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**WMSC Commissioner Brief: W-0053 – Improper Door Operation at Largo Town Center – August 25, 2020**

*Prepared for Washington Metrorail Safety Commission meeting on January 26, 2021*

**Safety event summary:**

The doors of a train that had just gone out of service at Largo Town Center Station opened on the non-platform side when a new train operator who had not been informed of damage in the cab entered the train and keyed up in the direction of Stadium-Armory at 7:44 a.m. on August 25, 2020.

The 3000-series consist was put into service the morning of August 25, 2020 despite problems with the door control panel that the train operator reported at approximately 4:54 a.m. before going into service at Largo Town Center Station. The investigation suggests that the door open pushbutton barrier broke during the door open and closed test that began around 4:40 a.m. (no problems were noted in overnight daily inspections).

Because Metrorail's 3000-series rail cars do not have inward facing cab cameras, the investigation is based on other recorded data, transmissions, and interviews.

The Largo Town Center Station Terminal Supervisor contacted the train operator at 4:53 a.m. warning that the train operator was going to be late for a scheduled 4:54 a.m. departure. The train operator responded, "I can't close the doors."

The Terminal Supervisor did not remove the train from service or seek additional information as required following the report from the train operator.

The train was then allowed to continue in service after the door control panel button was further damaged at Morgan Boulevard Station. The train operator reported this issue to the Rail Operations Control Center from Benning Road Station. The investigation identified that the train operator reported this damage shortly after it occurred with the expectation that the car maintenance road mechanic on duty at Stadium-Armory Station would board the train regardless of the timing of the report.

The mechanic boarded the train but opted not to work on the door control panel while the train was being operated from that cab.

That mechanic was relieved and replaced by another road mechanic, but the second mechanic did not have the parts necessary to make a repair when the train reached Franconia-Springfield.

A car maintenance supervisor and the terminal supervisor at Franconia-Springfield determined that the train should be allowed to operate back to Largo Town Center (without a mechanic on board) because the damaged cab was no longer in the lead car, but instead would be the trailing car.

Although the need to take the train out of service at Largo Town Center was communicated, the information regarding the reasoning and the specific damage was not communicated to the terminal supervisor or other employees at the Largo Town Center end of the line.

A supervisor relieved the train operator prior to the train reaching Largo Town Center, and a separate train operator was then assigned to move the train to New Carrollton Yard. The train operator did not receive any information regarding the broken door panel that was now stuck in the "on" position from the terminal supervisor or anyone else.

When that train operator boarded the train and keyed up just after passengers had cleared the train, the broken door control switch triggered the doors to open on the side of the train opposite the station platform.

Had the information been communicated regarding the broken switch, or had the broken switch otherwise been identified, the switch could have been bypassed for the non-revenue move to the rail yard.

**Probable Cause:**

The prioritization by supervisors of maintaining scheduled service rather than removing a train from service that had door problems and a lack of communication to other employees that the damage existed led to this event.

**Corrective Actions:**

As part of the ongoing large-scale effort to rewrite WMATA rules and procedures, Metrorail will review opportunities to improve the procedures for removing trains from service that have door-related problems.

Metrorail's Rail Transportation (RTRA) personnel reviewed a 2019 operations notice relating to the importance of proper reporting and communication of safety issues.

**WMSC staff observations:**

This event demonstrates the importance of clear communication and of pre-trip inspections.

Although apparently not contributing to this event, the fact that a rail controller was performing both buttons and radio duties for about 20 minutes during the relevant period further demonstrates the need identified in the WMSC's ROCC Audit for WMATA to meet full staffing needs and to institute scheduled breaks. These duties normally require two people to handle the significant workload and responsibilities.

**Staff recommendation**: Adopt final report.

# Washington Metro Area Transit Authority

# Department of Safety and Environmental Management (SAFE)

## FINAL REPORT OF INVESTIGATION A&I E20313

| | |
|---|---|
| **Date of Event:** | 8/25/2020 |
| **Type of Event:** | Improper Door Operation |
| **Incident Time:** | 07:44 hrs. |
| **Location:** | Largo Town Center Station, Track 1 |
| **Time and How received by SAFE:** | 08:07 hrs. – On-Call SAFE Phone |
| **WMSC Notification Time:** | 09:12 hrs. |
| **Rail Vehicle:** | 3000 Series 8-Car Consist Lead Car 3135 |
| **Injuries:** | No |
| **Damage:** | No |
| **SMS I/A Incident Number:** | 20200825#88559 |

**Largo Town Center Station, Track 1**
**Improper Door Operation**
**August 25, 2020**

## Table of Contents

## Abbreviations and Acronyms

| | |
|---|---|
| **ARS** | Audio Recording System |
| **CENV** | Vehicle Program Services |
| **CTEM** | Car Track Equipment Maintenance |
| **CCTV** | Closed-Circuit Television |
| **CMNT** | Office of Car Maintenance |
| **COMM** | Communication Section |
| **MSRPH** | Metrorail Safety Rules and Procedures Handbook |
| **NOAA** | National Oceanic Atmospheric Administration |
| **ROCC** | Rail Operations Control Center |
| **RTC** | Rail Traffic Controller |
| **RTRA** | Office of Rail Transportation |
| **SAFE** | Department of Safety and Environmental Management |
| **SMNT** | Office of Systems Maintenance |
| **SOP** | Standard Operating Procedure |
| **WMATA** | Washington Metropolitan Area Transit Authority |

**Executive Summary**

On Tuesday, August 25, 2020, at approximately 07:44 hrs., a New Carrollton division Train Operator, transporting a non-revenue train [no passengers], Train ID 727 [L3135-3134.3068-3067.3024-3025.3098-3099] to New Carrollton Yard, had an improper door operation at Largo Town Center Station, Track 1. Vehicle Program Services (CENV) and the Office of Car Maintenance (CMNT) inspection determined that when the Train Operator keyed up lead car 3135 at Largo Town Center, Track 1, the left side doors opened off-platform side as a result of the door control panel, open door pushbutton being depressed [stuck] in the activate position.

Further investigation determined; Train Operator 1 reported via radio, they were having trouble closing the doors at 4:54 hrs., before leaving Largo Town Center tail track. At 5:05 hrs. when the Train Operator reached Benning Road Station, Track 2, they notified the Rail Operations Control Center (ROCC) Radio Rail Traffic Controller (RTC) that the left side door control panel door open pushbutton was depressed into the console. The ROCC Radio RTC instructed the CMNT Road Mechanic 1 to board Train ID 407 for assistance.

After CMNT Road Mechanic 1 boarded Train ID 407, they identified the left side door control panel pushbutton barriers were broken and repairs could not be performed during train operation. The ROCC CMNT Supervisor advised the CMNT Road Mechanic 1 personnel to stay aboard Train ID 407 until relieved. CMNT Road Mechanic 2 announced being on duty at Metro Center Station. The ROCC Radio RTC acknowledged and then instructed CMNT Road Mechanic 2 to relieve Road Mechanic 1 currently on Train ID 407, Track 2. The ROCC CMNT Supervisor reported that Road Mechanic 2 did not have enough parts to fix the left side door control panel at Franconia-Springfield Station [terminal location] and stated the train would be removed from service at Largo Town Center Station upon arrival.

