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WMSC Commissioner Brief: W-0087 – Improper Door Operation – Capitol Heights Station – December 29, 2020

Prepared for Washington Metrorail Safety Commission meeting on June 29, 2021

Safety event summary:

A Rail Transportation (RTRA) Supervisor boarded the last Blue Line revenue train of the evening toward Largo Town Center Station, entered the operator's cab without permission or justification, and proceeded, contrary to Metrorail rules and procedures, to operate the doors at stations between Stadium-Armory and Capitol Heights with the Train Operator solely controlling the movement of the train. At Capitol Heights, at approximately 11:28 p.m.[1], the Train Operator opened the doors on the incorrect (right) side of the train without looking out to verify the platform side. The Supervisor then opened the doors on the correct (left) side of the train a moment later. Event Recorder and Vehicle Monitoring and Diagnostic System (VMDS) data show the Supervisor had attempted to open the doors on the correct side approximately 4 seconds before the doors were opened on the incorrect side, however the doors had not yet been enabled. The Train Operator hit the OK button, and then opened the doors on the incorrect side, followed by the Supervisor opening the doors on the incorrect side.

Neither the Train Operator nor the Supervisor initially identified that the doors had opened on the wrong side. In interviews, they stated that they did hear the door open chime play twice, but that the Supervisor looked out the platform side and saw that doors were open on that side, so they assumed there were no problems. When the train operator went to move the train after the Supervisor closed the platform-side doors, the train would not move due to doors being open. The Supervisor then identified that the doors on the side opposite the platform were open.

Neither the Train Operator nor the Supervisor immediately reported this improper door operation to the Rail Operations Control Center (ROCC), and neither performed a ground walk around required by Metrorail procedures to ensure the safety of passengers. The ROCC also did not direct the Train Operator, Supervisor or Station Manager to conduct this walk around.

The Capitol Heights Station Manager approached the operating cab to inform the Train Operator and Supervisor of door operation issues. The Station Manager reported the improper door operation to the ROCC Assistant Superintendent at 11:32 p.m. When the ROCC controller contacted the RTRA Supervisor at 11:34 p.m., the Supervisor then acknowledged that they were in the operating cab during the event and that the doors had opened on both sides of the train. The doors on the side opposite the platform were closed at approximately 11:36 p.m.

The train was then taken out of service at 11:38 p.m. and was later taken to New Carrollton Yard for inspection. A separate train in the area was put into revenue service to complete passengers' trips. That replacement train arrived at Capitol Heights Station at 11:42 p.m. on the opposite track.

RTRA did not remove the Supervisor from service for post-event drug and alcohol testing.

[1] Times from the Vehicle Monitoring and Diagnostic System (VMDS), the Advanced Information Management (AIM) System, and the radio and phone recording system are not precisely synced.

Probable Cause:

The probable cause of this event was Metrorail's inconsistent supervisory training and procedural oversight, which led to the train operator's distraction and a loss of situational awareness. Contributing to this event and the lack of immediate reporting was Metrorail's ineffective safety culture.

Corrective Actions:

RTRA is planning to improve on-the-job training for operators and ride check processes, in conjunction with their plans to deploy a simulator program to include initial and recurring qualification requirements.

RTRA has produced a 'lessons learned' document discussing this event, associated hazards, safety rules and SOPs, and the importance of notifying ROCC before riding in an operating cab with an operator.

RTRA is re-evaluating RTRA supervisor and train operator oversight responsibilities when a supervisor enters the operating cab.

The Train Operator and Supervisor involved in this event are receiving refresher training.

WMSC staff observations:

This event demonstrates the impact of improper supervisory actions.

The event also exemplifies concerns related to Train Operator and RTRA Supervisor training on all aspects of door operations, which remain important to understand as Metrorail has begun to return to automatic door operations.

RTRA did not remove the Supervisor from service for post-event drug and alcohol testing, and appears to have allowed the supervisor involved in the event to determine whether they themselves may have contributed to the event. This supervisor was the one to escort the Train Operator to post-incident testing.

Staff recommendation: Adopt final report.

Washington Metro Area Transit Authority
Department of Safety and Environmental Management (SAFE)

FINAL REPORT OF INVESTIGATION A&I E20511

Date of Event:	12/29/2020
Type of Event:	Improper Door Operation
Incident Time:	23:28 hours.
Location:	Capitol Heights Station, Track 1
Time and How received by SAFE:	23:45 hours. SAFE On-call Phone
WMSC Notification Time:	01:18 hours.
Rail Vehicle:	Train ID 491 L7522.7523X7525.2524X7568.7569X7465.7464T
Injuries:	No
Damage:	No
SMS I/A Incident Number:	20201230#91089MX

Capitol Heights Station
Improper Door Operation

December 29, 2020

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Abbreviations and Acronyms

AIMS	Advanced Information Management System
ADU	Aspect Display Unit
ARS	Audio Recording System
ATC	Automatic Train Control
CCTV	Closed-Circuit Television
CMNT	Office of Car Maintenance
CMOR	Office of Chief Mechanical Officer
COMM	Office of Systems Maintenance Communication Section
IC	Incident Commander
IIT	Incident Investigation Team
MSRPH	Metrorail Safety Rules and Procedures Handbook
NOAA	National Oceanic and Atmospheric Administration
OJT	On-the-Job Training
OSC	On-Scene Commander
ROCC	Rail Operations Control Center
ROIC	Rail Operation Information Center
RTC	Rail Traffic Controller
RTRA	Office of Rail Transportation
SAFE	Department of Safety and Environmental Management
SOP	Standard Operating Procedure
VMDS	Vehicle Monitoring and Diagnostic System
WMATA	Washington Metropolitan Area Transit Authority

Executive Summary

On Tuesday, December 29, 2020, at approximately 23:28 hours, a Largo Division Train Operator, operating revenue Train ID 491 [L7522.7523X7525.2524X7568.7569X7465.7464T] in the direction of Largo Station, opened the door on the opposite side of the platform at Capitol Heights Station, Track 1.

Based on Audio Recording System (ARS) playback, at approximately 23:32 hours, the Capitol Heights Station Manager reported the improper door operation to the Rail Operation Control Center (ROCC) Assistant Superintendent. At approximately 23:34 hours, the Office of Rail Transportation (RTRA) Supervisor reported to the ROCC Radio Traffic Controller (RTC) that they were in the operator's cab during the time of the event and confirmed the consist doors opened on the opposite side of the platform at Capitol Heights Station, Track 1. The RTRA Supervisor informed the Radio RTC that customers had not exited the consist, and there were no customers on the roadway or the catwalk. The Radio RTC instructed the RTRA Supervisor to assist with offloading the affected consist and re-blocked Train ID 491 to non-revenue Train ID 791 for transport to the New Carrollton Yard for post-incident inspection. During the virtual interview, the RTRA Supervisor indicated they boarded Train ID 491 at Stadium-Armory Station, Track 1, entered the operator's cab without a justifiable reason, and were not given permission from the ROCC. By the RTRA Supervisor and Train Operator's own admissions, they both stated the RTRA Supervisor was riding in the operator's cab and activated the door open button on the platform side upon the train's arrival to the Capitol Heights Station, Track 1. After servicing the platform, the doors on the platform side of the train closed. The Train Operator attempted to take a point of power, but the Train Operator could not get all doors closed & lock relay indication. Shortly afterward, the RTRA Supervisor discovered that the train doors on the opposite side of the platform were open. The RTRA Supervisor performed door operation on Train ID 491 from Stadium-Armory Station to Capitol Heights Station while the Train Operator sat and only operated the consist.

