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WMSC Commissioner Brief: W-0162 – Improper Door Operation – Fort Totten Station – January 7, 2022

Prepared for Washington Metrorail Safety Commission meeting on May 24, 2022

Safety event summary:

A Yellow Line Train Operator overran Fort Totten Station at 4:21 p.m. on January 7, 2022, then, at 4:24 p.m., opened the train doors on the wrong side (non-platform side). The Train Operator did not report any aspect of this event to the Rail Operations Control Center (ROCC).

Metrorail employees from the Metro Transit Police Department (MTPD) who were already on the station platform observed this improper door operation. However, Metrorail did not conduct a ground walkaround required by its procedures to ensure that there are no injuries and no riders on the roadway before the train continued to the next station. MTPD personnel did not report these safety issues directly to the ROCC and did not prevent the train from continuing on until the safety steps had been completed. MTPD reports and CCTV do indicate that MTPD personnel attempted to prevent doors on the platform side from closing until the non-platform side doors closed. It is not clear what the intended purpose of this action was, as the engineering controls that prevent movement of a train without all doors closed and locked does not differentiate between platform side and non-platform side doors, and as MTPD personnel did not hold the train until a ground walkaround could be completed to assure the safety of Metrorail riders and personnel. The Mission Assurance Coordinator (MAC) in the ROCC overheard discussion on an MTPD radio channel about an off-platform door opening. The MAC informed ROCC personnel of this discussion.

Based on that information, after the train departed, a Rail Controller asked the Train Operator if they had opened their doors on the incorrect side of the train at Fort Totten Station. The Train Operator replied that they had not. This communication began approximately 1 minute and 30 seconds after the Train Operator had begun to initiate communication with the ROCC but had then told the Rail Controller to “hold on a second” and had not followed up. The Rail Controller initially asked whether the operator had serviced Fort Totten Station. The question related to wrong side door operations occurred at 4:33 p.m. The Train Operator stated that police had told them the doors were open, and stated that they had told the police officer that the doors were not open on the wrong side.

ROCC personnel and the MAC reviewed Closed Circuit Television (CCTV) images that showed the Train Operator had opened the doors on the non-platform side. The ROCC incident chronology shows this was confirmed at 4:41 p.m. and the Train Operator was then instructed to offload the train at Gallery Place-Chinatown Station.

The Train Operator and the train consist were removed from service.

The ROCC instructed the Train Operator of a different train, Train 502, entering Fort Totten Station to perform a visual track inspection. Train 502 entered the station and reported the track was clear.

Train Operator sleep and work schedule information indicates that the Train Operator was at increased risk of fatigue due to a limited off-duty period of 6.5 hours preceding this event, which violates Metrorail’s existing fatigue policies and agreements. The Train Operator had worked schedules in the days leading up to event that included starting work at 7:30 a.m. and ending work at 10:12 p.m. on January 3 and starting work at 8:30 a.m. January 6 and ending work at 12:36 a.m. January 7. The Train Operator had then returned to work at 7:10 a.m. January 7, the day of the event.

The Train Operator's certification was scheduled to expire December 5, 2021. The Train Operator was still operating a train more than one month later under a waiver that the Department of Rail Transportation (RTRA) had given itself from these safety training processes.

Vehicle Data

Vehicle data demonstrates that the Train Operator had entered Fort Totten Station at 41 mph, 1 mph above the allowed station entry speed, in B1 braking mode (B1 is the lowest brake application, B5 is the highest level short of emergency). The Train Operator moved to B5 (maximum braking mode) after the front of the train was more than halfway through the station platform. The Train Operator then used the master controller to activate emergency braking when the train was moving 22 mph and the front of the train was approximately 85 feet from the end of the platform. The train passed the eight-car marker at the end of the platform while moving approximately 9 mph. The train stopped 11 feet beyond the end of the platform. The first door of the first car was beyond the platform end gate. Metrorail defines this as a station overrun.

The Vehicle Monitoring System (VMS) recorded no actions by the Train Operator for nearly two minutes after the train stopped. The Train Operator then opened the doors of the train on the non-platform (right) side at approximately 4:24 p.m. 18 seconds after opening those doors on the non-platform side, the Train Operator then opened the doors on the correct (left) side of the train. The doors on both sides were open at the same time. The Train Operator attempted to close the platform-side doors approximately 14 seconds after opening the doors. The Train Operator pushed the door closed button for that side again approximately 52 seconds later. 16 seconds after that, the Train Operator pushed the door closed button for the non-platform side doors.

The doors on the non-platform side were open for a total of approximately 92 seconds. The Train Operator closed the non-platform side doors, pressed the platform-side door closed button again, and then got an all doors closed and locked indication. This indication is required for train movement. The Train Operator then continued on in P5 (maximum) power mode.

Probable Cause

The probable cause of this event is Metrorail's failure to implement and follow effective fatigue management policies. Contributing to this event, including the movement of the train without proper safety precautions such as a ground walkaround, was that elements of Metrorail have a culture that accepts noncompliance with written operational rules, instructions, and manuals.

Corrective Actions:

Metrorail provided refresher training to Depot and Division Clerks regarding Train Operator schedules. (These clerks provide schedules and manifests, and have a frontline responsibility for the schedules being in compliance with Metrorail policy.) Metrorail conducted a safety standdown with Depot Clerks related to fatigue-related impairment.

Metrorail's Rail Transportation (RTRA) Management developed internal policies to review all work assignments (schedules) given to Station Managers and Train Operators daily.

WMSC staff observations:

Metrorail is required to address multiple issues related to this investigation due to recent WMSC audit findings. This includes, among others, Corrective Action Plans (CAPs) Metrorail is in the process of developing or implementing for:

- Fitness for Duty Audit (final report August 2021): Metrorail has not implemented many aspects of its fatigue management policy, and ignores the policy's minimum daily release (rest) period requirements. In any event, Metrorail does not have adequate access to, documentation of, or compilation of data to assess compliance with its hours of service requirements.
- Emergency Management and Fire and Life Safety Audit (final report February 2022): MTPD general orders do not reflect current operational realities and procedures, and areas for improvement from prior events are not effectively communicated to frontline MTPD personnel.
- Rail Operations Audit (final report April 2022): Elements of Metrorail have a culture that accepts noncompliance with written operational rules, instructions, and manuals.
- Rail Operations Audit (final report April 2022): Metrorail is not meeting its operational refresher training and recertification requirements.

Metrorail may also consider whether engineering controls or confirmations are warranted to alert and confirm to Train Operators and other personnel when doors are being opened on both sides of the train or off the platform. Metrorail's AIM system can provide such warnings to the ROCC; however Metrorail has not ensured that the AIM system and associated train control and communication equipment is up to date and consistently communicating to ensure that these warnings are provided in a consistently timely and accurate fashion.

Washington Metro Area Transit Authority

Department of Safety and Environmental

Management (SAFE)

FINAL REPORT OF INVESTIGATION A&I E22015

Date of Event:	01/07/2021
Type of Event:	Improper Door Operation
Incident Time:	16:24 hours
Location:	Fort Totten Station, Track 2
Time and How received by SAFE:	16:26 hours via MAC Notification
WMSC Notification Time:	17:37 hours
Responding Safety Officers:	WMATA: No WMSC: No Other: No
Rail Vehicle:	Train ID 304 L6046-6047.6005-6004.6172-6173T
Injuries:	No
Damage:	No
SMS I/A Incident Number:	20220121#97993

Fort Totten Station – Improper Door Operation

January 7, 2022

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Abbreviations and Acronyms

ARS	Audio Recording System
CAP	Corrective Action Plan
CCTV	Closed-Circuit Television
CMNT	Office of Car Maintenance
CMOR	Office of Chief Mechanical Officer
DCKR	Doors closed, locked indication
EMER	Emergency
I/A	Incidents/Accidents
MAC	Mission Assurance Coordinator
MC	Master Controller
MTPD	Metro Transit Police Department
MSRPH	Metrorail Safety Rules and Procedures Handbook
NOAA	National Oceanic and Atmospheric Administration
ROCC	Rail Operations Control Center
RTC	Radio Traffic Controller
RTRA	Office of Rail Transportation
SAFE	Department of Safety and Environmental Management
SMS	Safety Measurement System
SRC	Safety Risk Coordinator
VMS	Vehicle Monitoring System
WMATA	Washington Metropolitan Area Transit Authority
WMSC	Washington Metrorail Safety Commission