The consist operated back to Largo Town Center Station from Lead Car 3099. Upon arrival, the Train ID 407 was off-loaded at Largo Town Center Station, Track 1. After the train was cleared of customers, Train Operator 2, unfamiliar with the condition of the train, boarded, keyed up the consist and had an improper door operation. An Office of Rail Transportation (RTRA) Supervisor later removed the Train Operator from service for post-incident toxicology testing.

The probable cause of this incident was the left side door control panel, door open pushbutton barriers failed [broke] when the Train Operator performed an open and close door operation test in Largo Tail Track before entering mainline on the morning of August 25, 2020. After the Train Operator reported the event to the Largo Town Center Terminal Supervisor, the Terminal Supervisor did not remove the train from service upon notification. The CMNT Road Mechanic 2 assigned to repair the affected consist did not have adequate parts to repair the defect. The ROCC CMNT Supervisor or Terminal Supervisor did not deem the failure critical to safe operations because the defective lead car now trailing [not operating as lead] could operate back in the direction of Largo Town Center and be removed from service. At this time, the left side door control panel pushbutton on 3135 was depressed in the energized state when the train left Franconia-Springfield Station. Upon arrival, there were no instructions provided to the oncoming Train Operator that operating car 3135 had a door discrepancy and required the left side door control breaker to be isolated before keying up the affected consist at Largo Town Center. The Train Operator that boarded car 3135 to transport the consist to New Carrollton Station for subsequent repairs did not perform an inspection of the left door control panel on car 3135 before keying up the consist.

Upon analysis of data collected from systems of record and the results of interviews with staff, multiple human factors failures occurred in response to this incident. Additionally, SAFE identified processes and procedural gaps which directly and indirectly contributed to the incident, as follows:

The Largo Town Center Terminal Supervisor did not make a recommendation to remove the train from service upon receiving notification that the doors would not close from Train Operator 1 prior to entering the mainline.

The ROCC CMNT Supervisor did not take further action after being notified that the CMNT Road Mechanic 2 did not have enough parts to repair the left side door control panel on the platform and recommended the train be removed from service at that terminal location.

The Franconia-Springfield Station Terminal Supervisor did not recommend the train be removed from service for safety reasons. Upon arrival at Largo Town Center Station, the Terminal Supervisor did not update Train Operator 2 of the condition of the train and to drop associated train line door circuit breakers before keying up the train.

Several communication breakdowns, a lack of management oversight, inconsistent adherence to written procedures and processes within the Metrorail Safety Rules and Procedures Handbook (MSRPH) were identified as contributing factors in this event.

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

RTRA shall undertake a review of the MSRPH to identify opportunities to improve removing trains from service with door safety-related discrepancies.

RTRA has reviewed RTRA Operations Personnel Notice, Importance of Proper Notification with the Train Operator and the Terminal Supervisor to raise awareness on the importance of reporting issues immediately while on the mainline.

**Incident Site**

Largo Town Center Station, Track 1 Chain Marker G1-629+00

## Field Sketch/Schematics

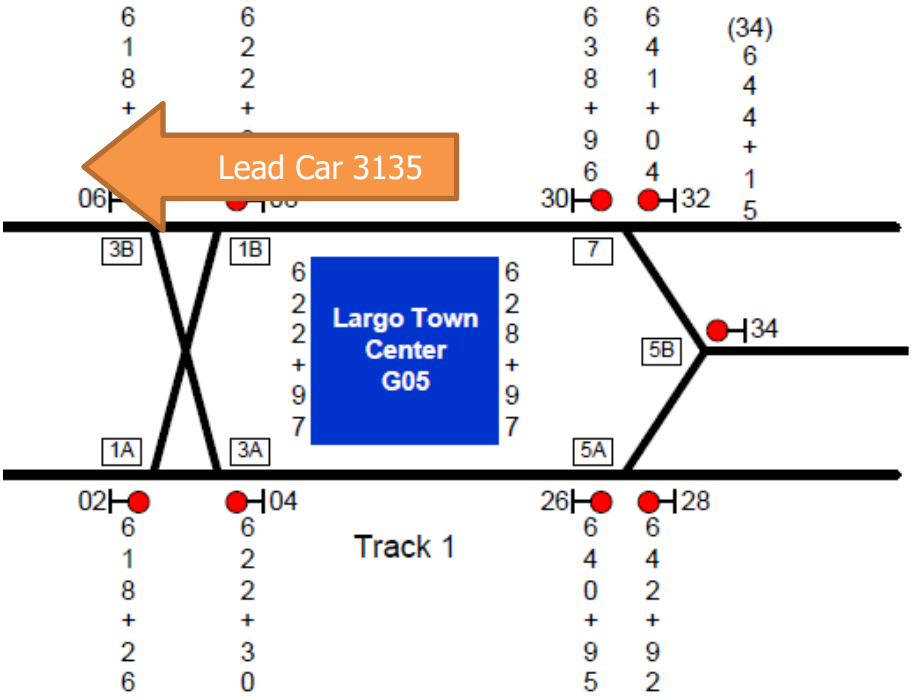


*Figure 1: Largo Town Center Station, Track 1 Chain Marker G1-629+00*

## Purpose and Scope

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

## Investigation Process and Methods

Upon receiving notification of the improper door operation at Largo Town Center Station, Track 1 on August 25, 2020. SAFE conducted a cross-functional investigation into this event. SAFE team members worked with relevant WMATA subject matter experts to review facts and data associated with the incident

## Investigative Methods

The investigative methodologies included the following:

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

    - Train Operator 1
    - Train Operator 2
    - CMNT Road Mechanic 1
    - Radio RTC

- RTRA Supervisor
- Terminal Supervisor

- Documentation Review - Collection of relevant work history information and process documentation contained in WMATA systems of records. These records include:

  - MSRPH
  - National Oceanic Atmospheric Administration (NOAA)

- System Data Recording Review - Collection of information contained in Metro Data Recording Systems. This data includes:

  - Audio Recording System (ARS) playback [Radio communication]
  - ROCC SPOTS event log data review
  - CMNT post-incident inspection data review
  - CENV post-incident analysis data review
  - Office of System Maintenance (SMNT) Communication Section (COMM) radio communication data review

**Investigation**

On Tuesday, August 25, 2020, at approximately 07:44 hrs., Eastern Daylight Time, 3000 Series 8-car consist lead car 3135 at Largo Town Center Station, Track 1 had an improper door operation event. Based on interviews with SAFE, the RTRA Supervisor stated, they relieved Train Operator 1 on Train ID 407, at Addison Road Station, Track 1 and brought the consist to Largo Town Center Station. The RTRA Supervisor stated, the consist was off-loaded, the Yard Operator walked through all 8-cars and verified the consist was clear of all customers. The platform doors were closed and the consist was removed from revenue service. The Terminal Supervisor informed Train Operator 2 that the consist is on Track 1 and would be transported non-revenue to New Carrollton Rail Yard. Train Operator 2 stated, they never initiated a door open event by depressing the open door button while the consist was berthed at Largo Town Center Station, Track 1. Train Operator 2 keyed up car 3135 and noticed they could not take a point of power and that's when Train Operator 2 noticed the doors were open on the opposite side of the platform by sticking head out of the operator cab window. A ground walkaround was conducted after the incident occurred. Train Operator 2 was subsequently removed from service for post-incident toxicology testing. The affected consist was removed from service for post-incident inspection.