Based on the Vehicle Monitoring and Diagnostic System (VMDS) data, at 23:28:34 hours, Train ID 491 Aspect Display Unit (ADU), left and right-side door function was enabled. At 23:28:35 hours, Train ID 491 right-side door open push button was depressed to open the doors on the opposite side of the platform. Car-borne footage of the Train Operator's cab revealed that the Train ID 491 Train Operator depressed the OK button on the console. The Train Operator of Train ID 491 then depressed the right-side door open pushbutton, subsequently activating the doors on the opposite side of the platform after the RTRA Supervisor initiated the doors on the platform side of the Capitol Station Platform, Track 1 (See Photo 1). The Office of Chief Mechanical Officer (CMOR) Incident Investigation Team (IIT) indicated that all the subsystems' safety components such as Automatic Train Control (ATC), brakes, and propulsion acted as designed, and there were no failures with the train that contributed to the event. Office of Car Maintenance (CMNT) personnel found no anomalies during the post-incident inspection.

The Advanced Information Management System (AIMS) playback showed Train ID 491, Lead Car 7522, being the last revenue train in the direction of Largo Station. RTRA removed the Train Operator from service for post-incident toxicology testing per RTRA's Standard Operating Procedure (SOP 102-1 Removing an Employee from Service). RTRA Management reported that they did not remove the RTRA Supervisor from service because they did not depress the right door open push button that commanded the doors open on the opposite side of the Capitol Heights Station platform, Track 1. After reviewing the ARS data, there did not appear to be any

communication deficiencies over the radio. There were no injuries or damages reported as a result of this incident.

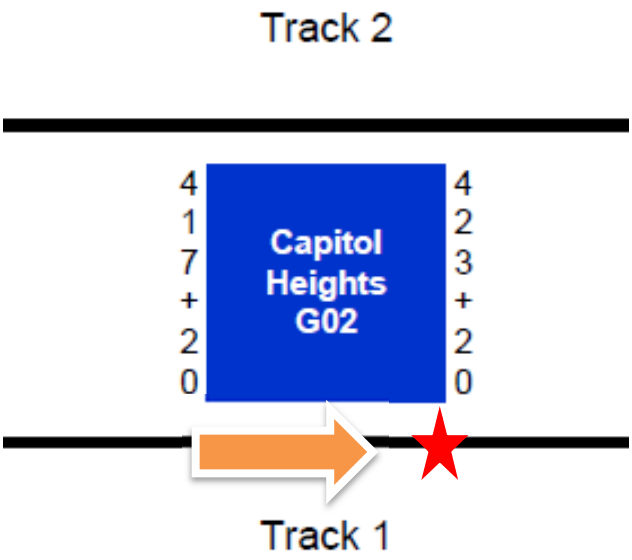
The probable cause of the Improper Door Operation event on December 29, 2020, was human error and lack of procedural adherence from the Train Operator and RTRA Supervisor. The Train Operator did not place their head out of the cab window for five seconds to verify they were opening doors on the correct side of the platform while keeping their hands at their sides before depressing the door open push-button.

SAFE identified employee non-adherence to written procedures and processes within the MSRPH as contributing factors in this event. The RTRA Supervisor entered the operator's cab without ROCC's authorization, subsequently causing the Train Operator's distraction. The Train Operator and the RTRA Supervisor failed to adhere to Metrorail Safety Rules and Procedures Handbook (MSRPH) *SOP 40.5.1, Door Opening Procedures.*

After the incident, the Train Operator closed the train doors and failed to notify ROCC and conduct a ground walk-around inspection.

Incident Site
Capitol Heights Station, Track 1

Field Sketch/Diagram



Purpose and Scope

The purpose of this incident investigation 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:

- Formal Interview – SAFE conducted two interviews as part of this investigation. The interviews included:
  - One RTRA Supervisor
  - One Train Operator

- Informal Interviews – Collected through conversations with individuals during the investigation to provide background and supporting information.

- Documentation Review – A collection of relevant work history information and process documentation in Metro's records systems. These records include:
  - Employee Training Procedures & Records
  - Certification
  - The 30-Day work history review
  - Metrorail Safety Rules and Procedures Handbook (MSRPH)
  - National Oceanic and Atmospheric Administration (NOAA)
  - Rail Operations Control Center (ROCC) Procedures Manual
  - Office of Systems Maintenance Communication Section (COMM)
  - Office of Car Maintenance (CMNT) post-incident inspection data
  - Office of Chief Mechanical Officer (CMOR) Incident Investigation Team (IIT) post-incident analysis data
  - Maximo

- System Data Recording Review – A collection of information contained in Metro Data Recording Systems. This data includes:
  - Audio Recording System (ARS) playback [Radio and Phone Communications]
  - Close-Circuit Television (CCTV) playback
  - Advanced Information Management System (AIMS)
  - Rail Operations Control Center (ROCC) SPOTS event log data review

Investigation

On Tuesday, December 29, 2020, at approximately 23:28 hours, a Largo Division Train Operator, operating revenue Train ID 491 [L7522.7523X7525.2524X7568.7569X7465.7464T] in the direction of Largo Town Center Station, opened the doors on the opposite side of the platform at Capitol Heights Station, Track 1. Upon further investigation, the RTRA Supervisor, who was on board the train in the operator's cab during the incident, reported to the ROCC Radio RTC that the train doors opened on the opposite side of the Capitol Heights Station platform, Track 1. The RTRA Supervisor informed the Radio RTC that customers had not exited the consist, and there were no customers on the roadway or the catwalk. There were no injuries reported as a result of this event. Below is the actual incident timeline identified through data sources such as AIMS, ARS, CCTV, and other data capturing resources.

Advanced Information Management System (AIMS)