Executive Summary

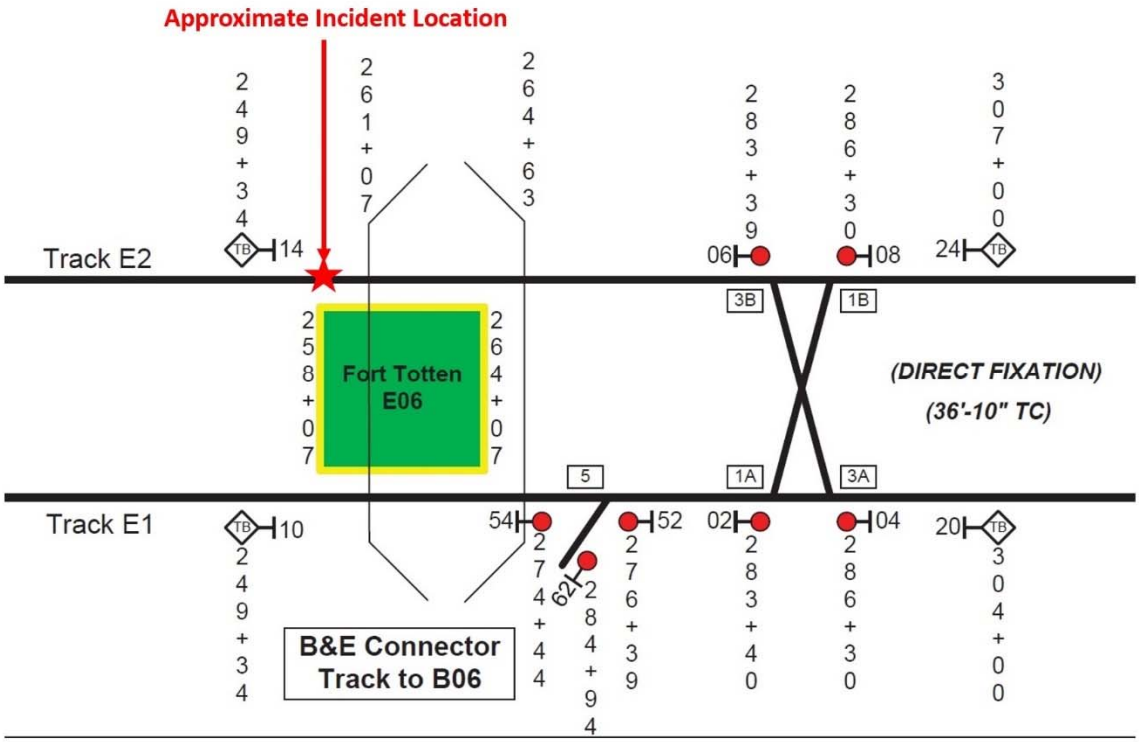
On Friday, January 7, 2022, at approximately 16:24 hours, a Greenbelt Division Train Operator, operating inbound Yellow Line Train ID 304 [L6046-6047.6005-6004.6172-6173T], towards Huntington Station, opened train doors on the opposite side of the train from the platform at Fort Totten Station, Track 2. Initially, the Train Operator of Train ID 304 overran Fort Totten Station on Track 2 at approximately 16:21 hours. The Train Operator then opened the train doors on the right (non-platform) side of the consist. The incident was witnessed and reported by Metro Transit Police Department (MTPD) personnel on the platform. MTPD personnel held and boarded the train and visually checked the opposite side of the consist to look for any fallen passengers prior to allowing the train doors to close. The Train Operator of Train ID 304 did not report the incident to the Rail Operations Control Center (ROCC) and continued in service after servicing Fort Totten Station, Track 2. The Mission Assurance Coordinator (MAC) in the Rail Operations Control Center (ROCC) overheard MTPD radio traffic about an off-platform door opening event and notified ROCC personnel. Subsequently, ROCC Radio Traffic Controller (RTC) contacted the Train Operator and asked about the event. The Train Operator denied opening the doors on the opposite side of the platform. ROCC and MAC personnel also reviewed data from Closed-Circuit Television (CCTV), which confirmed the Train Operator of Train ID 304 opened doors on the non-platform side of Fort Totten Station, Track 2. An Office of Rail Transportation (RTRA) Supervisor was dispatched to remove the Train Operator of Train ID 304 from service at Gallery Place Station, Track 2. The incident consist was taken out of service and transported to the Alexandria Yard for further inspection by Office of Car Maintenance (CMNT) personnel. There were no injuries or damage reported as a result of this incident. A review of the vehicle systems did not reveal any anomalies that would have resulted in an uncommanded door opening event.

The probable cause of the station overrun event that led to the Improper Door Operation was a human factors failure to adhere to established procedures of reporting all events on the WMATA rail right-of-way, including Station Overruns. Contributing factors included multiple fatigue factors, such as a mix of night- and day-work and an inadequate release period on the day preceding the incident. Fatigue possibly contributed to the errors in judgement and decision-making that resulted in the Train Operator failing to report the events and ultimately depressing the Right-Side Open Doors button.

Incident Site

Fort Totten Station, Track 2

Field Sketch/Schematics



Purpose and Scope

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

Investigative Methods

The preliminary investigative methodologies included the following:

- Formal Interview – SAFE interviewed one individual as part of this investigation. Interviews include persons present at, during, and after the incident, those directly involved in the response process. Representatives from the Washington Metrorail Safety Commission (WMSC) were present during the interview. SAFE interviewed the following individual:
  - Train Operator

- Documentation Review – A collection of relevant work history information and process documentation in Metro 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
  - Maximo Data

- System Data Recording Review – A 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 System (VMS)
    - Closed-Circuit Television (CCTV)

Investigation

Systems of record determined that at approximately 16:21 hours, a Greenbelt Division Train Operator operating Train ID 304 [L6046-6047.6005-6004.6172-6173T] overran Fort Totten Station, Track 2, 8-Car Marker by 11 feet (one door beyond the end-gate). The Train Operator entered the station's platform limits at a speed of 41 mph in a B1 braking mode. The Train Operator then entered a B5 (maximum braking) mode approximately 252 feet from the eight-car marker, which was beyond the mid-point of the platform. Using the master controller, the Train Operator then initiated the emergency brake approximately 85 feet from the eight-car marker. After the train came to a complete stop, the Train Operator logged no actions on the train's Vehicle Monitoring System (VMS) for nearly two minutes. The Train Operator then depressed the right-side (off-platform) door open button, resulting in the train doors opening on the opposite side of the platform at Fort Totten Station, Track 2 at approximately 16:24 hours. MTPD personnel were on the platform conducting an unrelated investigation and witnessed the event. MTPD reported the event over their radio channel, which was overheard by the MAC. According to CCTV, after bringing the train to a complete stop, the Train Operator opened the right-side doors for approximately one minute and 30 seconds. The Train Operator of Train ID 304 subsequently opened doors on the left side of the train, resulting in both the left-side and right-side doors being opened at the same time. MTPD personnel attempted to get the Train Operator's attention by flashing their flashlight in the Train Operator's direction. The Train Operator subsequently closed the left-side doors while the right-side were open. An MTPD officer put themselves in the path of the left-side doorway to prevent the train from moving. The Train Operator then closed the right-side doors and the MTPD officer removed themselves from the train door threshold. The Train Operator was able to close the left-side doors and continued operating.

When contacted by the ROCC at approximately 16:28 hours, the Train Operator reported they opened the doors on the platform side and MTPD was mistaken about the off-platform door opening. ROCC management's review of CCTV confirmed the Improper Door Opening event. ROCC then instructed the Train Operator of Train ID 502 to perform a visual track inspection entering and exiting Fort Totten Station, Track 2. The Train Operator of Train ID 502 performed the visual inspection and reported a clear track inspection. ROCC instructed the Train Operator of Train ID 304 to offload their customers at Gallery Place Station, Track 2. An RTRA Supervisor was dispatched to Gallery Place, Track 2, to take over operations from the Train Operator. The RTRA Supervisor changed the Train ID to 704 in non-revenue service to Alexandria Yard. ROCC instructed Train ID 305 to service the customers from the incident train at Gallery Place Station, Track 2.

Chronological Event Timeline

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

Time	Description
16:24:36 hours	MTPD: MTPD Officer contacts MTPD dispatch and report the train operator opened doors on the non-platform side. Dispatch acknowledges. MTPD personnel reported they are checking to see if anyone fell out of the train and they are in contact with the train operator. [MTPD-1X-CTF]
16:27:07 hours	Train ID 304 Train Operator: 304, Central. 304. [Ops 3]
16:27:09 hours	MTPD Dispatch: MTPD Dispatch contacted ROCC and reported Train ID 304 Train Operator opened door off the platform. ROCC stated they were unaware and began to investigate. [SOCC Console 2D]
16:27:15 hours	ROCC Radio RTC: 304, go with your message. [Ops 3]
16:27:26 hours	Train ID 304 Train Operator: Central this is 304. [Ops 3]
16:27:29 hours	ROCC Radio RTC: 304, Track 2, Fort Totten go with your message, over. [Ops 3]
16:27:35 hours	Train ID 304 Train Operator: Hold on a second. [Ops 3]
16:28:29 hours	ROCC Radio RTC: 304, Track 2, Fort Totten. 304, did you service Fort Totten? Over. [Ops 3]
16:28:47 hours	ROCC Radio RTC: Train 304, Track 2 in approach to Georgia Avenue, did you service Fort Totten? Over. [Ops 3]
16:30:33 hours	ROCC Radio RTC: Train 304, Track 2 in approach to Georgia Avenue, come into to Central, over. [Ops 3]
16:30:51 hours	Train ID 304 Train Operator: 304, Georgia Avenue. Go ahead with your message Central. [Ops 3]
16:30:55 hours	ROCC Radio RTC: 304 did you service Fort Totten? Over. [Ops 3]
16:30:59 hours	Train ID 304 Train Operator: Yes ma'am. Yes ma'am. Affirm. [Ops 3]
16:31:04 hours	ROCC Radio RTC: Affirm, thank you. Central out. [Ops 3]
16:32:56 hours	ROCC Radio RTC: Train 304, come into Central for me 304. [Ops 3]
16:32:59 hours	Train ID 304 Train Operator: 304, go ahead with your message. [Ops 3]
16:33:05 hours	ROCC Radio RTC: Copy that 304. Did you happen to open the doors off the wrong side of the platform 304 at Fort Totten? Over. [Ops 3]
16:33:12 hours	Train ID 304 Train Operator: No sir. I didn't open the wrong doors. Police told me the doors was open. I told him it wasn't. I opened the doors on the passenger side. Passenger side only. [Ops 3]
16:33:22 hours	ROCC Radio RTC: Affirm. That's the report we are getting from Transit. That you opened the doors on the opposite side of the platform. I copy that 304, you said you serviced the platform, platform side only. I copy that 304. [Ops 3]
16:33:36 hours	ROCC Radio RTC: Affirm. I serviced the passenger side only. Opened doors to the passenger side. [Ops 3]
16:33:44 hours	ROCC Radio RTC: Track 3, 502, let me get a track inspection entering Fort Totten, Track 2, over. [Ops 3]

Time	Description
16:33:52 hours	Train ID 502 Train Operator: 502 copy. I have a track inspection, Track 2, Fort Totten, over. [Ops 3]
16:33:56 hours	ROCC Radio RTC: That's affirm. [Ops 3]
16:34:31 hours	Train ID 502 Train Operator: Central Control, 502, nothing unusual, Fort Totten, Track 2. Clear track inspection, over. [Ops 3]
16:34:48 hours	ROCC Radio RTC: I copy 502. Track 2, Fort Totten good track inspection. Thank you. Central out. [Ops 3]
16:43:59 hours	ROCC Assistant Operations Manager: ROCC Assistant Operations Manager contacted RTRA Management via landline and reported Train Operator of Train ID 304 opened doors off the platform at Fort Totten, Track 2. ROCC Assistant Operations Manager stated the Train Operator was properly berthed and opened doors off the platform side while MTPD personnel were present on the platform. [Phone]

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

The Office of Chief Mechanical Officer (CMOR) / Vehicle Monitoring System (VMS) Analysis

IIT CMOR analysis of the VMS data found that the train entered Fort Totten Station, Track 2 in a "B1" Braking mode at a speed of 41 mph. The Master Controller (MC) was moved to the emergency position, initiating emergency braking approximately 85 feet from the 8-Car Marker. The train overran the station by passing the 8-Car marker at approximately 9 mph with the MC in the Emergency Position. The train came to a complete stop after traveling approximately 11 feet beyond the 8-Car Marker.