Upon further investigation from the Terminal Supervisor and RTRA Supervisor, they opened the door compartment and identified an issue with the door open pushbutton being stuck in the depressed position on car 3135. Based on CENV data, lead car 3135 showed the door open pushbutton being activated and/or stuck in the depressed position prior to the doors opening on the opposite side of the platform. The issue with the left door open button initially started at 04:42:56 hrs. Based on a review of the Car Maintenance daily inspection log for Monday evening, August 24, 2020, going into Tuesday, August 25, 2020, there were no failures documented to reflect anomalous conditions with car 3135.

An investigative analysis of the data from the system of record, Audio Recording System playback, ROCC SPOTS data, and CENV post-incident data revealed the following:

CENV data: At 04:42:56 hrs., the left side door open pushbutton was activated and stayed activated for around five minutes. At 04:47:56 hrs., the left side door open pushbutton was activated and deactivated more than ten times. At 04:48:32 hrs., the left side open pushbutton was reset and at 04:48:40 hrs., all doors closed indicator was achieved. NOTE: CENV personnel

reported time of events is based on the Vehicle Monitoring and Diagnostic System's time. This is the time they use to do their analysis and prepare the report. The time can be offset by different amounts for different cars. For this incident, cars 3134/3135 Vehicle Monitoring and Diagnostic System data time is around 5 minutes and 55 seconds ahead of real-time.

ARS data: At 04:53 hrs., the Largo Town Center Station Terminal Supervisor told Train ID 407, lead car 3135 that their schedule to depart is 04:54 hrs., and referenced SOP 50 and then stated, you are going to be late. Train Operator 1 can be heard over the radio, stating, "I can't close the doors" to the Terminal Supervisor.

SPOTS event log data: The consist's tail cleared Largo Town Center Station at 04:55 hrs. During post-incident interviews with SAFE, Train Operator 1 stated that when getting ready to depart Largo Town Center Station on August 25, 2020, at approximately 4:55 hrs., the operator closed the doors by pressing the closed doors button.

At that time, the close door pushbutton was pushed into the console slightly. However, Train Operator 1 stated, "they mentioned it to the Terminal Supervisor and was still able to close the doors and did not think it was a big deal." Train Operator 1 advised once arriving at the next station [Morgan Boulevard Station], they went to depress the left door control panel open doors button and the entire button panel pushed in lodged into the console.

Train Operator 1 stated, they reported the incident to the ROCC at Benning Road Station but was not certain of their exact location. NOTE: Ops 2 ARS confirmed the Train Operator 1 reported the incident at Benning Road Station. Train Operator 1 stated, they waited to contact the ROCC because they knew a CMNT Road Mechanic 1 was at Stadium-Armory Station. CMNT Road Mechanic 1 stated in the interview with SAFE, after boarding the consist at Stadium-Armory Station, Train Operator 1 stated, the consist buttons were pushed into the console. CMNT Road Mechanic 1 stated, they notified Rail Operations Control Center and explained to them the situation and asked the ROCC how to proceed. The ROCC advised CMNT Road Mechanic 1 to contact their supervisor for instructions on how to proceed. CMNT Road Mechanic 1 stated, their supervisor [ROCC CMNT desk] advised them to stay with the consist. Once the consist got to the end of the line at Franconia-Springfield Station, CMNT would troubleshoot the issue.

There was another CMNT Road Mechanic that boarded the consist at Metro Center Station. Once the consist made it to Franconia-Springfield Station, CMNT Road Mechanic 2 did not have enough parts to fix the damaged open-and-closed-door buttons on the left side door control panel. CMNT Road Mechanic's 2 Supervisor, made the decision for the consist to be operated back to Largo Town Center Station with no CMNT Road Mechanic in the operator's cab area because the consist would be on the trailing end car on return to Largo Town Center Station.

The ROCC CMNT Supervisor, stated there were no issues with the open/close button on the trailing end car and the plan was to take the consist out of service at Largo Town Center Station due to the lead car 3135 door buttons being pushed into the console and did not foresee any more problems because there would be no door operations conducted. However, once the consist arrived at Largo Town Center Station, Track 1, based on CENV lead car 3135 data showed, the consist door open pushbutton on the left was stuck in the ON position. This pushbutton is energized from the operator's cab area, which means when the consist was keyed up from car 3135, the door open signal was sent to the door open train lines on the left side. This caused the doors to open on the opposite side of the platform.

*Photo 1 - Broken control panel switch barriers.*

Largo Town Center Station Platform Closed-Circuit Television video recording revealed the following:


*Photo 2 - The consist entering Largo Town Center Station 07:41:29 hrs.*


*Photo 3 - The consist berthed at the 8-car marker at 07:41:52 hrs., and then the customers exited the consist shortly after.*

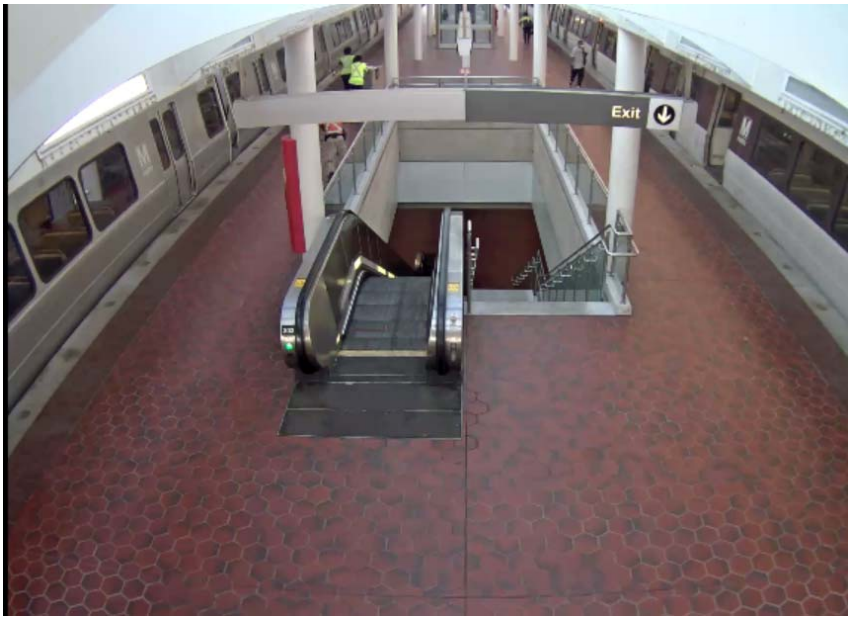


*Photo 4 - The consist doors opened on the opposite side of the platform at 07:44:53 hrs. At this point, per CCTV, the customers had already exited the consist and the platform side doors were closed. Additionally, the yard operator had already walked through the entire consist to confirm the consist was clear of customers.*