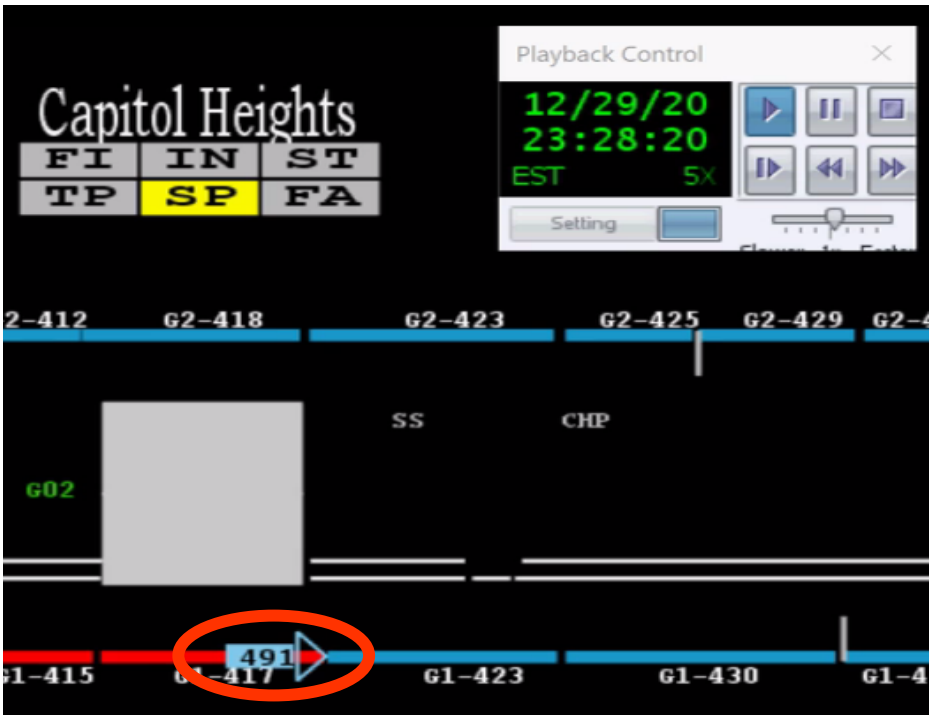


Diagram 1 - Based on the AIMS, at 23:28:20 hours, shows revenue *Train ID 491 berthed at Capitol Heights Station, Track 1.*

Figure 1 - The operator's cab video revealed that Train ID 491 Operator depressed the right door open push button, which commanded the doors open on the opposite side of the Capitol Heights Station platform, Track 1.

Figure 2 - *Based on the CCTV, at 23:28 hours, the consist doors were commanded open on the opposite side of the Capitol Heights Station platform, Track 1.*

Based on ARS playback, at 23:32 hours, the Capitol Heights Station Manager reported to the ROCC Assistant Superintendent that they witnessed the Train Operator on operating car 7522 doors opened on the platform's opposite side at Capitol Heights Station, Track 1. The ROCC Assistant Superintendent instructed the Capitol Heights Station Manager to instruct Train ID 491 Operator to announce it over the airway. At 23:34 hours, the Radio RTC contacted the RTRA Supervisor and asked, “are you aboard Train ID 491?” The RTRA Supervisor responded, “roger, I am onboard Train ID 491.” The Radio RTC appointed the RTRA Supervisor as the On-Scene Commander and asked whether they can confirm if Train ID 491 Operator opened the doors on the platform's opposite side Capitol Heights Station, Track 1. The RTRA Supervisor responded, “I was in the operating cab, and the Train Operator pressed the OK button, and the doors opened up on both sides of the consist.” The Radio RTC asked the RTRA Supervisor if the doors on the platform's opposite side were still open. The RTRA Supervisor responded, “that's affirmative.” At 23:35 hours, The Radio RTC contacted the RTRA Supervisor and asked, “are we able to close the doors on the platform's opposite side?” The RTRA Supervisor responded, “yes, we can close the doors, and I have verified that all doors are closed.”

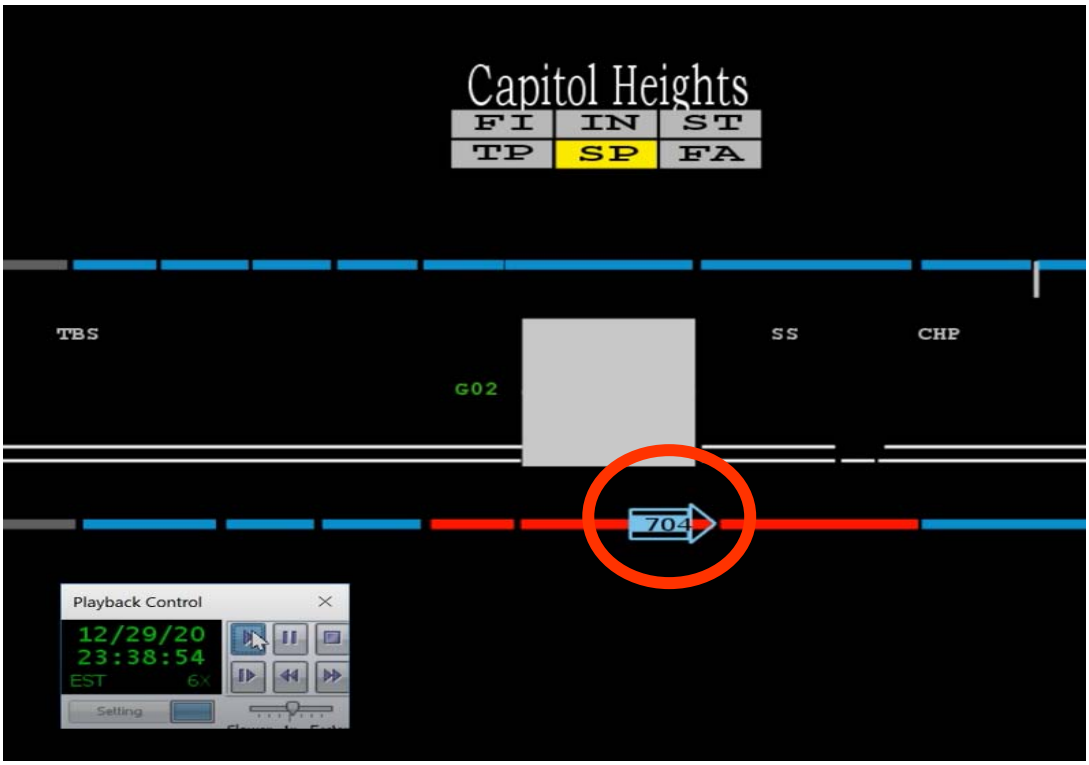


Diagram 2 - Based on the AIMS, at 23:38:54 hours, shows incident train's ID changed from 491 to 704.