After coming to a complete stop, the VMS data revealed the Right-Side Door Open Push Button signal triggers high, then the Left-Side Door Open Push Button signal goes high, indicating both side doors were commanded to open. The VMS data also illustrated the Door Close Signals on both sides going low after the Left and Right Door Open Push Buttons were activated, indicating the doors on both sides were opened simultaneously.

The Door Close Push Buttons were activated first on the Left-Side, then the Right-Side and doors closed. Once the brake pipe was charged and all doors closed, locked indication (DCKR) was achieved, and the MC was moved to a "P5" power mode. The train continued on to the next station.

"Based on the VMS data, there was no faults observed with the train that contributed to the cause of this incident."

Adopted from CMOR IIT Report:

Time	Description
16:20:44 hours	Train entered into Fort Totten Station, Track 2 at a speed of 41 mph with the MC in the B1 Braking Mode.
16:20:50 hours	MC moved to B5 Braking Mode, 252 feet from the 8-Car Marker.
16:20:55 hours	MC moved to Emergency (EMER) Position, Initiating Emergency Braking causing the Brake Pipe to Dump. Train Speed was 22 mph, 85 feet from 8-Car Marker.
16:20:59 hours	Train passes 8-Car Marker at a speed of 9 mph, with the MC in the EMER Braking Mode.

Time	Description
16:21:01 hours	Train came to a complete stop 11 feet beyond the 8-Car Marker.
16:22:58 hours	Right-Side Open-Door Pushbutton Signal goes high (opposite platform side) and Right-Side Door Close signals go low indicating doors open.
16:23:16 hours	Left Side Door Open Pushbutton Signal goes high (platform side) and Left Side Door Signals go low indicating doors open.
16:23:30 hours	Left Door Closed Pushbutton Signal goes high.
16:24:22 hours	Left Door Closed Pushbutton Signal goes high.
16:24:38 hours	Right Door Closed Pushbutton Signal goes high.
16:24:43 hours	Right Door Closed Pushbutton Signal goes high.
16:24:45 hours	Left Door Closed Pushbutton Signal goes high.
16:26:46 hours	MC moved from EMER position
16:26:46 hours	DCKR signal goes high (all doors closed and locked) after MC is moved from EMER position.
16:26:47 hours	Brake Pipe Recharge Pushbutton Signal goes high and Brake Pipe is recharged.
16:27:00 hours	MC is moved to B5 and train continues to the next station.

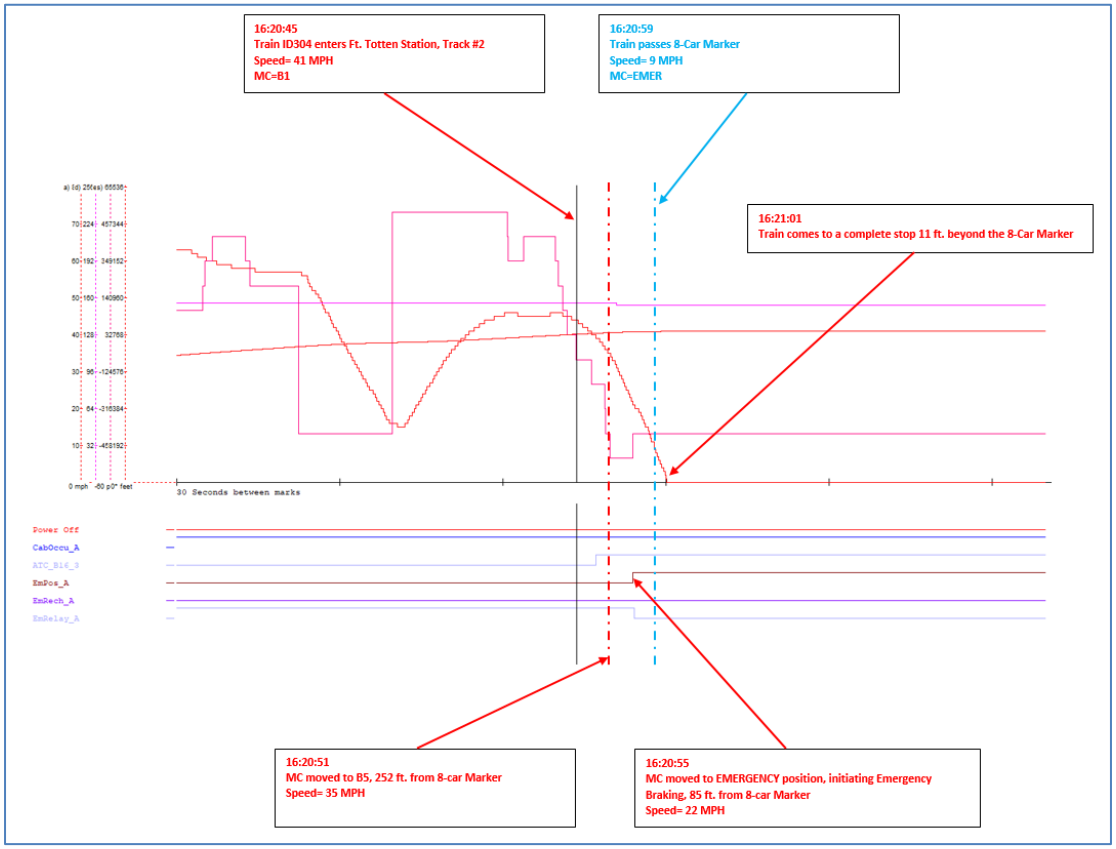


Figure 1 – IIT CMOR VMS analysis showing Train Operator's actions.

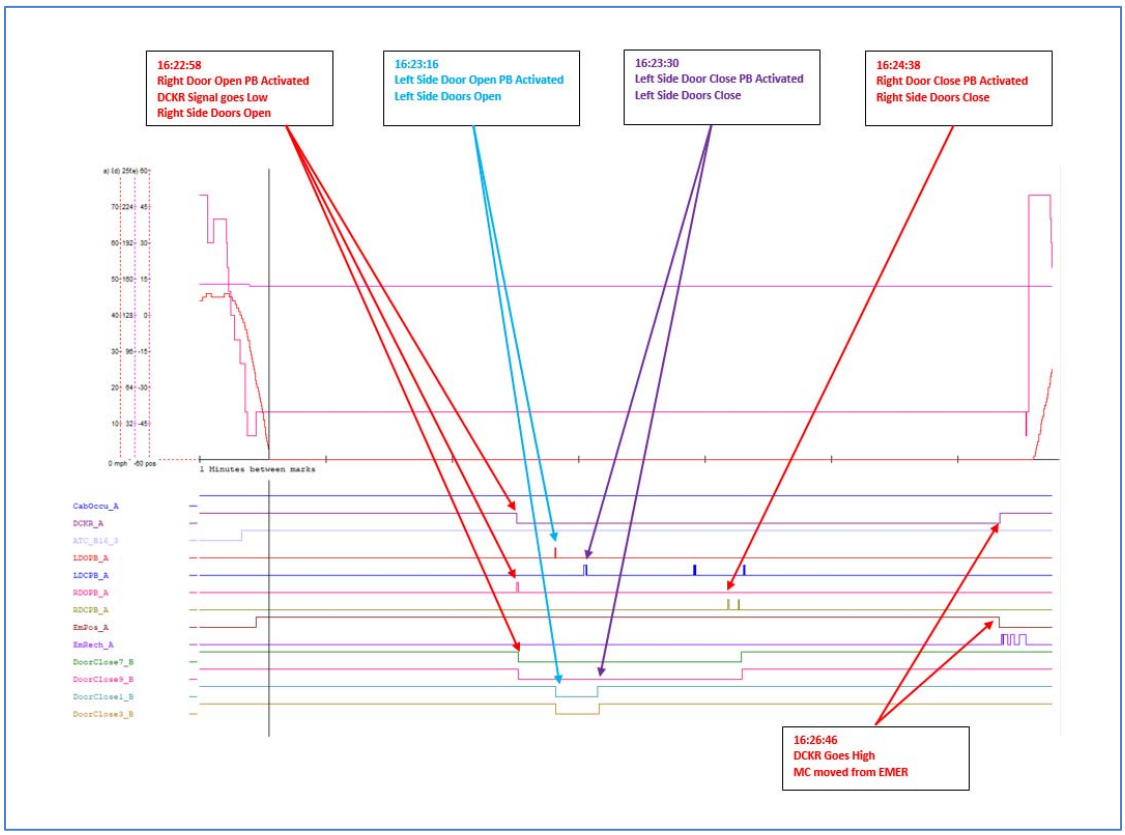


Figure 2 – IIT CMOR VMS analysis showing Train Operator's door actions.

