700. [Radio, Ops 1]
04:49:11 hours	Button RTC: Notified the IO that they were unable to make contact with Train 700 and requested the RVO's information. [Phone]
04:52:34 hours	IO: Made three announcements for Train ID 700 to contact the MICC if they could copy their announcement via Shady Grove Yard Ops. [Radio, YD]

Time	Description
04:53:15 hours	Rail Transportation Supervisor: Arrived at Friendship Heights Station topside. [Radio, Ops1]
04:53:34 hours	Radio RTC #1: Instructed the Rail Transportation Supervisor to stand by and for Train ID 122 to sound their train horn as they pass Train ID 700. [Radio, Ops 1]
04:54:27 hours	Radio RTC #1: Dispatched a Rail Transportation Supervisor to the platform to be in place to take over the operation of Train ID 700. [Radio, Ops 1]
04:57:55 hours	Radio RTC #1: Granted the Rail Transportation Supervisor foul time to investigate Train ID 700. [Radio, Ops 1]
05:00:40 hours	OM: Contacted MTPD to respond to Friendship Heights Station for the RVO. [Phone]
05:02:12 hours	AOM: Notified DCFEMS to respond to Friendships Heights Station for the RVO. [Phone]
05:07:11 hours	Rail Transportation Supervisor: Arrived in the lead car of Train ID 700 and made contact with the RVO. [Radio, Ops 1]
05:08:20 hours	Train ID 700: Made contact with the Radio RTC. [Radio, Ops 1]
05:08:32 hours	Rail Transportation Supervisor: Relinquished foul time. [Radio, Ops 1]
05:12:18 hours	Button RTC: Advised the Rail Transportation Supervisor that a relief RVO would take over operations Train ID 700 Cleveland Park Station. [Phone]

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

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

The Office of Radio Communications (COMR) completed a comprehensive radio check from Friendship Heights Station (A08) to Bethesda Station (A09) and found an UPLINK PTT [1]issue on track 2 A09-A08 portal to the platform. COMR personnel completed a Comprehensive Radio Communication System (CRCS) Below ground HEAD-END and LINE Bi-Directional Amplifier (BDA) alignment to correct the UPLINK PTT. Following the repair all radio checks were loud and clear.

Office of Rail Transportation (RTRA)
Adopted from RTRA report:

Following the loss of communication, the RVO was evaluated by Occupational Health and Wellness (OHAW) and found fit for duty.

For failing to maintain attention to operational duties, the RVO was issued a Level II Safety/Operational Violation and six (6) Discipline Administration Program (DAP) points.

[1] Bi-Directional Signal Amplifier (uplink/downlink)

Interview Findings

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

Rail Vehicle Operator

- The RVO received instructions to pick up an employee at Grosvenor and drop them off at the Medical Center.
- When encountering a red signal at Friendship Heights, attempts to communicate with Shady Grove Tower via handheld radio were hindered by choppy signals.
- The Rail Supervisor arrived, contacted the RTC for a block, and operations resumed until relieved two stations later.
- The train involved was a test train with no other personnel onboard, and communication with the RTC was solely via the handheld radio.
- The RVO did not attempt to contact the RTC using the handheld radio while waiting they were stopped at the A08-02 signal for 29 mins.

Rail Transportation Supervisor

- The Rail Transportation Supervisor stated that RVO mentioned they didn't know the RTC was trying to make contact with them and that they had no radio communication.

Weather

NOAA recorded the temperature at 68 ° F. at the time of the incident. The weather did not contribute to this incident (Weather source: NOAA—Location: [Washington, D.C.]).

Related Rules and Procedures

Metrorail Operating Rulebook

2.1 Employees shall not absent themselves without permission from their supervisor.

12.6.4 If there is no response after multiple attempts, the reporting party shall locate the closest Emergency Trip Station and attempt to establish contact at the Emergency Trip Station.

12.5.2 Rail Vehicle Operators and Roadway Workers using radios to communicate with the Rail Traffic Controller shall use the designated Radio Ops channels for their location on the Metrorail system as shown in the Radio Ops Table.

Table 10, Radio Ops Channel for Rail Line

Line	Location	Radio Ops Channel
Red Line	ALL	OPS 1
Orange Line	Inbound at CM 223+00	OPS 2
Orange Line	Outbound at CM 223+00 (K02-K08)	OPS 4
Silver Line	Inbound at CM 223+00	OPS 2
Silver Line	Outbound at CM 223+00 (K02-N06)	OPS 4
Blue Line	Inbound at CM 188+30	OPS 2
Blue Line	Outbound at CM 188+30 (C06-J03)	OPS 3
Yellow Line	ALL	OPS 3
Green Line	ALL	OPS 3

12.10.1.3. In the event of a life-threatening situation or a radio malfunction, cell phones may be used to contact the Rail Traffic Controller after the vehicle is stopped in a safe place.