**Chronological Timeline of Events**

Based on Radio ARS playback via Ops 2 and Largo Terminal Blockhouse Ambient audio, the following information was revealed:

| Time | Description |
|---|---|
| 04:53:43 hrs. | The Terminal Supervisor told Train ID 407, Lead car 3135 that your schedule to depart is at 04:54 hrs. and referenced Standard Operating Procedure (SOP) 50 Train Operator Baseline Announcements and then stated, you are going to be late. |
| 04:54:20 hrs. | Train Operator operating car 3135 can be heard over the radio stating, I cannot close the door to the Terminal Supervisor. |
| 05:05:25 hrs. | Train ID 407 leaving Benning Road Station, Track 2 requested Car Equipment to board the train due to left door control panel door open button being pushed in the console on lead car 3135. The Radio RTC acknowledged and then asked Car Equipment to board the second train Track 2 and Car Equipment acknowledged. |
| 05:17:48 hrs. | Another Car Equipment personnel announced being on duty at Metro Center Station. Radio RTC acknowledged and then asked the Car Equipment employee to relieve the Car Equipment employee currently on Train 407, Track 2. Train Operator is reporting that the left panel control pushbutton is pushed in. Radio RTC stated, “we just need a Car Equipment person to stay onboard train until the consist gets to the end of the line.” Car Equipment acknowledged. |
| 07:13:01 hrs. | Car Equipment reported to the ROCC being back at Metro Center Station. The Radio RTC acknowledged. |
| 07:30:59 hrs. | RTC advised Train ID 407 they will get relieved by the RTRA Supervisor at Capitol Heights Station. Train ID 407 acknowledged. |
| 07:45:38 hrs. | Terminal Supervisor asked Train Operator 2 if the doors are open. Terminal Supervisor then asked Train Operator 2 if they got all doors closed showing. Train Operator 2 responded; I sure do. The Terminal Supervisor responded; you have a defective button; that is why the consist is out of service. |
| 07:46:00 hrs. | The Terminal Supervisor responded; did someone just open the doors on the opposite side of the platform? |
| 07:47:00 hrs. | Train Operator 2 responded, I already opened doors up. The Terminal Supervisor responded close doors on Track 1, and I would need a ground walk around. |
| 07:47:20 hrs. | The Terminal Supervisor contacted the Rail Operations Control Center and advised the doors are open on the opposite side of the platform, Track 1. The RTRA Supervisor on the scene is investigating. |
| 07:50:00 hrs. | The Radio RTC contacted ROCC Assistant Superintendent via phone and stated that the RTRA Supervisor was operating Train ID 407, lead car 3135 that had a defective door control panel. Doors were opened on the opposite side of the platform at 07:44 hrs., at Largo Town Center Station, Track 1. The Radio RTC advised the RTRA Supervisor is in the process of doing a ground walkaround now. |
| 07:56:00 hrs. | The ROCC Assistant Superintendent contacted the CMNT desk and reported the improper door operations at Largo Town Center Station and the consist is out of service. The Car Maintenance employee advised the consist was supposed to be out of service already. |
| 07:59:04 hrs. | The ROCC Assistant Superintendent contacted the Largo Town Center Station Terminal. The RTRA Supervisor answered the phone and stated, lead car 3135 is on the downtown end of the platform. Additionally, the RTRA |

| | |
|---|---|
| | Supervisor stated Train Operator 2 never opened the doors; they just sat down and keyed up and the doors opened due to the button being depressed in the ON position. The RTRA Supervisor advised the consist was berthed and off-loaded at Largo Town Center Station. The Yard Operator walked through the entire consist to verify the train was clear of customers. Once the Yard Operator confirmed the consist was clear of customers, Train Operator 2 keyed up and the doors opened. |

**SPOTS event log**

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

- Consist tail cleared Largo Town Center Station at 04:55 hrs.
- Consist head arrived at Largo Town Center Station at 07:41:29 hrs.
- Consist platform side doors were commanded open at 07:41:58 hrs., and customers exited the consist, per closed-circuit television.

**Vehicle Program Services (CENV)**

CENV personnel performed analysis on the affected consist. The lead car data showed that there was an indication of the door open pushbutton being activated and/or depressed prior to the doors opening at 7:36:02 hrs., on the opposite side of the platform. The issue with the left door open pushbutton initially started at 04:42:56 hrs., on August 25, 2020. The detailed times of events and the screenshot in diagram 1 showed at 04:33:50 hrs., lead car 3135 located at Largo Town Center Station keyed up. At 04:34:44 hrs., the consist was keyed down. At 04:40:47 hrs., the consist was keyed up from car 3135 again with no problems shown. At 04:41:57 hrs., the consist moved approximately 591 feet to Largo Town Center Station, Track 2. At 04:42:56 hrs., the left side door open pushbutton was activated and stayed activated for around 5 minutes. At 04:47:56 hrs., the left side door open pushbutton was activated and deactivated more than 10 times (The consist door open pushbutton on the left was stuck in the ON position causing the multiple pushbutton activations). At 04:48:32 hrs., the left side open pushbutton was reset and at 04:48:40 hrs., all door closed indicator was achieved.

At 04:48:48 hrs., the consist started moving in the direction towards Franconia-Springfield Station, Track 2. During the time from Largo Town Center Station to Franconia-Springfield Station, Track 2 the LDOPB was erratic (activated/deactivated) in 5 stations. At 05:56:29 hrs., the consist arrived in Franconia-Springfield Station, Track 2 and keyed down from car #3135 at 05:57:05 hrs. CENV personnel performed an analysis of the affected consist when the consist went back to Largo Town Center Station. The detailed times of events and the screenshot in diagram 2 for the lead car data showed at 07:35:57 hrs., the consist arrived in Largo Town Center Station with car 3099 leading. At 07:36:02 hrs., the doors open on the left side from car 3099 and on the right side from car 3134. At 07:36:10 hrs., the - doors close on the left side from car 3099 and on the right side from car 3134. At 07:36.25 hrs., the consist was keyed down from car 3099. At 07:38:58 hrs., the consist was keyed up from car 3135. At 07:38:58 hrs., the left door pushbutton was activated. Line 3 and 4 were energized and doors opened on the opposite side of the platform.