Closed-Circuit Television (CCTV) Playback

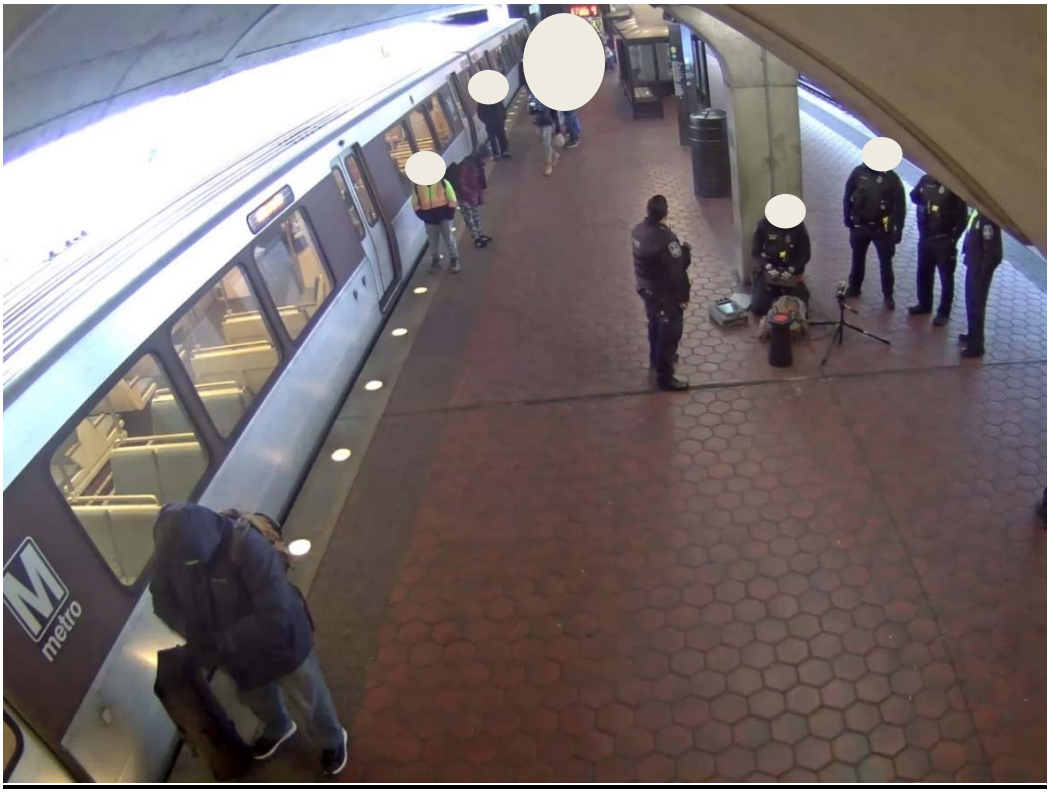


Image 1 – Train ID 304 properly berthed at Fort Totten Station, Track 2, at approximately 16:24:16 hours.

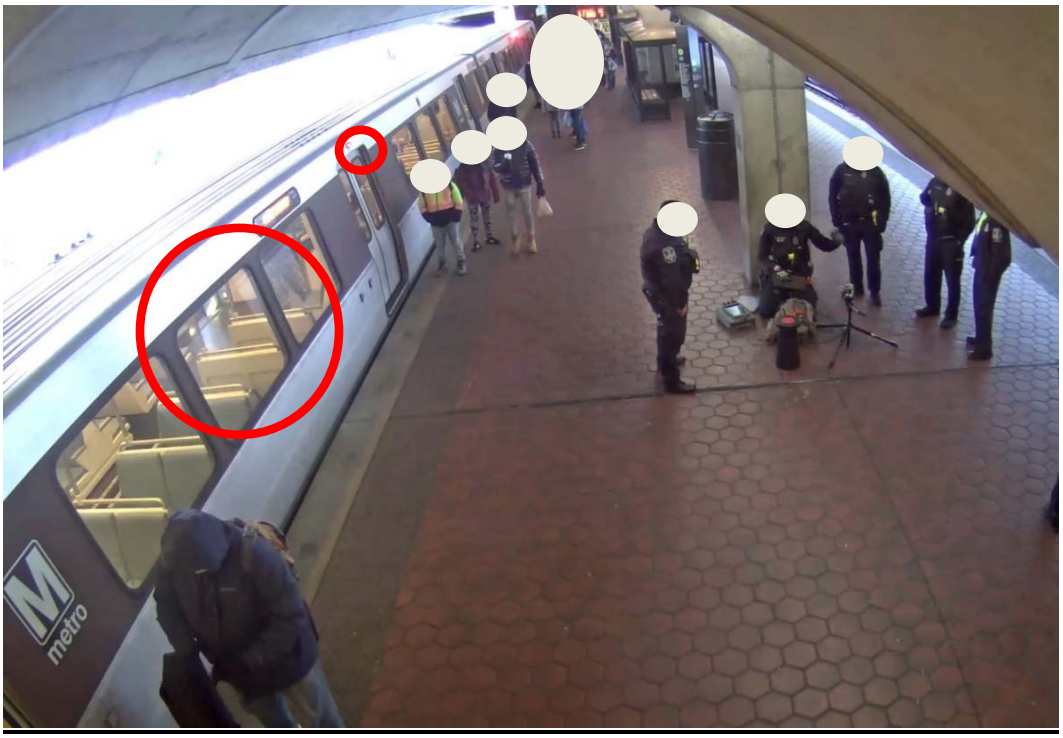


Image 2 – Train ID 304 right side doors (non-platform side) begin to open at Fort Totten Station, Track 2, at 16:24:22 hours. Door Open indicator light is illuminated.

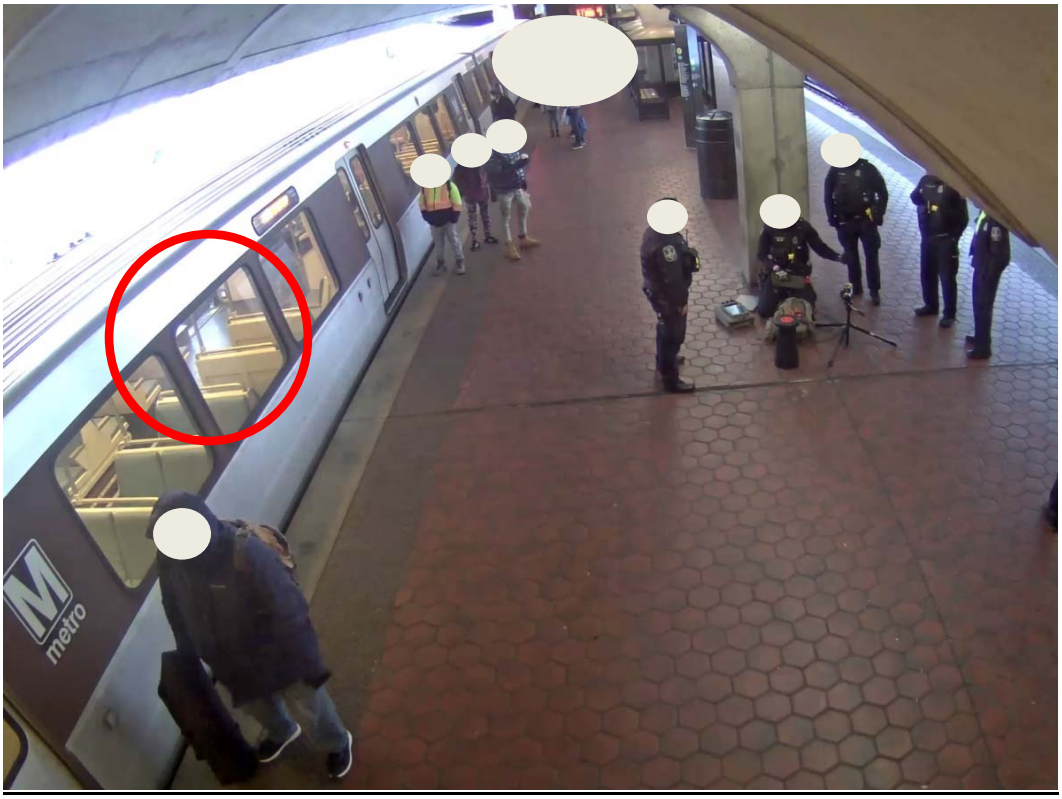


Image 3 – Train ID 304 right side doors on the non-platform side completely opened at approximately16:24:22 hours.

Image 4 – Train ID 304 left side doors on the platform side begin to open at Fort Totten Station, Track 2 at 16:24:40 hours.

Image 5 – Train ID 304 left side doors on the platform side completely opened at Fort Totten Station, Track 2, at 16:24:42 hours.