Human Factors

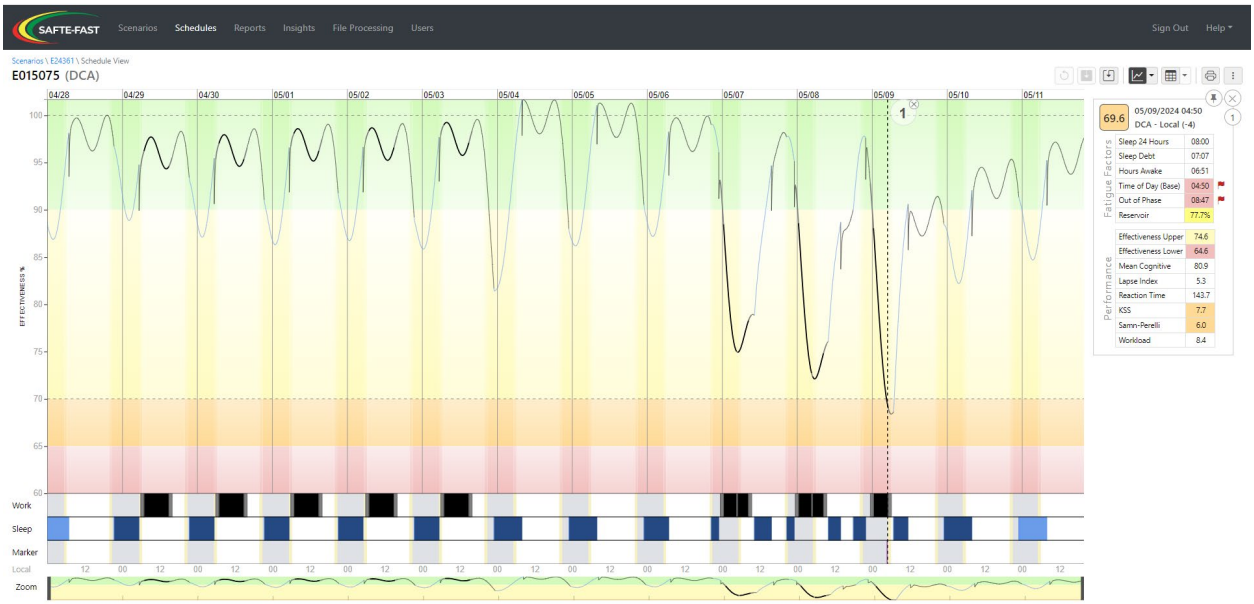
Fatigue

Conditions at the time of the incident were evaluated to distinguish whether evidence of fatigue was present. Video of the incident was not available[2] to ascertain whether signs of fatigue were present. The employee reported feeling fully alert at the time of the incident and reported experiencing no symptoms of fatigue in the time leading up to the incident.

Fatigue Risk

Incident data was evaluated for fatigue risk factors. Fatigue risk factors were identified. The incident time of day (4:50 hours) suggests an increased risk of fatigue-related impairment. The employee worked day and overnight shifts in the days leading up to the incident. The employee reported a total of 8 hours of sleep in the last sleep period preceding the incident and was awake for 6.8 hours at the time of the incident. The off-duty period preceding the incident was 16 hours, which, given the employee's reported 30-minute commute, provided the opportunity for 7-9 hours of sleep. The employee reported usual workday sleep durations of 8 hours and no issues with sleep.

A biomathematical fatigue modeling application (SAFTE-FAST WebSFC) was used to further evaluate fatigue risk factors that may have been present in the Train Operator's schedule. The analysis was based on the Train Operator'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 69.6%. Specifically, the analysis identified the circadian effects of night work as a factor contributing to an increased risk of fatigue at the time of the incident.



[2] Train ID 700 was made up of a legacy fleet and is not equipped with cameras.

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 Train Operator's work schedule, reported sleep from the day preceding the incident, and reported habitual sleep durations (8 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 RVO complied with the Drug and Alcohol Policy and Testing Program 7.7.3/6.

Findings

- The Radio RTC attempted to contact Train ID 700 for approximately twenty-nine (29) minutes.
- Train ID 122 was single tracked around the stopped train and attempted to contact Train ID 700 by sounding their train horn. The attempt was unsuccessful due to a concrete walk between the tracks.
- The Rail Transportation Supervisor was able to establish radio communication with the Radio RTC from Train ID 700 via landline.
- A radio UPLINK PTT issue on track 2 A09-A08 portal to the platform.[3]

[3] No radio issues were discovered on track 1 where the incident train was stopped.