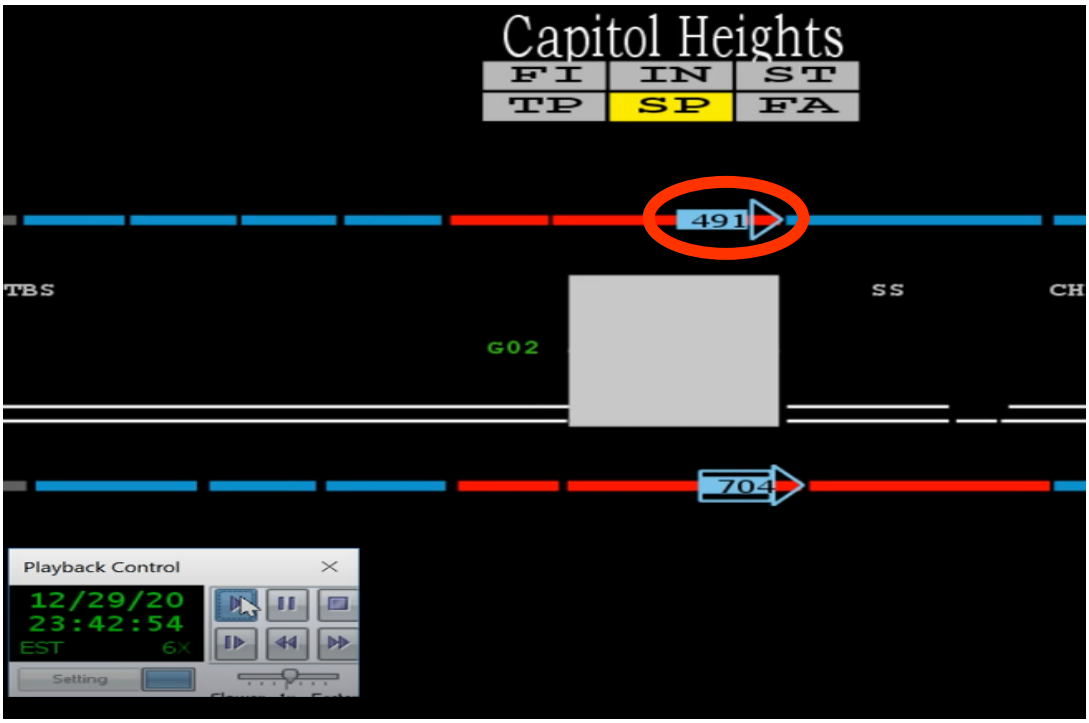


Diagram 3 - Based on the AIMS, at 23:42:54 *hours, the* new *Train ID 491 serviced Capitol Heights Station, Track 2, and picked up customers to head towards Largo Station Track.*

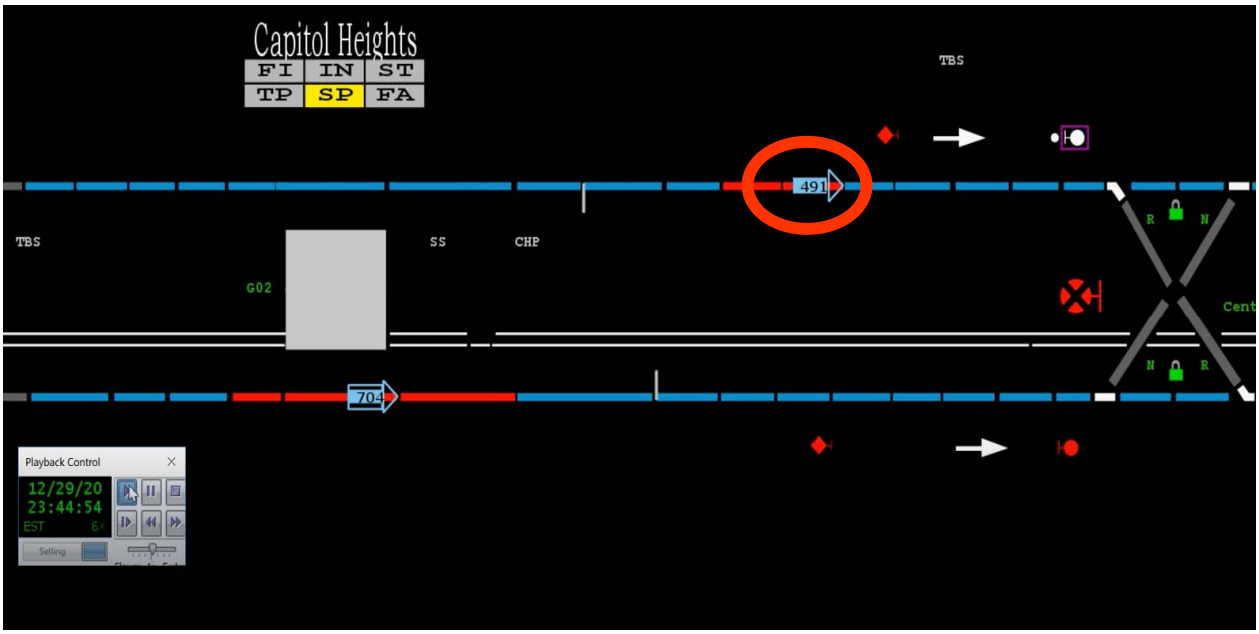


Diagram 4 - At *22:44:54* hours, *the AIMS playback revealed the new revenue Train ID 491 in service is about to traverse through the interlocking from Track 2 to Track 1 in Largo Town Center Station direction.*

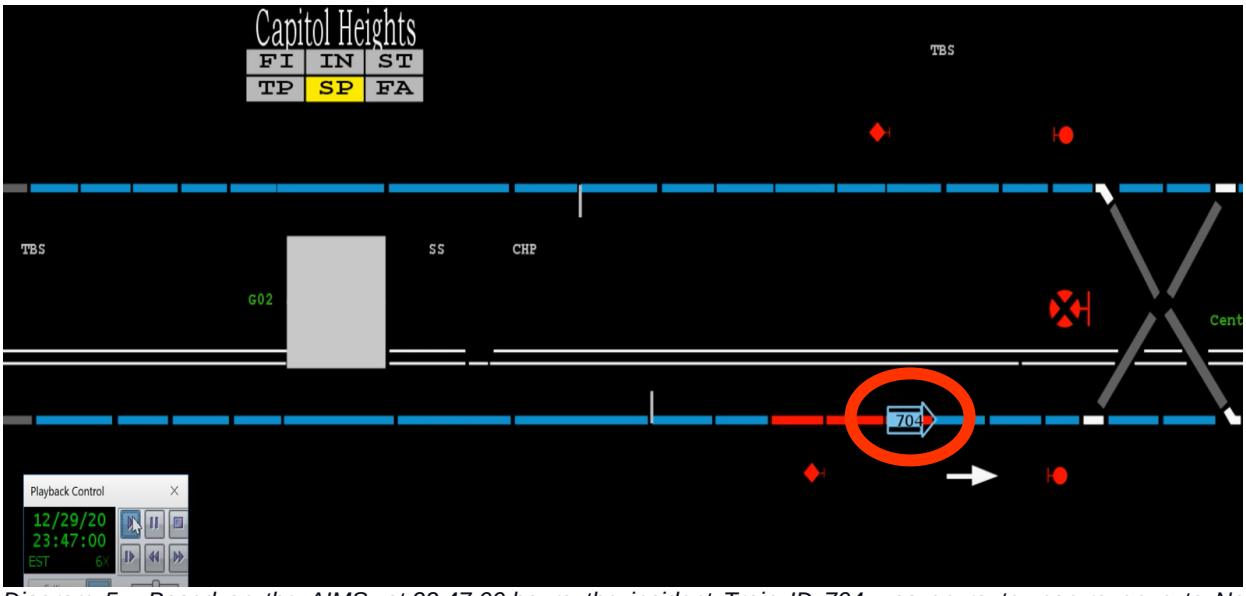


Diagram 5 - Based on the AIMS, at 22:47:00 hours, the incident Train ID 704 was en route, non-revenue to New Carrollton Yard for post-incident inspection.

Based on the AIMS, no other revenue trains came through Capitol Heights Station after the last scheduled revenue Train ID 491 departed. RTRA removed the Train Operator from service for post-incident toxicology testing per RTRA's Standard Operating Procedure (SOP 102-1 Removing an Employee from Service).

Chronological Audio Recording System (ARS) Event Timeline

A review of ARS playback, i.e., phone, ambient, and radio communications revealed the following: Note: Radio communication is not annotated.