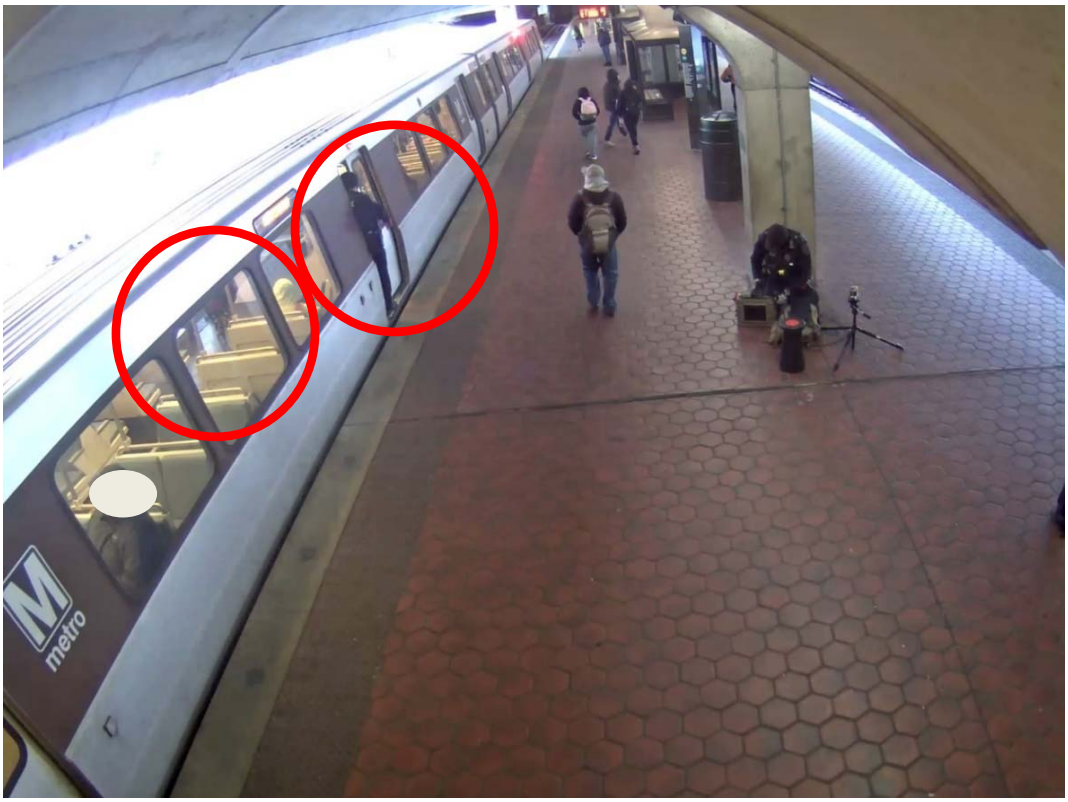


Image 6 – Train ID 304 left side doors (platform side) closed as MTPD personnel keep one door open. Doors on the non-platform side are completely opened at Fort Totten Station, Track 2, at 16:25:02 hours.

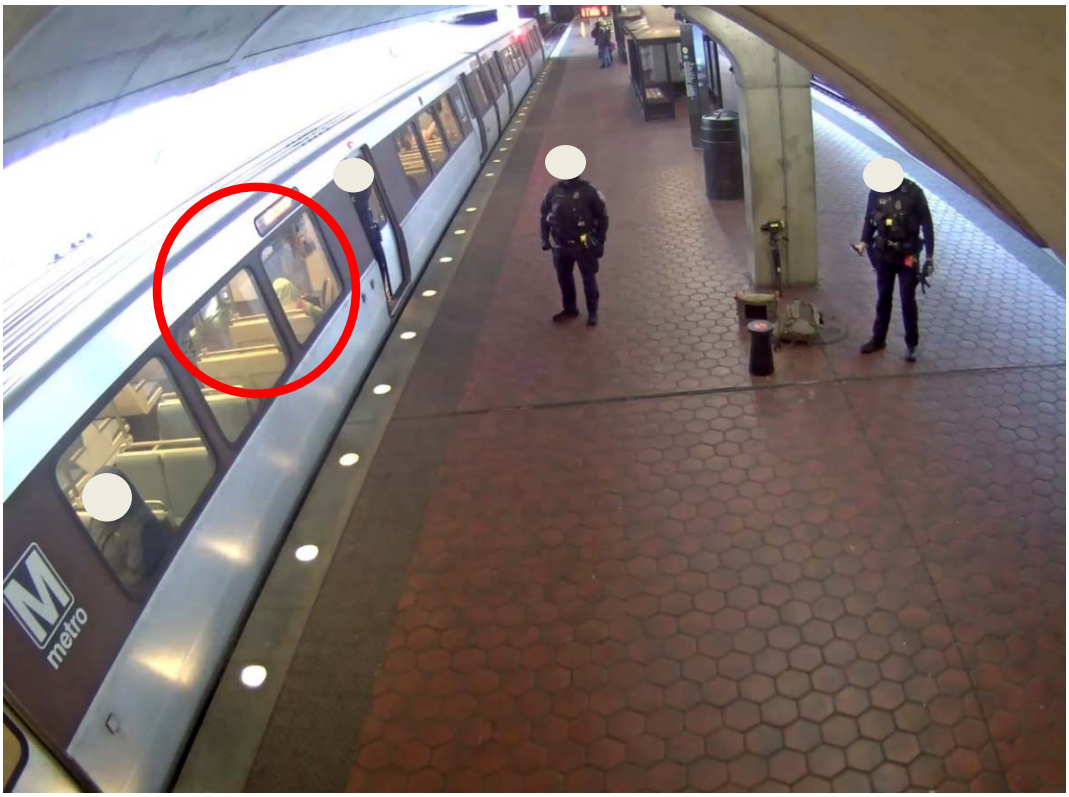


Image 7 – Train ID 304 right side doors (non-platform side) completely closed at Fort Totten Station, Track 2, at 16:26:08 hours.

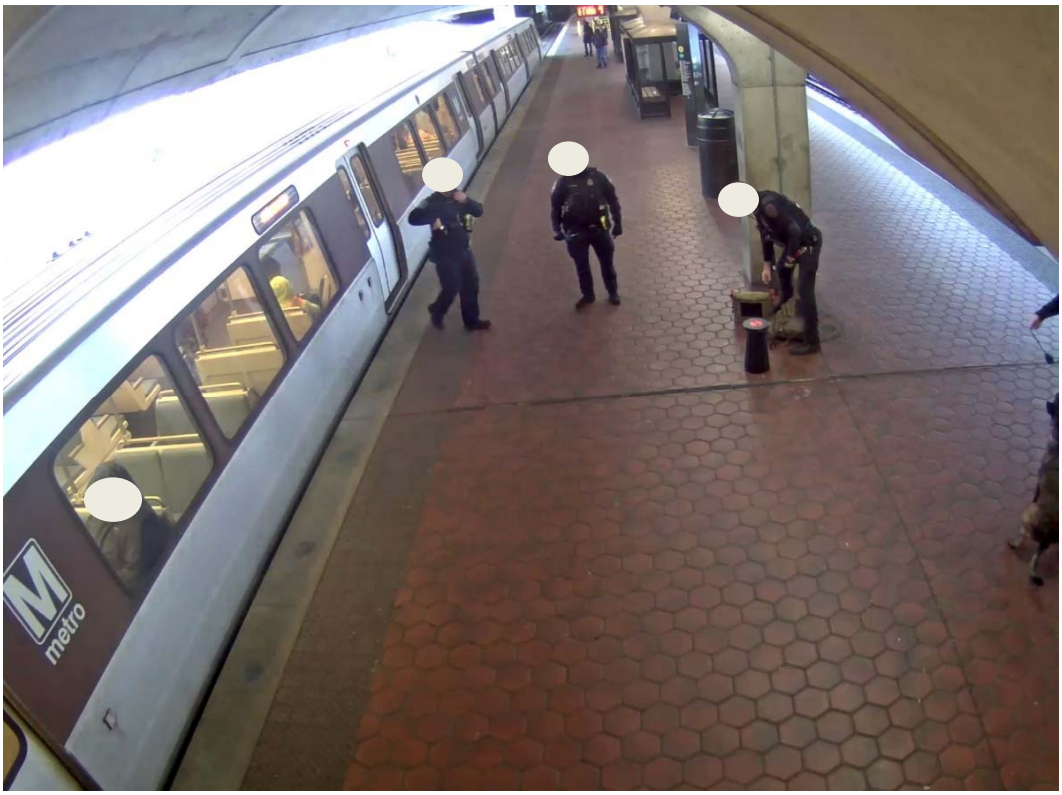


Image 8 – Train ID 304 right side doors (platform side) completely closed at Fort Totten Station, Track 2, at 16:26:16 hours.

Interview Findings

Based on the investigation launched into the improper door operation at Fort Totten Station, SAFE conducted one formal interview with the Train Operator via Microsoft Teams, which included the investigation team and a representative from the WMSC. The interview conducted identified the following key findings associated with this event. Findings detailed below include reported information from interviews and may conflict with other data sources contained in the report:

The Train Operator reported experiencing mechanical issues, such as "bucking" with the train consist, beginning at Greenbelt Station, Track 2, and continued until they were approaching the platform limits of Fort Totten Station. The Train Operator stated they did not report the mechanical issues to ROCC. The Train Operator stated they overran the station and attempted to drop circuits on both doors. They added that when they looked down the platform to open the [left-side] doors an MTPD Officer began flashing a flashlight in their direction and did they not know the reason. The Train Operator reported they did not contact ROCC after they overran the 8-Car Marker at Fort Totten Station. The Train Operator stated they did not know the train doors were opened on the non-platform side.

Related Rules and Procedures:

- MSRPH Section 1 – General Rule 1.32 – "Employees involved in, witnessing, or informed of an accident or incident, to include near misses, on the Metrorail system shall inform their supervisor, Transit Police, ROCC and/or other appropriate authority as soon as possible, and shall file a written report."

- MSRPH Section 3 – Operating Rule 3.18 – “Employees shall not operate any vehicle in a reckless or unsafe manner.”
- MSRPH Section 3 – Operating Rule 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 side of the platform, Train Operators shall close doors, notify ROCC and conduct a ground walk 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.”
- SOP #40 – Door Opening Procedures – 40.5.1.5.b – “Verify the platform side of the train by placing your head out of the cab window and first look and identify the platform. Then look at the doors on the platform side of the train to observe any activity in front of the doors, with your hands to your side for five (5) seconds, before reaching up to touch the manual door opening button and then;”
- SOP #40 – Door Opening Procedures – 40.5.1.5.c – “Depress Open Doors button on the platform side of the train.”