Immediate Mitigation to Prevent Recurrence

Following the incident, the rail vehicle operator was removed from service for a post-incident medical examination and scheduled for fitness for duty.

Probable Cause Statement

The probable cause of the communication loss was the RVO's failure to communication. Specifically, the RVO failed to utilize their handheld radio to communicate with the MICC and alternate sources of communication, such as the Emergency Trip Station (ETS) phone. Additionally, operator fatigue likely contributed to the initial probable cause of the communication loss.

Recommended Corrective Actions

Corrective Action Code	Description	Responsible Party	Estimated Completion Date
116972_SAFE CAPS_COMR_ 001	Complete a Comprehensive Radio Communication System (CRCS) Belowground HEAD-END and LINE Bi-Directional Amplifier (BDA) alignment.	COMR	Completed
116972_SAFE CAPS_RTRA_ 001	RTRA will have the RVO complete a fit for duty evaluation by OHAW.	RTRA	Completed

Appendices

Appendix A – Interview Summary

The below narrative 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.

Rail Vehicle Operator

The RVO is a WMATA employee with 11 years of service and five total years of experience as a Train Operator. The Train Operator holds a Roadway Worker Protection (RWP) Level 2 certification that expires in April 2025.

During the formal interview, the RVO noted that they initially described the instructions given to them, which were to pick up an employee at Grosvenor and drop them off at the Medical Center. The RVO stated they then arrived at a red signal at A08-02 and was instructed to standby when they inquired moving. The RVO then contacted Shady Grove Tower via handheld radio to confirm if they were transporting their train to Brentwood Rail Yard. The IO instructed them to them.to standby they would get back

The RVO stated they just stood by at the red signal and waited for instructions from Shady Grove Tower and the RTC whom instructed them to hold.

The RVO mentioned that fatigue wasn't a factor for them, and explained the procedure if fatigue had occurred. The supervisor arrived and informed them that the RTC's were trying to reach them. The RVO stated they didn't hear any communication from the RTC. The RVO stated they made an attempt to contact the RTC while the Rail Transportation Supervisor was on the train but could not hear them. They Rail Transportation Supervisor contacted the Radio RTC for a permissive block via landline, and the RVO continued to operate until relieved two stations later.

During follow-up questions, they confirmed that they never tried to contact the RTC using the handheld radio.

Rail Transportation Supervisor

According to the Rail Transportation Supervisors incident report, they responded to Friendship Heights station at 04:40 hours. They informed the RTC that they were on the scene and requested foul time to enter the roadway to walk to the train. Upon arrival at the train, they tapped on the left cab window and motioned to the RVO to key them onto the train. They explained to the RVO that the RTC was trying to contact them for an inordinate amount of time. They responded that they didn't know the RTC was trying to contact them and had no radio communication. Following the Rail Transportation Supervisor updating the RTC, they were instructed to remove the RVO from service for post-incident testing.

Appendix B – Work Order

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

Page 1 of 3
MX76PROD

Work Order #: 18640999
Type: PM

Status: CLOSE
07/03/2024 06:56

Work Description: COMR, CRCS HEAD-END AND BI-DIRECTIONAL AMPIFIER ALIGNMENT
Job Plan Description: COMR, CRCS HEAD-END AND BI-DIRECTIONAL AMPIFIER ALIGNMENT

Work Information

Asset:	511823 RADIO, CRCS, TUNNEL INFRASTUTURE, BDA, SEG 4	**Owning Office:**	COMM-TSSM-RADO	**Parent:**	
Asset Tag:	SEG 4	**Maintenance Office:**	COMM-TSSM-RADO	**Create Date:**	05/27/2024 08:06
Asset S/N:	SEG 4	**Labor Group:**	COMMR3RADO	**Actual Start:**	06/26/2024 20:03
Location:	8436 A09, BETHESDA, WAYSIDE	**Crew:**	COMRADO3	**Actual Comp:**	06/27/2024 10:41
Work Location:		**Lead:**	[redacted]	**Item:**	N60040011
Failure Class:	COMR004 CRCS TUNNEL EQUIPMENT	**GL Account:**	WMATA-02-33540-50499280-042-**********-*****-OPR**		
Problem Code:		**Supervisor:**	[redacted]	**Target Start:**	06/01/2024 00:00
Requested By:		**Requestor Phone:**		**Target Comp:**	06/01/2024 04:00
				Scheduled Start:	
Create-Mileage:	0.0	**Complete-Mileage:**	0.0		