NOTE: The consist door open pushbutton on the left was stuck in the ON position. This pushbutton is energized from the operator's cab, which means when the consist was keyed up from car 3135, the door open signal was sent to the door open train lines on the left side. This caused the doors to open on the opposite side of the platform.

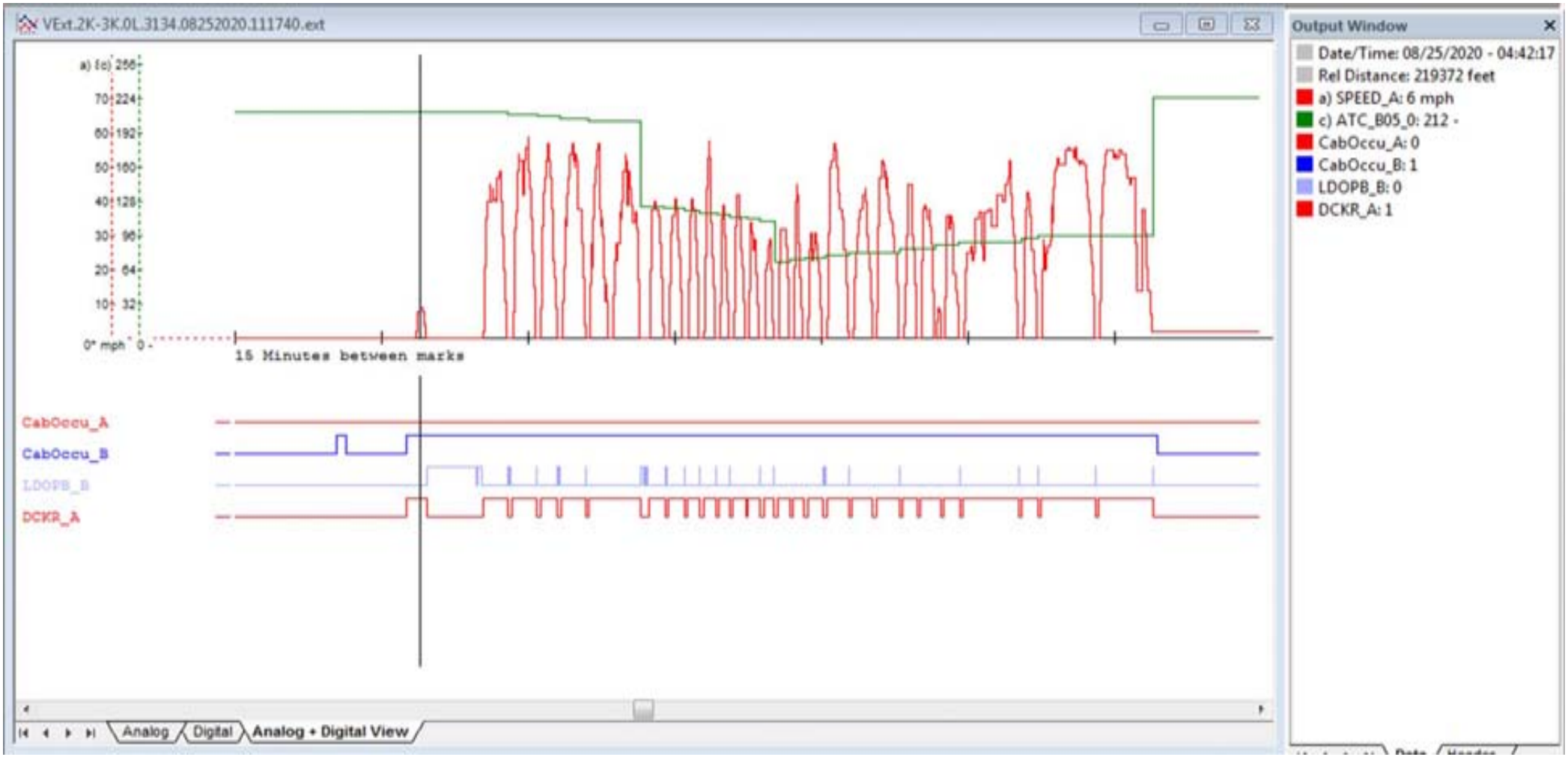


*Diagram 1- Event Recorder Graphical Analysis*

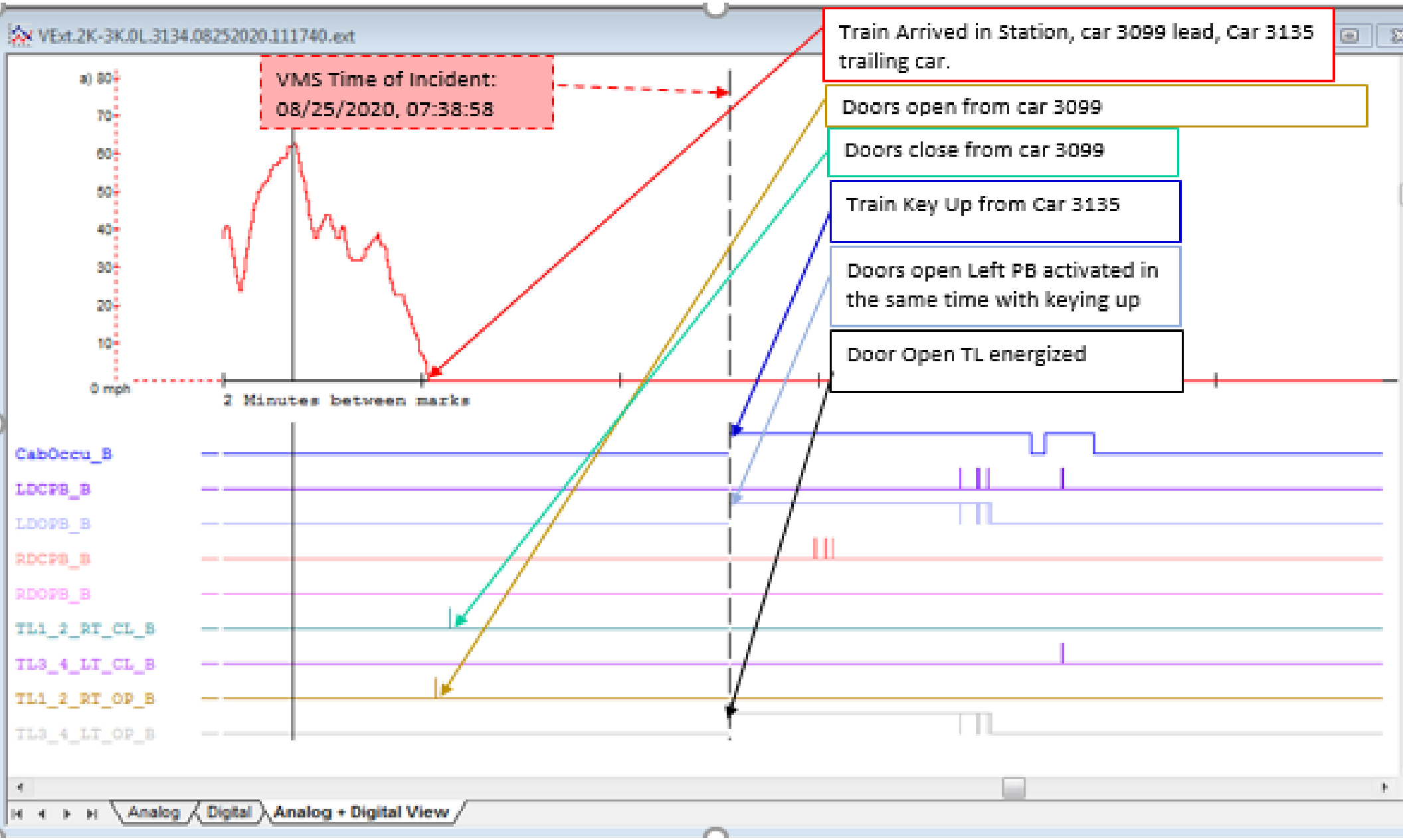


Diagram 2 - Event Recorder Graphical Analysis

**Office of Car Maintenance (CMNT)**

CMNT personnel performed an inspection on the affected consist and the following anomalies were found:

Car 3135 – Left side door operation control panel switch barriers were broken. See photo 1. CMNT personnel made the necessary repairs and changed out the side barriers to keep the buttons in place. CMNT checked the functionality of the door open/close pushbuttons by cycling the doors multiple times.

NOTE: Base on a review of Car Maintenance's daily inspection log for Monday evening, August 24, 2020, going into Tuesday, August 25, 2020, the data evidence did not identify or report any anomalies or conditions which were out of tolerance with car 3135.

**Communication Maintenance**

COMM performed a comprehensive radio operational test at Largo Town Center Station, Tracks 1 and 2. The test was successful, and the signal was at an optimal level.
NOTE: After reviewing the Audio Recording System playback, there did not appear to be any communication deficiencies over the radio.

**Interview Findings**

Based on the investigation launched into the Improper Door Operation event at Largo Town Center Station, Track 1, SAFE conducted six (6) investigative interviews. The following key findings associated with this event identified are as follows:
Train Operator 1 stated, as I was getting ready to depart Largo Town Center Station, I closed the doors and the doors pushbutton went in slightly, but I was still was able to close the doors. The operator stated they told the terminal supervisor but decided to continue since they were able to get the doors to close. The Train Operator stated, upon arriving at the next station, which was Morgan Boulevard Station, they went to push the open door button and the button got pushed inside the console. Train Operator 1 never reported the panel damage at Morgan Boulevard Station and continued. Train Operator 1 stated that they do not know where they were at the time they contacted ROCC about the damaged button, but they believed it was Benning Road Station. CMNT Road Mechanic 1 indicated, once they boarded the consist at Stadium-Armory Station, the operator advised the CMNT Road Mechanic 1 that the left-side door control panel door open pushbutton is pushed in. The CMNT Road Mechanic 1 stated, they are unable to perform repairs on the left side door control panel while the train is in operation due to the possibility of inadvertently causing an uncommanded door operation. CMNT Road Mechanic 1 stated their supervisor advised CMNT Road Mechanic 1 to remain with the train to the end of the line. CMNT Road Mechanic 1 got relieved at McPherson Square Station and updated the relieving CMNT Road Mechanic 2 of the train discrepancy.

The ROCC CMNT Supervisor assigned to the Car Maintenance desk stated that CMNT Road Mechanic 2 did not have enough parts with them to fix the damaged door button console at Franconia-Springfield Station. The ROCC CMNT Supervisor stated it was fine for the consist to go back to Largo Town Center Station because there were no issues with the trailing end. The ROCC CMNT Supervisor stated once the consist made it back to Largo Town Center Station, they did not foresee any other problems because the consist was going out of service and there will be no door operations conducted. The Radio RTC stated, “it was Car Equipment’s recommendation to keep the train in service with Car Equipment on board.” The Radio RTC stated, “they were doing both roles of buttons and radio controller for approximately 20 minutes.”