Findings

- Train ID 304 overran the 8-Car Marker at Fort Totten Station, Track 2, by approximately 11 feet after entering the platform limits at 41 mph at approximately 16:21 hours.
- The Train Operator did not report the Station Overrun to the ROCC.
- The ROCC received a report from MTPD personnel stating a Train Operator opened doors on the non-platform side at Fort Totten Station, Track 2, at approximately 16:24 hours.
- The Train Operator depressed the Right-Side Open-Door Pushbutton at approximately 16:23 hours.
- The Train Operator did not verify the platform side of the train before opening doors.
- The Train Operator did not notify ROCC of the Improper Door Operation event.
- The Train Operator and consist remained in service while the reported event was being verified.
- The Train Operator’s work schedule leading up to the incident did not provide an adequate rest during his off-duty period which was less than required eight-hour period.

Weather

At the time of the incident, NOAA recorded the temperature at 32° F, with light snow, ice fog, 85% humidity, north to south winds at 14 mph, and visibility of 3 miles. Weather was not a contributing factor in this event (Weather source: NOAA – Location: Washington, DC).

Human Factors

Fatigue

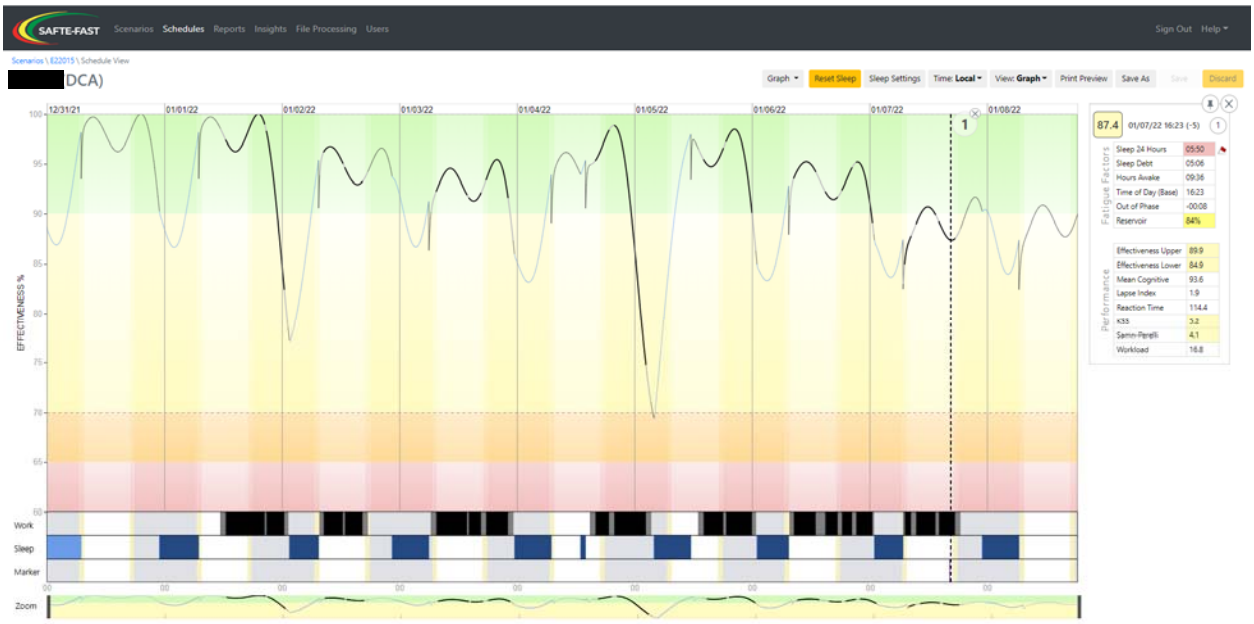
Evidence of Fatigue:

Systems of record, including radio communications, VMS data and CCTV were evaluated for evidence of fatigue that may have been present at the time of the incident. No signs or symptoms of fatigue were detected from the available video. The Train Operator reported feeling fully alert at the time of the incident and did not report experiencing any symptoms of fatigue 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 (16:24 hours) does not suggest an increased risk of fatigue-related impairment. The employee worked day and overnight shifts, including a 12.5-hour long shift (8:30 – 00:36), in the days leading up to the incident. Based on the employee's reported bed and wake times, the employee slept a total of 5 hours and 50 minutes in the sleep period preceding the incident and was awake for 9.5 hours at the time of the incident. The off-duty period preceding the incident was 6.5 hours long, which curtailed the opportunity for 7-9 hours of sleep. The employee reported usual workday sleep durations of 7.5 hours and no issues with sleep.

A biomathematical fatigue modelling 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. Estimated performance effectiveness at the time of the incident was 87.4%. Specifically, the analysis identified short sleep duration in the last 24 hours as a factor contributing to an increased risk of fatigue at the time of 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 Train Operator's work schedule, reported sleep from the day preceding the incident, and reported habitual sleep durations (7.5 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 the Train Operator was not in violation of the Drug and Alcohol Policy and Testing Program 7.7.3/6.

Immediate Mitigation to Prevent Recurrence

- Train ID 304 was offloaded at Gallery Place Station, Track 2.
- Train Operator of Train ID 304 was removed from service.
- Consist was removed from service for inspection.

Probable Cause Statement

The probable cause of the station overrun event that led to the Improper Door Operation was a human factors failure to adhere to established procedures of reporting all events on the WMATA rail right-of-way, including Station Overruns. Contributing factors included multiple fatigue factors, such as a mix of night- and day-work and an inadequate release period on the day preceding the incident. Fatigue possibly contributed to the errors in judgement and decision-making that resulted in the Train Operator failing to report the events and ultimately depressing the Right-Side Open Doors button.

SAFE Recommendations

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, and the respective departmental Safety Risk Coordinator (SRC) will manage the mitigation. Refer to the SMS I/A Module for additional information.

Corrective Action Code	Description	Responsible Party	Estimated Completion Date
97993_SAFE CAPS_RTRA _001	(RC-1) RTRA Management will ensure all Depot and Division Clerks attend Mandatory Refresher Training regarding Train Operator schedules.	RTRA SRC	09/30/2022
97993_SAFE CAPS_RTRA _002	(RC-1) RTRA Management will implement internal policies to review all work assignments given to Station Managers and Train Operators daily.	RTRA SRC	Completed
97993_SAFE CAPS_RTRA _003	(RC-1) RTRA Management will conduct a safety standdown with Depot Clerks to review, discuss and bring awareness to how fatigue can affect employee performance.	RTRA SRC	Completed
97993_SAFE CAPS_RTRA _004	(RC-1) RTRA Management will ensure the Train Operator receives refresher training regarding station overrun procedures.	RTRA SRC	Completed

Appendices

Appendix A – Interview Summaries

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

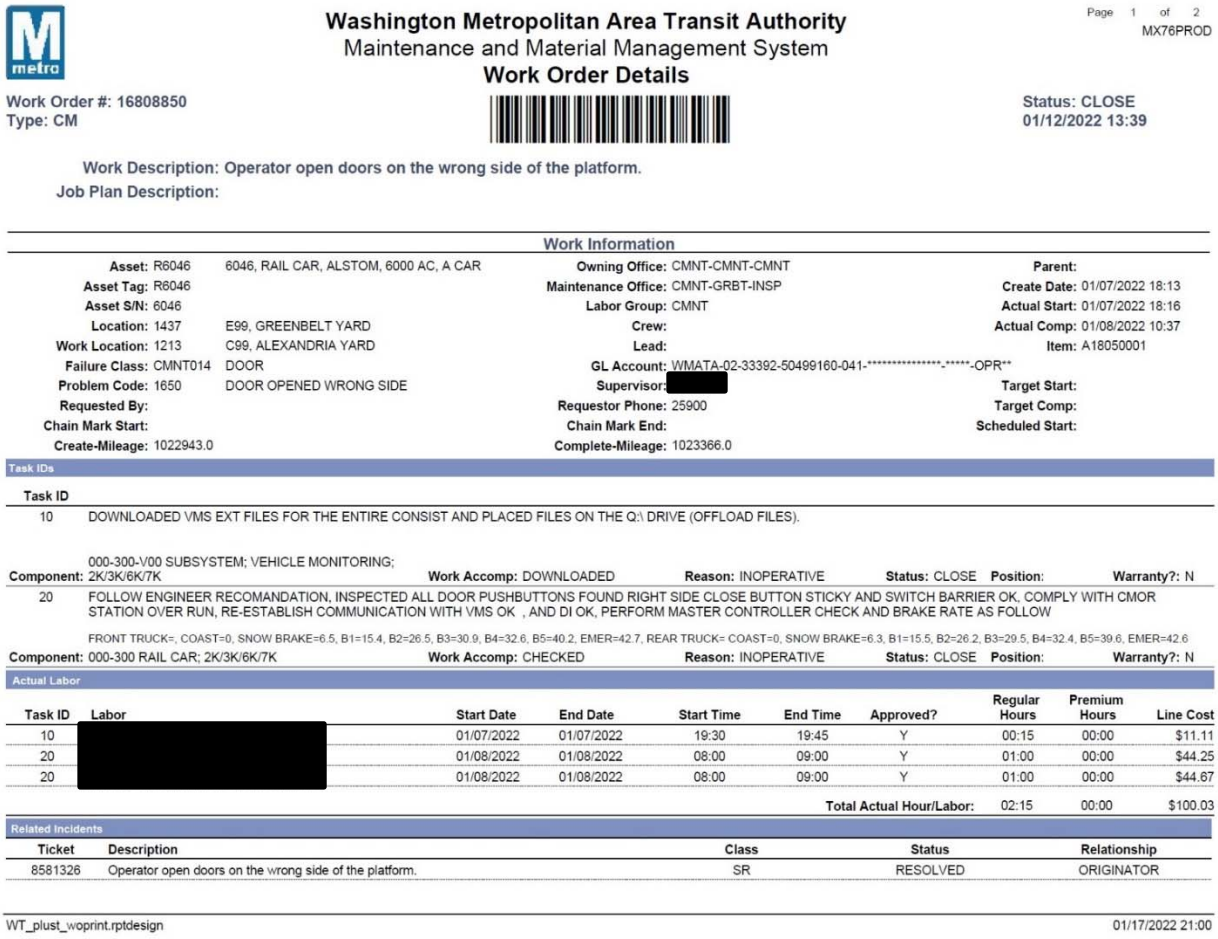
Train Operator

This employee is a WMATA Train Operator with a total of nine years and three months of service: seven years and four months as a Bus Operator, and one year and 10 months as a Train Operator. The Train Operator's last certification was on February 25, 2020. This employee has no history of sleep issues to report.