Task IDs

Task ID						
10	Perform alignment procedures for the Comprehensive Radio Communication System (CRCS) Belowground HEAD-END and LINE Bi-Directional Amplifiers (BDA) per attached preventative maintenance instructions. Detailed Instructions for this procedure can be found in sections 09 through 18.					
Component:		**Work Accomp:**	**Reason:**	**Status:** CLOSE	**Position:**	**Warranty?:** N
20	Complete CRCS BDA Visual Inspection and Defect Checklist in Appendix A. Complete CRCS Head-End (Box A, Box B+C) Alignment Datasheet in Appendix B. Complete CRCS Head-End ALARM and CONFIGURATION Datasheet in Appendix C. Complete CRCS Line BDA Alignment Datasheet in Appendix D.					
Component:		**Work Accomp:**	**Reason:**	**Status:** CLOSE	**Position:**	**Warranty?:** N
30	Please make sure to follow all safety directives for this inspection.					
Component:		**Work Accomp:**	**Reason:**	**Status:** CLOSE	**Position:**	**Warranty?:** N
40	PREFORMED CRCS HEAD-END PMI					
Component:	100-112-201-004-003 CRCS SEGMENT HEADEND	**Work Accomp:**	COMPLETED - WORK OR TASK	**Reason:** SCHEDULED	**Status:** CLOSE	**Position:** **Warranty?:** N
50	PREFOMED CRCS PMI A09-A08 MID TUNNEL CRCS Alignment performed and followed up with radio checks and all were loud and clear.					
Component:	100-112-201-004 CRCS TUNNEL INFRASTRUCTURE	**Work Accomp:**	COMPLETED - WORK OR TASK	**Reason:** SCHEDULED	**Status:** CLOSE	**Position:** **Warranty?:** N

WT_plust_woprint.rptdesign 07/9/2024 18:26

Figure 2 - COMR Work Order - (page 1 of 3).

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

Work Order #: 18640999
Type: PM

Status: CLOSE
07/03/2024 06:56

Work Description: COMR, CRCS HEAD-END AND BI-DIRECTIONAL AMPIFIER ALIGNMENT
Job Plan Description: COMR, CRCS HEAD-END AND BI-DIRECTIONAL AMPIFIER ALIGNMENT

Task IDs

Task ID	
60	PREFOMED CRCS PMI A10 - A10 PORTAL Track#1

_ #389 and #3007 worked on track . Start from A10, track#1.

_ Location of BDAs in the tunnel did not match with "Chain marker " in the drawing.

_ In the Drawing, BDAs were at: 455+00 , 478+00 and 498+00.

_ Location of BDA in the tunnel were: 453+00 , 466+00 , 479+00 and 500+00.

_ We completed PMI from CRCS _ segment #4 from A10 to A10 platform.

All Radio checks were LOUD and CLEAR .

Component: **Work Accomp:** **Reason:** **Status:** CLOSE **Position:** **Warranty?:** N

70 PREFORMED CRCS PMI TK#1&2 A09-A10

Component: 100-112-201-004 CRCS TUNNEL INFRASTRUCTURE **Work Accomp:** COMPLETED - WORK OR TASK **Reason:** SCHEDULED **Status:** CLOSE **Position:** **Warranty?:** N

Actual Labor

Task ID	Labor	Start Date	End Date	Start Time	End Time	Approved?	Regular Hours	Premium Hours	Line Cost
40	[redacted]	06/10/2024	06/10/2024	00:00	02:00	Y	02:00	00:00	$89.85
40	[redacted]	06/24/2024	06/24/2024	00:00	06:30	Y	06:30	00:00	$318.51
40	[redacted]	06/24/2024	06/24/2024	00:00	06:30	Y	06:30	00:00	$280.77
40	[redacted]	06/24/2024	06/24/2024	00:00	06:30	Y	06:30	00:00	$246.53
40	[redacted]	06/10/2024	06/10/2024	00:00	02:00	Y	02:00	00:00	$101.37
50	[redacted]	06/24/2024	06/25/2024	22:00	03:00	Y	05:00	00:00	$189.64
50	[redacted]	06/24/2024	06/25/2024	22:00	03:00	Y	05:00	00:00	$242.61
50	[redacted]	06/24/2024	06/25/2024	22:00	03:00	Y	05:00	00:00	$245.01
50	[redacted]	06/24/2024	06/25/2024	22:00	03:00	Y	05:00	00:00	$224.61
50	[redacted]	06/24/2024	06/25/2024	22:00	03:00	Y	05:00	00:00	$253.42
60	[redacted]	06/30/2024	06/30/2024	00:00	06:00	Y	06:00	00:00	$259.17
60	[redacted]	06/30/2024	06/30/2024	00:00	06:00	Y	06:00	00:00	$288.25
60	[redacted]	06/30/2024	06/30/2024	00:00	06:00	Y	06:00	00:00	$291.13
60	[redacted]	06/30/2024	06/30/2024	00:00	06:00	Y	06:00	00:00	$288.25
60	[redacted]	06/30/2024	06/30/2024	00:00	06:00	Y	06:00	00:00	$259.17

WT_plust_woprint.rptdesign 07/9/2024 18:26

Figure 3 - COMR Work Order - (page 2 of 3).