23:32:41 hrs.	Capitol Heights Station Manager: Reported to the ROCC Assistant Superintendent they witnessed the Train Operator operating car 7522 doors open doors on the opposite side of the platform at Capitol Heights Station, Track 1. ROCC Assistant Superintendent: Instructed the Capitol Heights Station Manager to instruct Train ID 491 Operator to announce it over the airway. [Phone]
23:34:15 hrs.	Radio RTC: Contacted the RTRA Supervisor and asked, are you aboard Train ID 491? RTRA Supervisor: responded, roger, I am onboard Train ID 491. Radio RTC: Appointed the RTRA Supervisor as the On-Scene Commander and asked whether they can confirm if Train ID 491 Operator opened the doors on the opposite side of the Capitol Heights Station platform Track 1. RTRA Supervisor: I was in the operating cab, and the Train Operator pressed the OK button, and the doors opened up on both sides of the consist. Radio RTC: Asked the RTRA Supervisor if the doors on the platform's opposite side were still open. RTRA Supervisor: Responded that's affirmative. [Ops 2]
23:35:49 hrs.	Radio RTC: contacted the RTRA Supervisor and instructed them to confirm that no customers exited on the non-platform side. The RTRA Supervisor responded, all customers exited on the platform side, and there are no customers on the roadway. Radio RTC: Contacted the RTRA Supervisor and asked, are we able to close the doors on the platform's opposite side? RTRA Supervisor: Yes, we can close the doors, and I have verified that all doors are closed. Radio RTC: Acknowledged that all doors were closed and instructed Train ID 491 Operator to hold their location. [Ops 2]
23:36:35 hrs.	ROCC Assistant Superintendent: Reported to the ROCC Superintendent that they have another consist available en route to replace Train ID 491 and pick up the customers at Capitol Heights Station. [Phone]
23:37:05 hrs.	Radio RTC: Contacted Train ID 704 Operator and instructed them to take the consist to Capitol Heights Station. The Radio RTC notified Train ID 704 that there was a consist that had open doors on the opposite side of the platform, so we need to offload that consist, and the ROCC needs you to pick up those customers. Train ID 704 Operator: acknowledged. [Ops 2]
23:37:44 hrs.	RTRA Supervisor: Contacted the ROCC and reported that the Capitol Heights Station Manager indicated that the only doors that had opened were on car 7569; all the other car doors did not open. [Ops 2]
23:38:10 hrs.	Radio RTC: Contacted the RTRA Supervisor and instructed them to offload the consist and that Train ID 704 on Track 2 will now be Train ID 491. Radio RTC: instructed the RTRA Supervisor to stay on the affected consist and with the Train Operator. [Ops 2]
23:42:09 hrs.	Train ID 491 Operator: Contacted the Radio RTC and reported their consist was clear of customers. Radio RTC: Acknowledged and advised the new Train ID 491 to go in service at Capitol Heights Station, Track 2, heading towards Largo Station. [Ops 2]

23:44:25 hrs.	A WMATA employee provided the ROCC Assistant Superintendent with Train ID 491 Operator's name, payroll number, and primary work location. [Phone]
23:45:08 hrs.	ROCC Assistant Superintendent: Contacted SAFE and reported the improper door operations event at Capitol Heights Station, Track 1. [Phone]
23:45:23 hrs.	Radio RTC: Contacted the new Train ID 491 and indicated they have a lunar signal at G03-06, crossover from Track 2 to Track 1, and go into service to Largo Station. [Ops 2]
23:47:50 hrs.	ROCC Assistant Superintendent: Reported to the RTRA Largo Town Center Station Terminal Supervisor that the RTRA Supervisor aboard the consist indicated that Train ID 491 initiated the OK button and opened the doors on the opposite side of the platform. The RTRA Largo Town Center Station Terminal Supervisor stated that what was supposed to happen was once the consist berth the platform, the Train Operator sticks their head out the window to make sure the platform is clear, step back over in the cab and depress the OK button, then back over to the window on the platform side and depress the door open button, that way it will keep the operator's from opening the doors on the wrong side. [Phone]
00:01:39 hrs.	The RTRA Supervisor contacted ROCC Assistant Superintendent and advised they were escorting the Train Operator for post-incident toxicology testing. [Phone]

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

Rail Operations Control Center (ROCC) Spots Report

Based on the SPOTS event log data, SAFE determined the following:

TIME	Description
23:28:12 hrs.	The consist head arrived at Capitol Heights Station, Track 1.
23:28:42 hrs.	The consist doors on the opposite side of the platform were commanded open.
23:29:05 hrs.	The consist doors on the platform's side were open, and customers exited the consist, per CCTV.
23:36:25 hrs.	The consist doors on the opposite side of the platform were commanded close.
23:41:44 hrs.	The consist doors on the side of the platform were commanded close.
23:46:06 hrs.	The consist tail cleared Capitol Heights Station.

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

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

Based on the Vehicle Monitor and Diagnostic System (VMDS) data, at 23:28:34 hours, Train ID 491 ADU, left and right-side door function was enabled. At 23:28:35 hours, the Train ID 491 right side door open push button was depressed and opened doors on the platform's opposite side. IIT CMOR indicated that all the subsystems' safety components such as ATC, brakes, and propulsion acted as designed, and there were no faults with the train that contributed to this incident.

Event Recorder (ER) Data Graph/Sequence of Events

Based on IIT CMOR analysis of the downloaded Vehicle Monitoring and Diagnostic System (VMDS) and ER, details from the data analysis are as follows:

TIME	Description
23:28:31 hrs.	The consist left-door open push button was depressed.
23:28:34 hrs.	The consist ADU left and right-side doors were enabled.
23:28:35 hrs.	The consist right-side door open push button was depressed, doors opened on the platform's opposite side.
23:28:36 hrs.	The consist left-door open push button was depressed, doors opened on the platform side.
23:28:53 hrs.	The consist left-door close push button was depressed, doors closed on the platform side.
23:29:08 hrs.	The consist left-door open push button was depressed.
23:29:13 hrs.	The consist left-door close push button was depressed, doors closed platform side.
23:36:13 hrs.	The consist right-door close push button was depressed, doors closed on the opposite side of the platform.
23:36:13 hrs.	All of the consist doors closed and were secure.

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

The VMDS data verified that the consist doors opened on the opposite side of the platform. All the subsystems' safety components such as ATC, brakes, and propulsion acted as designed, and there were no faults with the train that contributed to this incident.