During the interview, the Train Operator reported they began operating the incident consist at Greenbelt Station and were experiencing mechanical issues causing the train to brake improperly*. They stated the issue continued along the route in approach to Fort Totten Station. The Train Operator reported they were familiar with the 6k series of cars they were operating, and the mechanical issues were normal. The Train Operator stated the mechanical issue was not reported to ROCC or management. The Train Operator reported they overran Fort Totten Station by 1 car door and attempted to drop circuit breakers on both doors to service the station. The Train Operator stated that the station overrun was not reported to ROCC but did not a give reason why. Upon servicing the station, the Train Operator stated they noticed MTPD personnel flashing a light in their direction. The Train Operator stated MTPD personnel informed them that they had a door open. The Train Operator reported after continuing to Georgia Avenue Station, they were contacted by ROCC and asked if they serviced Fort Totten Station. They reported they serviced the passenger side only at Fort Totten Station, Track 2. The Train Operator reported they were not distracted at the time of the incident and were fully alert. They reported there was not anything they could have done to prevent this incident from occurring as the door push buttons were sticky.

**Note: No brake abnormalities were found during the post-incident inspection.*

Appendix B – Office of Car Maintenance (CMNT) Work Order #16808850



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

Page 1 of 2
MX76PROD

Work Order #: 16808850
Type: CM

Status: CLOSE
01/12/2022 13:39

Work Description: Operator open doors on the wrong side of the platform.
Job Plan Description:

Work Information

Asset:	R6046 6046, RAIL CAR, ALSTOM, 6000 AC, A CAR	Owning Office:	CMNT-CMNT-CMNT	Parent:	
Asset Tag:	R6046	Maintenance Office:	CMNT-GRBT-INSP	Create Date:	01/07/2022 18:13
Asset S/N:	6046	Labor Group:	CMNT	Actual Start:	01/07/2022 18:16
Location:	1437 E99, GREENBELT YARD	Crew:		Actual Comp:	01/08/2022 10:37
Work Location:	1213 C99, ALEXANDRIA YARD	Lead:		Item:	A18050001
Failure Class:	CMNT014 DOOR	GL Account:	WMATA-02-33392-50499160-041-**********-*****-OPR**		
Problem Code:	1650 DOOR OPENED WRONG SIDE	Supervisor:	[redacted]	Target Start:	
Requested By:		Requestor Phone:	25900	Target Comp:	
Chain Mark Start:		Chain Mark End:		Scheduled Start:	
Create-Mileage:	1022943.0	Complete-Mileage:	1023366.0		

Task IDs

Task ID	
10	DOWNLOADED VMS EXT FILES FOR THE ENTIRE CONSIST AND PLACED FILES ON THE Q:\ DRIVE (OFFLOAD FILES).

Component: 000-300-V00 SUBSYSTEM; VEHICLE MONITORING; 2K/3K/6K/7K Work Accomp: DOWNLOADED Reason: INOPERATIVE Status: CLOSE Position: Warranty?: N

20	FOLLOW ENGINEER RECOMANDATION, INSPECTED ALL DOOR PUSHBUTTONS FOUND RIGHT SIDE CLOSE BUTTON STICKY AND SWITCH BARRIER OK, COMPLY WITH CMOR STATION OVER RUN, RE-ESTABLISH COMMUNICATION WITH VMS OK , AND DI OK, PERFORM MASTER CONTROLLER CHECK AND BRAKE RATE AS FOLLOW

FRONT TRUCK=, COAST=0, SNOW BRAKE=6.5, B1=15.4, B2=26.5, B3=30.9, B4=32.6, B5=40.2, EMER=42.7, REAR TRUCK= COAST=0, SNOW BRAKE=6.3, B1=15.5, B2=26.2, B3=29.5, B4=32.4, B5=39.6, EMER=42.6

Component: 000-300 RAIL CAR; 2K/3K/6K/7K Work Accomp: CHECKED Reason: INOPERATIVE Status: CLOSE Position: Warranty?: N

Actual Labor

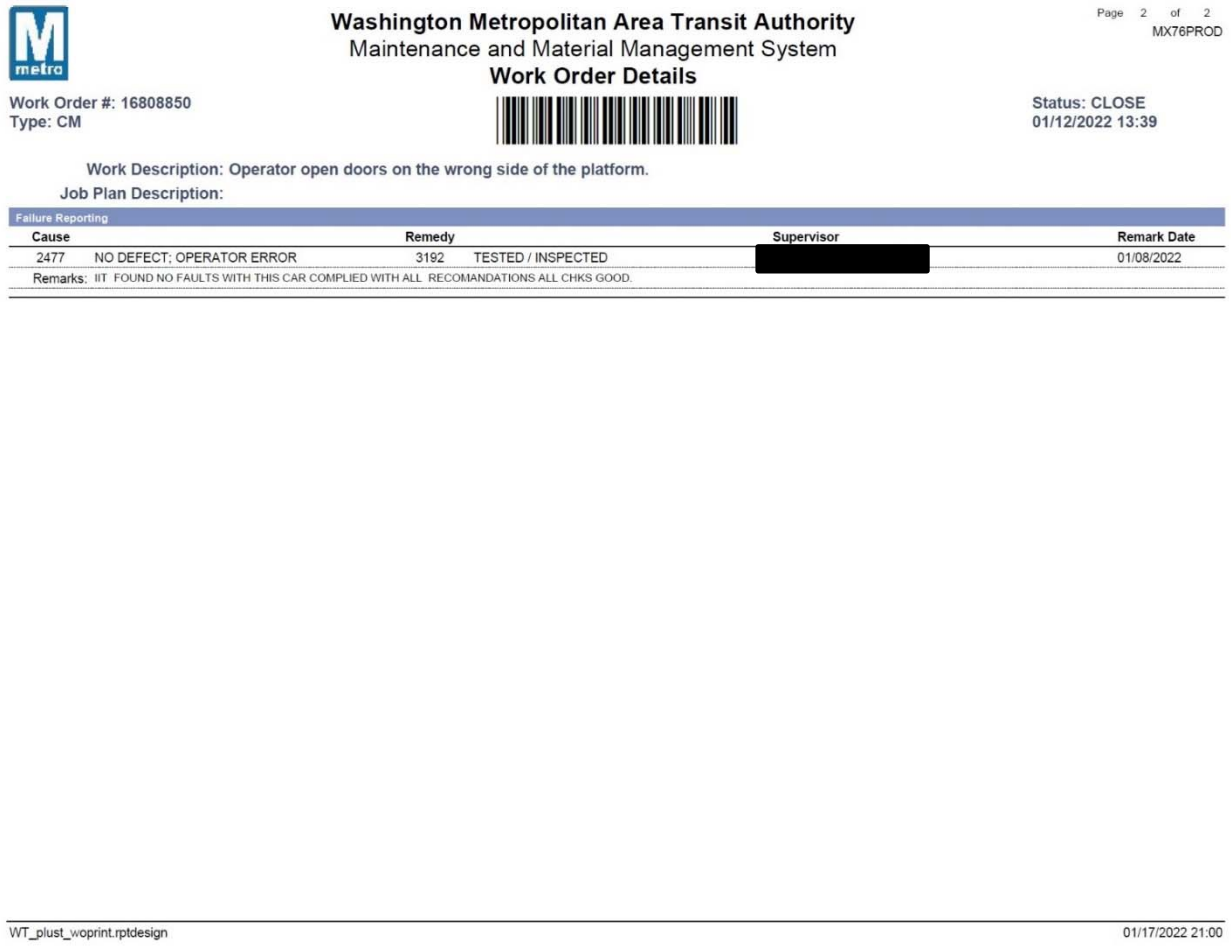
Task ID	Labor	Start Date	End Date	Start Time	End Time	Approved?	Regular Hours	Premium Hours	Line Cost
10	[redacted]	01/07/2022	01/07/2022	19:30	19:45	Y	00:15	00:00	$11.11
20		01/08/2022	01/08/2022	08:00	09:00	Y	01:00	00:00	$44.25
20		01/08/2022	01/08/2022	08:00	09:00	Y	01:00	00:00	$44.67
						Total Actual Hour/Labor:	02:15	00:00	$100.03

Related Incidents

Ticket	Description	Class	Status	Relationship
8581326	Operator open doors on the wrong side of the platform.	SR	RESOLVED	ORIGINATOR

WT_plust_woprint.rptdesign 01/17/2022 21:00

Document #1 - Page 1 of 2 – CMNT Maximo Work Order #16808850 detailing inspections conducted.