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

Work Order #: 18640999
Type: PM

Status: CLOSE
07/03/2024 06:56

Work Description: COMR, CRCS HEAD-END AND BI-DIRECTIONAL AMPIFIER ALIGNMENT
Job Plan Description: COMR, CRCS HEAD-END AND BI-DIRECTIONAL AMPIFIER ALIGNMENT

Actual Labor

Task ID	Labor	Start Date	End Date	Start Time	End Time	Approved?	Regular Hours	Premium Hours	Line Cost
70	[redacted]	07/02/2024	07/03/2024	22:00	03:00	Y	05:00	00:00	$224.61
70	[redacted]	07/02/2024	07/03/2024	22:00	03:00	Y	05:00	00:00	$253.42
70	[redacted]	07/02/2024	07/03/2024	22:00	03:00	Y	05:00	00:00	$189.64
70	[redacted]	07/02/2024	07/03/2024	22:00	03:00	Y	05:00	00:00	$240.21
70	[redacted]	07/03/2024	07/03/2024	03:00	06:00	Y	03:00	00:00	$129.58
70	[redacted]	07/02/2024	07/03/2024	22:00	03:00	Y	05:00	00:00	$240.21
70	[redacted]	07/02/2024	07/03/2024	22:00	03:00	Y	05:00	00:00	$242.61
						Total Actual Hour/Labor:	111:30	00:00	$5,098.54

Failure Reporting

Cause	Remedy	Supervisor	Remark Date
		[redacted]	

Remarks:

WT_plust_woprint.rptdesign 07/9/2024 18:26

Figure 4 - COMR Work Order - (page 3 of 3).

Appendix C – Why-Tree Analysis

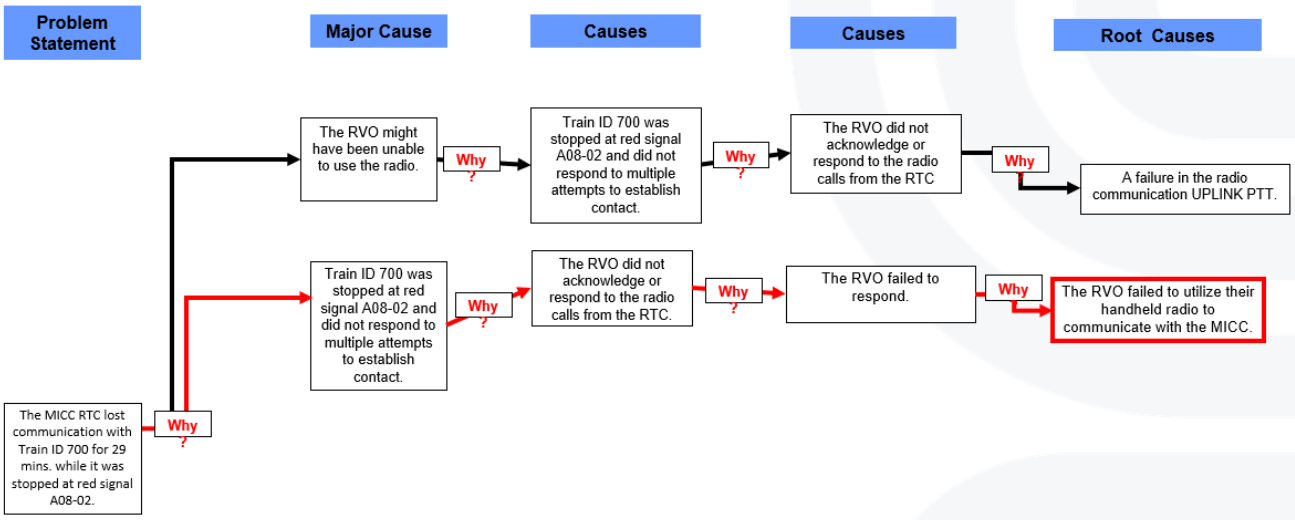


Figure 5 -Root Cause Analysis.