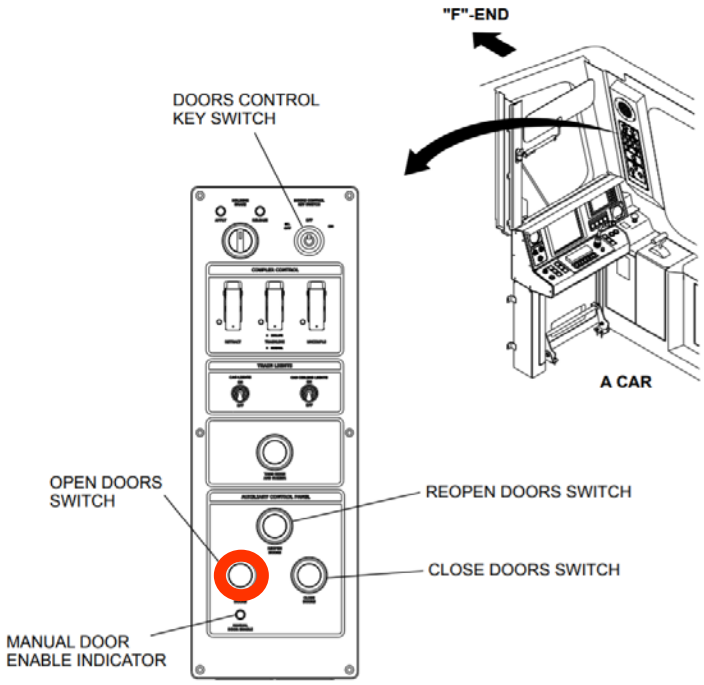


Diagram 6 – *This illustration represents the auxiliary control Panel (right doors control). Train ID 491 Operator depressed the right door open push switch (circled in red), which commanded the doors open on the opposite side of the Capitol Heights Station platform, Track 1.*

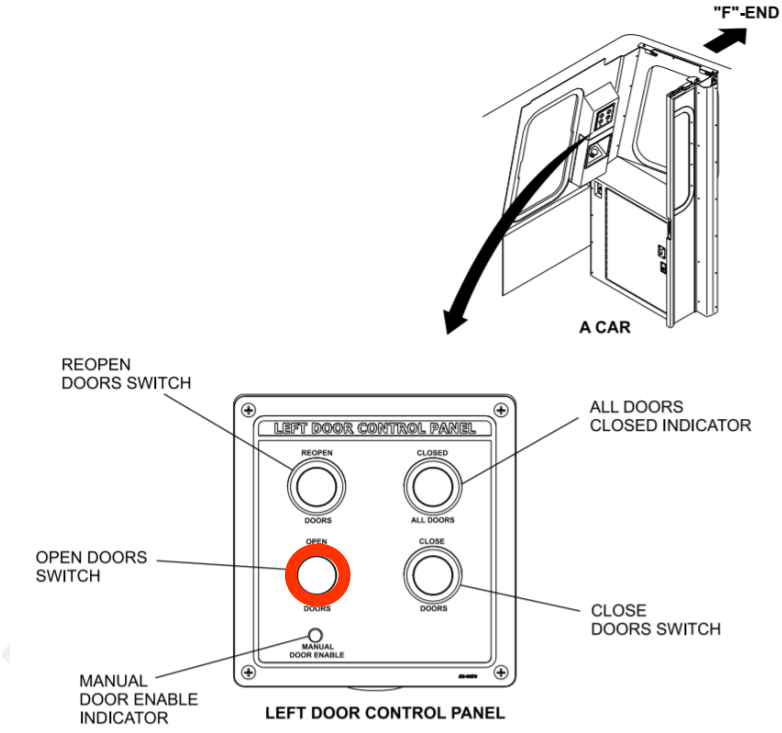


Diagram 7 – This illustration represents the left door control panel. The RTRA Supervisor depressed the left door open push switch (circled in red), which commanded the *doors opened on the platform side at Capitol Heights Station platform, Track 1.*

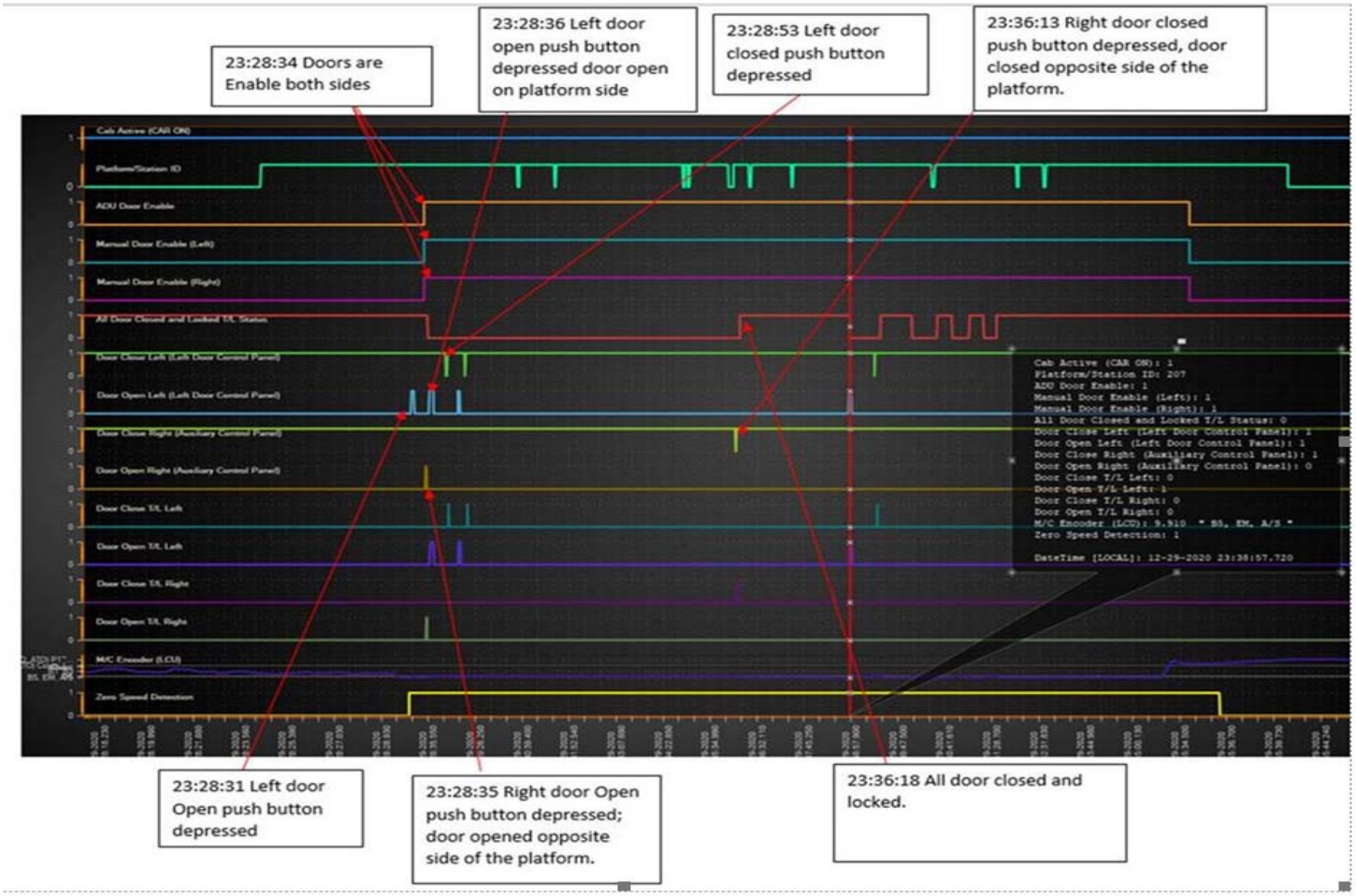


Figure 1: ER Graphical Analysis

Office of Car Maintenance (CMNT)

CMNT personnel performed an exterior and interior inspection of the affected car and found no equipment-related issues. Additionally, the master controller operation and the consist's doors were checked and found to be working as designed.