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

Page 2 of 2
MX76PROD

Work Order #: 16808850
Type: CM

Status: CLOSE
01/12/2022 13:39

Work Description: Operator open doors on the wrong side of the platform.
Job Plan Description:

Failure Reporting

Cause		Remedy		Supervisor	Remark Date
2477	NO DEFECT; OPERATOR ERROR	3192	TESTED / INSPECTED	[redacted]	01/08/2022

Remarks: IIT FOUND NO FAULTS WITH THIS CAR COMPLIED WITH ALL RECOMANDATIONS ALL CHKS GOOD.

WT_plust_woprint.rptdesign 01/17/2022 21:00

Document #2 - Page 2 of 2 – CMNT Maximo Work Order #16808850 stating no defects were found.

Appendix C – Rail Operations Control Center (ROCC) Incident Report

View Approved Incident Report

INCIDENT ID: 2022007YELLOW1

DATE	TIME	LINE	ITEM
2022-01-07	1624	Yellow	1

LOCATION (STATION/YARD)
Fort Totten (E06)

LOCATION/CHAIN MARKER (If Applicable)

REPORTED BY
MTPD [redacted]

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

CAR NUMBERS (XXXX-XXXX)
Lead Car

6046-6047	6005-6004	6172-6173	-
Caused Issue ☑	Caused Issue ☐	Caused Issue ☐	Caused Issue ☐

TRBL CODE
OPER-
OPERATOR
ERROR

RESP CODE
RTR

TYPE INCIDENT
Doors Opened Off The Platform

ACTION PLAN
Offload Train, Operator Removed From Service,

DELAYS IN MINUTES

LINE	INCIDENT	TRAIN	TOTAL DURATION
20	20	6	0

TRIPS MODIFIED

PARTIAL	GAP TRAIN	LATE DISPATCHES	REROUTED	NOT DISPATCHED	OFFLOADS
1	0	0	0	1	1

FIVE PRIMARY CONSOLE INDICATIONS

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

Document #3 - Page 1 of 2 – ROCC Incident Report.

View Approved Incident Report

INCIDENT CHRONOLOGY	
TIME	**DESCRIPTION**
1624	ROCC received a report from MTPD of train 304 track two at Fort Totten servicing on the wrong side of the platform. ROCC attempted to question the operator to verify if the platform was serviced on the wrong side. Train 304 operator insisted that the platform was serviced on the correct side of the platform. Train 304 resumed in revenue service in the direction of Huntington. Unit 21, RTRA Supervisor [redacted] was dispatched to the scene. ROCC Assistant Operations Manager, ROIC, MTPD, IMO and all concerned personnel were notified.
1629	ROCC instructed Train 502 to perform a visual track inspection on track two entering and exiting the platform at Fort Totten.
1634	Train 502 confirmed a cleared track inspection track two Fort Totten.
1641	CCTV playback from ROCC management confirmed Train 304 servicing on the wrong side of the platform track two at Fort Totten. ROCC instructed Train 304 operator to offload the train at Gallery Place track two. Unit 21 arrived on the scene to removed the operator from service.
1647	Train 304 operator confirmed the train was cleared of customers. Unit 63, RTRA Supervisor [redacted], arrived on the scene and took over operations of the train. Train 304 was re-blocked to Train 704 and continued non-revenue towards Alexandria rail yard.
1701	Train 305 serviced Train 304 customers track two at Fort Totten track two ending the longest customer delay. Normal service resumed.
0000	NOTE: Train 704 was stored on track 23 at Alexandria rail yard pending investigation. Operator [redacted] instructed to submit an incident report following his post-incident and interview with SAFE[redacted]

MAXIMO TICKET#
8581326

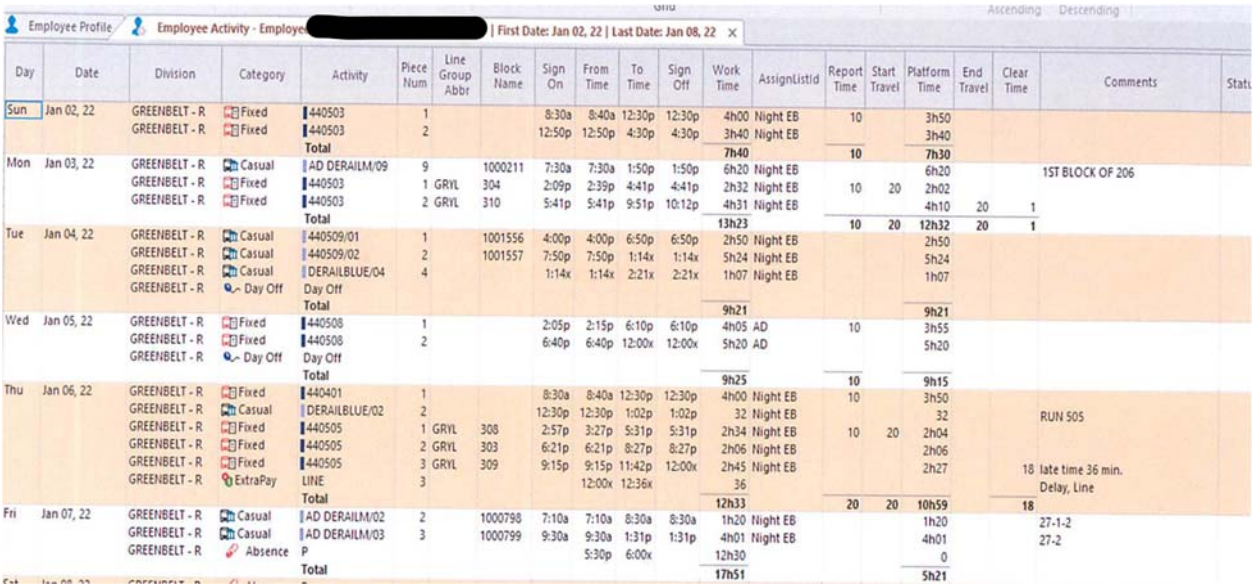
REPORT PREPARED BY	NAME	CLICK TO SIGN
RADIO CONTROLLER 1	[redacted]	✓
BUTTON CONTROLLER 1		✓
RADIO CONTROLLER 2		
BUTTON CONTROLLER 2		✓

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]	✓

Document #4 - Page 2 of 2 – ROCC Incident Report.

Appendix D – Operator's Schedule



Employee Profile | Employee Activity - Employe [redacted] | First Date: Jan 02, 22 | Last Date: Jan 08, 22

Day	Date	Division	Category	Activity	Piece Num	Line Group Abbr	Block Name	Sign On	From Time	To Time	Sign Off	Work Time	AssignListId	Report Time	Start Travel	Platform Time	End Travel	Clear Time	Comments	Stat
Sun	Jan 02, 22	GREENBELT - R	Fixed	440503	1			8:30a	8:40a	12:30p	12:30p	4h00	Night EB	10		3h50				
		GREENBELT - R	Fixed	440503	2			12:50p	12:50p	4:30p	4:30p	3h40	Night EB			3h40				
				Total								7h40		10		7h30				
Mon	Jan 03, 22	GREENBELT - R	Casual	AD DERAILM/09	9		1000211	7:30a	7:30a	1:50p	1:50p	6h20	Night EB			6h20			1ST BLOCK OF 206	
		GREENBELT - R	Fixed	440503	1	GRYL	304	2:09p	2:39p	4:41p	4:41p	2h32	Night EB	10	20	2h02				
		GREENBELT - R	Fixed	440503	2	GRYL	310	5:41p	5:41p	9:51p	10:12p	4h31	Night EB			4h10	20	1		
				Total								13h23		10	20	12h32	20	1		
Tue	Jan 04, 22	GREENBELT - R	Casual	440509/01	1		1001556	4:00p	4:00p	6:50p	6:50p	2h50	Night EB			2h50				
		GREENBELT - R	Casual	440509/02	2		1001557	7:50p	7:50p	1:14x	1:14x	5h24	Night EB			5h24				
		GREENBELT - R	Casual	DERAILBLUE/04	4			1:14x	1:14x	2:21x	2:21x	1h07	Night EB			1h07				
		GREENBELT - R	Day Off	Day Off																
				Total								9h21				9h21				
Wed	Jan 05, 22	GREENBELT - R	Fixed	440508	1			2:05p	2:15p	6:10p	6:10p	4h05	AD	10		3h55				
		GREENBELT - R	Fixed	440508	2			6:40p	6:40p	12:00x	12:00x	5h20	AD			5h20				
		GREENBELT - R	Day Off	Day Off																
				Total								9h25		10		9h15				
Thu	Jan 06, 22	GREENBELT - R	Fixed	440401	1			8:30a	8:40a	12:30p	12:30p	4h00	Night EB	10		3h50				
		GREENBELT - R	Casual	DERAILBLUE/02	2			12:30p	12:30p	1:02p	1:02p	32	Night EB			32			RUN 505	
		GREENBELT - R	Fixed	440505	1	GRYL	308	2:57p	3:27p	5:31p	5:31p	2h34	Night EB	10	20	2h04				
		GREENBELT - R	Fixed	440505	2	GRYL	303	6:21p	6:21p	8:27p	8:27p	2h06	Night EB			2h06				
		GREENBELT - R	Fixed	440505	3	GRYL	309	9:15p	9:15p	11:42p	12:00x	2h45	Night EB			2h27		18	late time 36 min.	
		GREENBELT - R	ExtraPay	LINE	3				12:00x	12:36x		36							Delay, Line	
				Total								12h33		20	20	10h59		18		
Fri	Jan 07, 22	GREENBELT - R	Casual	AD DERAILM/02	2		1000798	7:10a	7:10a	8:30a	8:30a	1h20	Night EB			1h20			27-1-2	
		GREENBELT - R	Casual	AD DERAILM/03	3		1000799	9:30a	9:30a	1:31p	1:31p	4h01	Night EB			4h01			27-2	
		GREENBELT - R	Absence	P					5:30p	6:00x		12h30				0				
				Total								17h51				5h21				

Appendix E - Root Cause Analysis