The RTRA Supervisor stated, per the schedule, they had to relieve a Train Operator 1 on Train ID 407 at Addison Road Station, Track 1. The RTRA Supervisor stated they brought the consist to Largo Town Center Station and the consist was off-loaded and closed the doors back on the platform side. The Yard Operator walked through the 8-cars to make sure the consist was clear of customers. At some point, when the Yard Operator and RTRA Supervisor were walking down the platform, the new Train Operator keyed up on car 3135 and that is when the doors opened on the platform side. Terminal Supervisor 2 told Train Operator 2 to perform a ground walk around. The Terminal Supervisor stated they did not know why the doors opened on the opposite side of the platform, so they opened the door control compartment with the crew key and identified the open door button was pushed in the console. Train Operator 2 indicated they got instruction from the Terminal Supervisor to board the consist of Track 1 and transport the consist to New Carrollton Station. Train Operator 2 stated, once I keyed up on car 3135, I noticed I did not have an all doors closed, then looked out the right side cab window because I knew there was an Operator that walked through the entire consist checking for customers. Train Operator 2 noticed the Operator walking down the platform and thought the Operator keyed someone off the consist, which the Operator did not. Train Operator 2 then noticed the door indicators lights were on then contacted the Terminal Supervisor. The Terminal Supervisor instructed Train Operator 2 to close the doors on the platform side and Train Operator 2 attempted to do so but still could not get all doors closed. Train Operator 2 then looked out the left side window and noticed that there were door indicator lights on. Train Operator 2 was then instructed to key the consist down. Upon further investigation, the door control panel was closed, but once the Terminal Supervisor opened it and discovered the buttons were pushed in.

## Immediate Mitigation to Prevent Recurrence

- The affected consist was removed from service for post-incident inspection.

## Findings

- The affected consist is not equipped with forward-facing and operator console cameras capabilities.
- The door open pushbutton on the left Door Control Panel was stuck in the ON position on car 3155 (only active while car 3155 was keyed up), which did not affect the consist operation while keyed on the opposite end. This pushbutton is energized from the operator's cab, which means when the consist was keyed up from car 3135, the door open signal was sent to the door open train lines on the left side. This caused the doors to open on the opposite side of the platform.
- CENV personnel reported time of events reported is based on the Vehicle Monitoring and Diagnostic System time; this is the time they use to do their analysis and prepare the report. The time can be offset by different amounts for different cars. For this incident cars, 3134/3135 Vehicle Monitoring and Diagnostic System data time is around 5:55 minutes ahead of real-time.
- Per Closed-Circuit Television video recording, the consist was already clear of customers when doors were closed on the platform side and before the doors opened on the opposite side of the platform.
- Train Operator 1 failed to report the defective open/close buttons panel immediately once observing the minor damage at Largo Town Center Station, which led to more severe damages at Morgan Boulevard Station. Additionally, the operator failed to report this issue at Morgan Boulevard Station. This is not in compliance with Metrorail Rules and Procedures Handbook Operating Rule 3.119 *"Failure of train doors to open or close properly must be reported to ROCC immediately."* and General Rule 1.55 *"Employee shall immediately report the loss or damage of any WMATA property to their supervisor and/or other appropriate authority."* CENV reported that it is not a normal function for the door open push button to be activated/deactivated more than 10 times. CMNT troubleshooted the left side door operation panel in car 3135. The left side door operation control panel switch barriers were broken. See Photo 1. CMNT personnel made the necessary repairs and changed out the barriers to keep the buttons in place. CMNT checked the functionality of the door open/close pushbuttons by cycling the doors multiple times.