Office of System Maintenance Communication Section (COMM)

COMM performed a comprehensive radio operational test at Capitol Heights Station, Track 1, and Track 2. The test was successful, and the signal was at an optimal level.

Note: After reviewing the ARS playback, there did not appear to be any communication deficiencies over the radio.

Interview Findings

SAFE interviewed Train ID 491 Operator and RTRA Supervisor via virtual Microsoft Teams. These interviews revealed the following:

On Tuesday, December 29, 2020, a Largo Division Train Operator was operating the last revenue train, Train ID 491, Lead Car 7522, in the direction of Largo Station. The RTRA Supervisor boarded Train ID 491 at Stadium-Armory Station, Track 1, due to it being the last revenue train for the night and entered the operator's cab to check on the Train Operator. Train ID 491 Train Operator proceeded. When the Train Operator made it to the next station, the Train Operator allowed the RTRA Supervisor to perform the following Train Operator duties: open the cab window on the

platform side and place their head out the window to monitor platform activity before closing the doors. The RTRA Supervisor also performed door operation on Train ID 491 from Stadium-Armory Station to Capitol Heights Station while the Train Operator sat and operated the consist.

Both employees indicated when they arrived at Capitol Heights Station, Track 1 at approximately 23:30 hours, the Train Operator properly berthed the consist on the platform, and the RTRA Supervisor depressed the open-door push button on the platform side and the Train Operator depressed the OK button. They both heard the door open chime sound twice and then realized the doors on the opposite side of the platform had opened. Both employees indicated they have no recollection of accidentally initiating the door open pushbutton on the platform's opposite side. IIT CMOR data confirmed that both the left and right-side door buttons were enabled. The employees indicated that they are familiar with MSRPH SOP 40, Door Operations, and knew that they were not following policies and procedures at the time of the incident. The Train Operator was then taken out of service for post-incident testing, but the RTRA Supervisor was not.

Findings

- During a virtual interview with the RTRA Supervisor and Train ID 491 Operator, both indicated that the RTRA Supervisor boarded Train ID 491 at Stadium-Armory Station, Track 1, which was being the last revenue train for the night, and entered the operator's cab to check on the Train Operator. Train ID 491 Operator proceeded on, and when the Train Operator made it to the next station, the Train Operator allowed the RTRA Supervisor to perform the following Train Operator duties:
    - Open the cab window on the platform side and place their head out the window to monitor platform activity before closing the doors.
    - The RTRA Supervisor also performed door operation on Train ID 491 from Stadium-Armory Station to Capitol Heights Station while the Train Operator sat and operated the consist.
- RTRA Management reported that the RTRA Supervisor was not removed from service because they did not open the train doors on the platform's opposite side. This was confirmed via written statements submitted by the RTRA Supervisor and Train Operator. RTRA Management indicated that they would take appropriate actions for all involved personnel to include the RTRA Supervisor, upon the investigation's conclusion.
- CCTV recording showed the consist doors opened on the opposite side of the platform.
- The Train Operator and the RTRA Supervisor failed to follow MSRPH *SOP 40 (40.5.1 Door Opening Procedures).*
- The Train Operator and the RTRA Supervisor failed to follow MSRPH 1.49 (Employees authorized to ride in the cab).
- The Train operator failed to follow MSRPH *OR 3.121, "In revenue service, when the train is otherwise within the limits of a station platform, Train Operators shall not manually operate the OPEN DOORS control on the side of the train opposite the platform. In the event train, doors are opened outside the platform limits or opposite side of the platform side, Train Operators shall close doors, notify ROCC and conduct a ground walk-around inspection. ROCC will determine if the train is to be taken out of service and if it is safe to discharge customers at that station."*

- The affected operator's cab video footage revealed that Train ID 491 Operator depressed the right door open push button, which commanded the doors open on the opposite side of the Capitol Heights Station platform, Track 1.
- Upon the Train Operator not being unable to get a 'brakes off' indication on the train, the RTRA Supervisor, standing in the cab area, observed that the doors opened on the platform's opposite side.
- The train sat on the platform for approximately eight (8) minutes with the doors opened on the opposite side of the Capitol Heights Station platform, Track 1, before Train Operator commanded doors to close.

Weather

At the time of the incident, National Oceanic and Atmospheric Administration (NOAA) recorded the temperature as 33°F with passing clouds and 81% humidity. SAFE has concluded that weather was not a contributing factor in this incident (Weather source: NOAA – Location: Capitol Heights, MD.)

Human Factors

Fatigue

Based on SAFE's review of the Train Operator's 30-day work history, the employee's 30-day work schedule leading up to the incident was compliant with WMATA's Policy/Instruction 10.6/1 Hours of Service Limitations for Prevention of Fatigue. It did not present a significant risk of impairment due to fatigue. Based on employee interviews, no personal factors would have increased the likelihood of fatigue-related impairment. The employees had no history of sleep issues to report.

The Train Operator was in the last hour of their 8-hour shift.

Post Incident Toxicology Testing

After reviewing the Train Operator post-incident testing results, it was determined that Train Operator was not in violation of the Drug and Alcohol Policy and Testing Program 7.7. 3/6, therefore, being under the influence of a controlled substance has been excluded as a contributing factor.

Probable Cause

The probable cause of the Improper Door Operation event on December 29, 2020, was human error and lack of procedural adherence from the Train Operator and RTRA Supervisor. The Train Operator did not place their head out of the cab window for five seconds to verify they were opening doors on the correct side of the platform while keeping their hands at their sides before depressing the door open push-button.

SAFE identified employee non-adherence to written procedures and processes within the MSRPH as contributing factors in this event. The RTRA Supervisor entered the operator's cab without ROCC's authorization, subsequently causing the Train Operator's distraction. The Train Operator and the RTRA Supervisor failed to adhere to Metrorail Safety Rules and Procedures Handbook (MSRPH) *SOP 40.5.1, Door Opening Procedures.*

After the incident, the Train Operator closed the train doors and failed to notify ROCC and conduct a ground walk-around inspection.

Recommendations/Corrective Actions

The following are the recommendations and corrective actions identified as a result of this investigation. These recommendations and corrective actions are tracked using WMATA's Safety Measurement System Incidents/Accidents (SMS I/A) Module and are verified by SAFE upon completion. The responsible department is identified in the corrective action code. Refer to the SMS I/A module for additional information.

Corrective Action Code	Description
91089_SAFECAPS_RTRA_001	Enhance Operator OJT and the ride check process and deploy a simulator program to include initial and recurrent qualification requirements.
91089_SAFECAPS_RTRA_002	Produce a lesson learned to discuss the Improper Door Operation incident, the associated hazards, the importance of notifying ROCC before riding in the lead car with an operator, and re-emphasizing all personnel governed by SOP and all safety guidelines.
91089_SAFECAPS_RTRA_003	Re-evaluate RTRA Supervisor and Train Operator oversight responsibilities when the RTRA Supervisor enters the train's operating cab.
91089_SAFECAPS_RTRA_004	Require the Train Operator to undergo refresher Train Operator training.
91089_SAFECAPS_RTRA_005	Require the RTRA Supervisor to undergo refresher RTRA Supervisor training.