## Weather

At the time of the incident, the temperature was recorded at 72°F with partly cloudy skies. SAFE has concluded that weather was not a contributing factor in this incident. (Weather source: National Oceanic Atmospheric Administration (NOAA) – Location: Largo, MD.)

## Human Factors

### Fatigue

Based on SAFE's interview question related to Fatigue Factors and review of all employee 30-day work history, it was determined, employee hours of service were in accordance with WMATA's *Fatigue Risk Management Policy 10.6* and *Hours of Service Limitations for Prevention of Fatigue Policy 10.7* and discounted Fatigue as a contributing factor for this event.

### Post-Incident Toxicology Testing

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

## Probable Cause Statement

The probable cause of this incident was the left side door control panel, door open pushbutton barriers failed [broke] when the Train Operator performed an open and close door operation test in Largo Yard before entering mainline on the morning of August 25, 2020. After the Train Operator reported the event to the Largo Town Center Terminal Supervisor, the Terminal Supervisor did not remove the train from service upon notification. The CMNT Road Mechanic assigned to repair the affected consist did not have adequate parts to repair the defect and recommended the train be removed from service at Franconia-Springfield location. The ROCC CMNT Supervisor or Terminal Supervisor did not deem the failure critical to safe operations because the defective lead car now trailing [not operating as lead] could operate back in the direction of Largo Town Center and be removed from service. At that time, the left side door control panel pushbutton on 3135 was depressed in the energized state when the train left Franconia-Springfield Station. Upon arrival, no communication was provided to the oncoming Train Operator that operating car 3135 had a door discrepancy and required the left side door trainline circuit breaker to be isolated before keying up the affected consist at Largo Town Center. The Train Operator that boarded car 3135 to transport the consist to New Carrollton Station for subsequent repairs did not perform an inspection of the left door control panel on car 3135 before keying up the consist.

**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. Refer to the SMS I/A module for additional information.

| Corrective Action Code | Description |
|---|---|
| 88559_SAFECAPS_ RTRA_001 | RTRA shall undertake a review of the MSRPH to identify opportunities to improve removing trains from service with door safety-related discrepancies. |
| 88559_SAFECAPS_ RTRA_002 | Develop and distribute the RTRA Operations Personnel Notice, Importance of Proper Notification with the Train Operator and the Terminal Supervisor, to raise awareness on the importance of reporting issues immediately while on the mainline. |
| 88559_SAFECAPS_ RTRA_003 | Develop and distribute a lessons learned based on the incident facts, with an emphasis on the importance of reporting issues immediately while on the mainline. |
| 88559_SAFECAPS_ CMNT_004 | Perform a safety stand-down to discuss the improper door operation incident and the importance of inspecting train door control panels and the associated hazards if not inspected properly. |

## Appendix A – RTRA Operations Personnel Notice

# RTRA OPERATIONS PERSONNEL NOTICE

Friday, February 08, 2019

## Importance of Proper Notifications

Within the last few months, there have been a number of incidents involving personnel failing to report incidents to the appropriate personnel in a timely manner. These incidents include: deer struck by trains, trains striking objects obstructing the roadway, damage to WMATA equipment while in rail yards (inter-car barrier damages, damaged pins following coupling procedures, etc.). There have also been instances where operators have overrun platforms or had an improper door operation and failed to notify ROCC.

These instances pose serious safety concerns to our customers and colleagues; by failing to report incidents in a timely manner or failing to report them at all, important safety measures (i.e. ground walk arounds, post incident testing, etc.) are not conducted as required.

Please be reminded of the following MSRPH rules:

**MSRPH GR 1.3:** *Acceptance of employment signifies the individual's willingness to comply with all WMATA's rules and regulations and orders; and to perform specific job duties and requirements in a safe, orderly and efficient manner.*

**MSRPH GR 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.*

The same rules apply to Station Managers. Any unusual occurrence, to include altercations with customers, must be reported and properly documented.

Failure to make the proper notifications immediately following an incident will result in progressive disciplinary action. If you have any questions and/or concerns, please notify a Rail Operations Supervisor or an RTRA Division Manager.

Print Name/Payroll# [redacted] Signature: [redacted]

Date Received: 9/11/2020 Supv. Print Name / Signature [redacted]

*Attachment 1 – RTRA Operations Personnel Notice page 1 of 2*

# RTRA OPERATIONS PERSONNEL NOTICE

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Print Name/Payroll# [redacted] Signature: [redacted]

Date Received: [redacted] Supv. Print Name / Signature: [redacted]

*Attachment 2 – RTRA Operations Personnel Notice page 2 of 2*

## Appendix B - Interviews

### Office of Car Maintenance

CMNT Road Mechanic 1

A WMATA employee for 31 years, 12 years as a Car Maintenance Road Mechanic, and last rail certification was in 2018 and has no history of sleep issues to report.

During post-incident interviews with SAFE, the CMNT Road Mechanic 1 stated, once they boarded the consist at Stadium-Armory Station, the operator advised the CMNT Road Mechanic 1 that the left-side door control panel door open pushbutton is pushed in. The CMNT Road Mechanic 1 stated, “they are unable to perform repairs on the left-side door control panel while the train is in operation, due to the possibility of inadvertently causing an uncommanded door operation.” The CMNT Road Mechanic 1 stated, “they notified the ROCC of their findings and stated, “how do you want to proceed.” The ROCC advised the CMNT Road Mechanic 1 to contact their supervisor for instructions on how to proceed. The Road Mechanic 1 stated their supervisor advised the CMNT Road Mechanic 1 to remain with the train to the end of the line. CMNT Road Mechanic 2 boarded the train at Metro Center Station and received a status update on the door control panel issue. After CMNT Road Mechanic 1 completed their status update they got relieved by CMNT Road Mechanic 2 and exited the train at McPherson Square Station. CMNT Road Mechanic 2 remained with the train to the end of the line without incident.

NOTE: The ROCC CMNT Supervisor assigned to the Car Maintenance desk stated that the CMNT Road Mechanic 2 did not have enough parts with them to fix the damaged door button console at Franconia-Springfield Station. The ROCC CMNT Supervisor stated, “it was fine for the consist to go back to Largo Town Center Station because there was no issues with the trailing end.” The ROCC CMNT Supervisor stated, “once the consist made it back to Largo Town Center Station, they did not foresee any other problems because the consist was going out of service and there will be no door operations conducted.” The ROCC CMNT Supervisor stated, “the consist would be operating, non-revenue to New Carrollton Yard for repairs.”