Appendices

Appendix A – RTRA Lessons Learned 2021-001

Train Doors Opened on the Off-Platform Side of a Train

INCIDENT SUMMARY

On Wednesday, December 29, 2020, at approximately 11:30pm, ROCC received a report that the doors of Train #491 opened on the opposite side of the platform at Capitol Heights, Track #1. It was later reported that a Rail Operations Supervisor was riding in the cab and activated the door open button on the platform side upon the train's arrival to the station. This was confirmed by the engineer's report which also revealed the right-side door button (which is on the opposite side of the platform) was depressed after the left side doors were already opened for approximately four (4) seconds. After servicing the platform, the doors on the platform side of the train were closed. Upon attempting to take a point of power, the operator was unable to get an all doors closed indication. Shortly afterwards, it was discovered that the train doors on the opposite side of the platform were open.

Video surveillance obtained from the cab area showed the Train Operator depressing the OK button on the console and depressing the door open button on the opposite side of the platform after the Supervisor initiated the doors on the platform side.

Upon being unable to get a 'brakes off' indication on the train, the Supervisor, standing in the cab area saw the doors opened on the off-platform side of the train. Prior to this observation, the train sat on the platform for approximately eight (8) minutes with the doors opened on the off-platform side of the train. It was at this time that ROCC was notified. The train was then offloaded, and a ground walk around was conducted. There were no reported injuries as a result of this incident.

ROOT CAUSES

The root causes of the incident are listed below:

- The Operator was distracted by the Rail Supervisor who was in the cab and who operated the doors of the train.
- The Operator failed to fully adhere to SOP #40 as it relates to proper door opening procedures. (Operator failed to have head out window 3-5 seconds prior to initiating doors).

LESSONS LEARNED

What happened…	*What should have happened…*
The Train Operator opened the train doors on the opposite side of the platform.	*The Train Operator should have opened the train doors, in accordance to SOP #40, when servicing the platform as prescribed by revenue service.*
Rail Operations Supervisor was not given permission by ROCC to ride in the train cab.	*ROCC must be notified and must sanction any additional personnel riding in the train operator's cab.*
The Rail Operations Supervisor operated the train doors.	*The Train Operator, and only the Train Operator is authorized to open train doors under normal operations.*

RECOMMENDATIONS

- When a Supervisor is required to ride in the lead car with an Operator, ROCC shall be notified of them doing so. The Supervisor is required to allow the Operator to perform their normal tasks without causing any distractions.
- Re-emphasize all personnel must be governed by Standard Operating Procedures and all Safety guidelines.

RULES VIOLATED

- MSRPH OR 3.120: In revenue service, Train Operators shall not manually operate any OPEN DOORS control except the crew door key switch while any side doors of the train are outside the limits of a station platform, except when directed by ROCC.
- MSRPH OR 3.121: In revenue service, when the train is otherwise within the limits of a station platform, Train Operators shall not manually operate the OPEN DOORS control on the side of the train opposite the platform. In the event train doors are opened outside the platform limits or on the off side of the platform, Train Operators shall

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close doors, notify ROCC and conduct a ground walk around inspection. ROCC will determine if the train is to be taken out of service and if it is safe to discharge customers at that station.

- MSRPH SOP 40.5: Door Opening Procedures

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Appendix B – Interview Summaries

RTRA

Train Operator

Train Operator is a WMATA employee with six years of service. The Train Operator started as a Bus Operator then became certified as a Train Operator on October 19, 2019.

During the virtual interview, the Train Operator stated that on December 29, 2020, they were operating Train ID 491, going into Capitol Heights Station, Track 1, at approximately 23:30 hours. The Train Operator indicated that before arriving at Capitol Heights Station, they picked up an RTRA Supervisor at Stadium-Armory Station. The Train Operator indicated that since it was the last revenue train, the RTRA Supervisor normally rides their train. NOTE: The Train Operator advised that the RTRA Supervisor was riding in the operator's cab with them while operating Train ID 491. The Train Operator indicated that the RTRA Supervisor performed door operation on Train ID 491 from Stadium-Armory Station to Capitol Heights Station while the Train Operator was operating the consist. The Train Operator stated that when they arrived at Capitol Heights Station, Track 1, they properly berthed the consist on the platform, and the RTRA Supervisor depressed the open-door push button on the platform side and the Train Operator depressed the OK button. They both heard the door open chime twice, and they advised that two chimes are not normal.

However, the RTRA Supervisor placed their head out the cab window on the platform side, and everything appeared normal and then closed the consist doors. The Train Operator indicated that they did not get the brakes off when they checked for brakes off. At that point, the Train Operator indicated that the Capitol Heights Station Manager came to the cab window and advised not all the platform side doors opened. The Train Operator then realized that the doors on the opposite side of the platform had opened. The Train Operator indicated that the Capitol Heights Station Manager contacted the ROCC and the ROCC instructed them to offload the train and perform a ground walk-around and verify that it was clear of customers. The roadway was clear of customers. The Train Operator indicated that this was the first time they allowed an RTRA Supervisor or another Train Operator to perform door operations after properly berthing the consist. The Train Operator indicated this incident might have transpired due to a train malfunction. They did not recall inadvertently depressing the open-door push button on the opposite side of the platform. The Train Operator stated they are familiar with MSRPH SOP 40, Door Operations, and knew that they were not following policies and procedures at the time of the incident. The Train Operator was subsequently removed from service for post-incident toxicology testing. The ROCC removed affected consist from service for post-incident inspection.

RTRA Supervisor

RTRA Supervisor is a WMATA employee with 18 years of experience as a Supervisor and 25 years of service. The RTRA Supervisor held various positions, such as Bus Operator, Train Operator, and Station Manager.

During the virtual interview, the RTRA Supervisor stated that they normally board the last revenue train and ride it to Largo Town Center Station. The RTRA Supervisor indicated that on December 29, 2020, they boarded Train ID 491 at Stadium-Armory Station, Track 1, and entered the operator's cab to check on the Train Operator. The RTRA Supervisor indicated that the Train Operator advised they were fine, so they proceeded on with the Train Operator allowing the RTRA Supervisor to perform door operations and verify when the platform was clear of customers after the Train Operator properly berthed the consist. The RTRA Supervisor indicated that when the

Train Operator berthed the consist at Capitol Heights Station, Track 1, there was a delay with the platform doors opening, and then they noticed the doors on the opposite side of the platform opened. The RTRA Supervisor indicated that the Train Operator advised they did not depress the open-door push button on the platform's opposite side, and they didn't know what happened. The RTRA Supervisor indicated that once they made contact with the ROCC, they informed the ROCC that the roadway was clear of customers. The RTRA Supervisor indicated that they walked through the consist to ensure the consist was clear of customers. The affected consist was then removed from service for post-incident inspection. The RTRA Supervisor indicated that they were familiar with MSRPH SOP 40, Door Operations, and knew that they were not following policies and procedures at the time of the incident. The RTRA Supervisor indicated that they escorted the Train Operator for post-incident toxicology testing, and the affected consist was removed from service for post-incident inspection. The RTRA Supervisor indicated that they were not removed from service as a result of this incident.