### Office of Rail Transportation

RTRA Supervisor

RTRA Supervisor is a WMATA employee with 20 years of experience as a Supervisor and 30 years of service. The RTRA Supervisor held various positions, such as Bus Operator, Train Operator and Station Manager. The RTRA Supervisor last rail certification was in 2018, and the RTRA Supervisor had no history of sleep issues to report.

During post-incident interviews with SAFE, the RTRA Supervisor stated, per schedule, they had to relieve a Train Operator on Train ID 407, at Addison Road Station, Track 1. The RTRA Supervisor stated, they brought the consist to Largo Town Center Station at 07:41 hrs. The RTRA Supervisor stated, when they arrived at the platform, the consist was offloaded and closed the doors back on the platform side. The Yard Operator walked through the 8-cars to make sure the consist was clear of customers. Once the Yard Operator verified the consist was clear of customers, the RTRA Supervisor keyed off first and the Yard Operator keyed off. At some point, when the Yard Operator and RTRA Supervisor were walking down the platform, the new Train Operator keyed up on car 3135 and that is when the doors opened on the platform side. The Yard Operator reported the doors were open and the consist was keyed down. The Yard Operator then conducted a ground walk around. Upon further investigation, the RTRA Supervisor stated, the door control panel was closed, but once they opened it, the buttons were pushed in. The RTRA

Supervisor stated, the damage to the console happened earlier in the day and Rail Operations Control Center knew about it.

Train Operator 1

A WMATA employee with 16 years of experience as a Train Operator and for 22 years of service in various positions, Bus Operator. Last certification was in 2018 and the Train Operator has no history of sleep issues to report.

During post-incident interviews with SAFE, Train Operator 1 stated, “as I was getting ready to depart Largo Town Center Station, I closed the doors and the doors pushbutton went in slightly, but I was still was able to close the doors.” The Train Operator stated, they told the Terminal Supervisor but decided to continue since they were able to get the doors to close. The Train Operator stated, “upon arriving at the next station, which was Morgan Boulevard Station, they went to push the open door button and the button got pushed inside the console.” Train Operator 1 never reported the panel damage at Morgan Boulevard Station and continued. Train Operator 1 stated, “they do not know where they were at the time they contacted ROCC about the damaged button, but they believed it was Benning Road Station.” Train Operator 1 stated, “they waited to contact the control center because they knew a CMNT Road Mechanic was at Stadium-Armory Station, so they wanted to just get closer to Stadium-Armory Station before contacting the control center since they were able to open and close doors while the panel was not secure. Train Operator 1 stated, once the CMNT Road Mechanic boarded the consist at Stadium-Armory Station, the ROCC was contacted and they advised that the Train Operator was able to operate the doors and can make it to the end of the line. Train Operator 1 stated, once the consist got to the end of the line, they were advised to take the consist back to Largo Town Center Station in revenue service and then the consist will be taken out of service and transported to New Carrollton Station. Train Operator 1 stated, “they were relieved at Addison Road Station by an RTRA Supervisor.”

Buttons and Radio Rail Traffic Controller

The WMATA employee has one (1) year of service as a RTC. and last RTC certification was in 2019, and the RTC has no history of sleep issues to report.

During post-incident interviews with SAFE, the Buttons RTC stated that a Train Operator reported at Benning Road Station that they were having issues with the left door control panel and that the pushbutton had been pushed into the console. The operator advised they were able to get the door open and Car Equipment was able to board the consist at Stadium-Armory Station. The RTC stated, “Car Equipment advised they could not troubleshoot anything on the consist because it was keyed up on the affected car. Car Equipment stayed on the consist until the consist made it to the end of the line. The only issue reported was that it was difficult to open the doors due to the door buttons being pushed in the console.” The RTC stated, “it was Car Equipment’s recommendation to keep the train in service with Car Equipment on board.” The RTC stated, “they were doing both roles of buttons and radio controller for approximately 20 minutes.”

Terminal Supervisor

A WMATA employee with five (5) years of experience as a Terminal Supervisor and for 20 years of service in various positions, Train Operator, Bus Operator, and last rail certification was in 2019, and the Terminal Supervisor has no history of sleep issues to report.

During post-incident interviews with SAFE, the Terminal Supervisor stated Train ID 407 was called in earler by an RTC advising that the consist was being taken out of service when it arrives at Largo Town Center Station due to car 3135 having a reported stuck button in the panel. Once

the consist arrived at Largo Town Center Station, the RTRA Supervisor and Yard Operator walked through the consist to ensure customers were clear of the consist. The Yard Operator then announced over the radio the consist was clear of customers. Train Operator 2 was sitting in the blockhouse when the Terminal Supervisor informed the Train Operator that consist on Track 1 would be going out of service and transported to New Carrollton Yard. Train Operator 2 keyed up the consist and the door indicator lights appeared. Once the door indicator lights came on, the Terminal Supervisor thought the Yard Operator that walked through the consist was keying off. However, the Yard Operator was already cleared from the consist. Train Operator 2 keyed up and realized they could not go to a point of power and lost all doors closed. The Terminal Supervisor stated, they went outside to investigate and heard personnel stating the doors were open on the platform side. Terminal Supervisor told Train Operator 2 to perform a ground walk around. The Terminal Supervisor stated they did not know why the doors opened on the opposite side of the platform, so they opened the door control compartment with the crew key and identified the open door button was pushed in the console. The Terminal Supervisor stated the reason they checked that area was because they got a report of a defective button on lead car 3135 but did not know what button it was, so they checked the door open button since the doors opened off the platform and it turned out that the door open button was defective.

Train Operator 2

A WMATA employee with 24 years of service and 22 years of experience as a Train Operator. . The Train Operator started off as a Bus Operator and had their last rail certification in 2018. The Train Operator has no history of sleep issues to report.

During post-incident interviews with SAFE, Train Operator 2 stated, they got instruction from the Terminal Supervisor to board the consist on Track 1 and transport the consist to New Carrollton Station. Train Operator 2 stated, once I keyed up on car 3135, I noticed I did not have an all doors closed, then looked out the right side cab window because I knew there was a Train Operator that walked through the entire consist checking for customers. Train Operator 2 noticed the Train Operator walking down the platform and thought the Train Operator keyed someone off the consist, which the Train Operator did not. Train Operator 2 then noticed the door indicators lights were on then contacted the Terminal Supervisor. The Terminal Supervisor instructed Train Operator 2 to close the doors on the platform side and Train Operator 2 attempted to do so but still could not get all doors closed. Train Operator 2 then looked out the left side window and noticed that there were door indicator lights on. Train Operator 2 was then instructed to key the consist down. Upon further investigation, the door control panel was closed, but once the Terminal Supervisor opened it and discovered the buttons were pushed in.