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WMSC Commissioner Brief: W-0088 – Improper Door Operation – Franconia-Springfield Station – December 16, 2020

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

Safety event summary:

A Blue Line train arriving at Franconia-Springfield Station stopped with the trailing two cars still off the platform at 7:50 a.m., and the Train Operator then opened the doors on the platform side, leading to the doors on the trailing two cars opening outside of the platform limits.

The Train Operator had stopped the train near the six-car marker rather than the eight-car marker. The Terminal Supervisor attempted to contact the Train Operator when the Terminal Supervisor identified this, but the Train Operator did not immediately respond until after the doors had been opened. Metrorail requires all trains to stop only at the eight-car marker as part of a rules-based effort to avoid this type of event. This Train Operator had approximately one year of experience as a Train Operator following three years as a Bus Operator. The Train Operator was not aware that the 3000-series consist they were operating was an eight-car consist. The train length is indicated on the console and the operator is supposed to identify the characteristics of their consist when they board.

In an investigative interview, the Train Operator stated that they knew that they stopped short of the 8-car marker, but thought it was acceptable since they believed it was a six-car consist and it would save them time to allow for a quicker opportunity for personal relief. The train operator had been directed to quickly move from a 6-car train they had operated to Largo Town Center to this eight-car train that was ready to depart for Franconia-Springfield, and the Train Operator stated they assumed the new train was also six cars. That also did not provide them with the required opportunity for personal relief. The Train Operator stated that at Pentagon Station they required this personal relief, but that they believed they could make it to Franconia-Springfield Station. The Train Operator did not request an opportunity for that relief from the ROCC at any point during their trip from Largo Town Center Station to Franconia-Springfield Station, at which point the Train Operator said that relief was urgently needed.

The Train Operator and Terminal Supervisor performed a ground walk around, and did not identify any damage, injuries, or customers on the roadway.

Probable Cause:

The probable cause of this event was an employee feeling rushed to turn a train to depart, and a lack of clear opportunities and acceptance of the need to request and use personal relief when required during the course of a trip. Contributing to this event was Metrorail's lack of comprehensive training and operational oversight related to rule and procedure updates such as the change that required all trains to be stopped at the 8-car marker.

Corrective Actions:

The Train Operator in this event underwent retraining.

Rail Transportation developed and circulated a lessons learned document related to this event and other improper door operations.

WMSC staff observations:

Awareness of the physical characteristics of the system, including train length and other features, is crucial to safe operations. Familiarization with the operating environment and providing complete training on operating rules are key steps toward safety.

Metrorail does not have pre-trip inspection requirements for operators taking over a new train. Metrorail only requires operators to be in the cab of the train two minutes prior to departure.

Staff recommendation: Adopt final report.

Washington Metro Area Transit Authority

Department of Safety and Environmental

Management (SAFE)

FINAL REPORT OF INVESTIGATION A&I E20498

Date of Event:	12/16/2020
Type of Event:	Improper Door Operation
Incident Time:	07:50 hrs.
Location:	Franconia Springfield Station, Track 2
Time and How received by SAFE:	08:16 hrs. SAFE On-call Phone
WMSC Notification Time:	09:18 hrs.
Responding Safety Officers:	WMATA SAFE: No WMSC: No Other: N/A
Rail Vehicle:	Train ID 403 L 3169.3168x3284.3285x3231.3230x**3281**.**3280** T
Injuries:	None
Damage:	None
Emergency Responders:	RTRA

Franconia Springfield Station – Improper Door Operation

December 16, 2020

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Abbreviations and Acronyms

ARS	Audio Recording Service
CENV	Vehicle Program Services
CMNT	Car Maintenance
ER	Event Recorder
MSRPH	Metrorail Safety Rules and Procedures Handbook
NOAA	National Oceanic and Atmospheric Administration
ROCC	Rail Operations Control Center
RTC	Rail Traffic Controller
RTRA	Office of Rail Transportation
SAFE	Department of Safety and Environmental Management
SMS I/A	Safety Measurement System Incidents/Accidents
TWC	Train Wayside Communication

Executive Summary

On Wednesday, December 16, 2020, at approximately 07:49 hrs., a Train Operator operating Blue line Train ID 403, an 8-car consist in approach to Franconia Springfield, contacted the Terminal Supervisor to request permission to enter Franconia Springfield Station Track 2. The Terminal Supervisor permitted Train ID 403 to enter the platform to offload the train. At approximately 07:50 hrs., the Terminal Supervisor observed the Train Operator stop at the 6-car marker and attempted to contact the Train Operator on the radio to notify them that they had an 8-car consist.

The Train Operator proceeded to perform a door operation at the 6-car marker allowing the doors on the trailing two cars, 3281 and 3280, to open off the platform. Upon having the door operation, the Train Operator contacted the Terminal Supervisor to ascertain if they were operating a 6-car consist; the Terminal Supervisor confirmed that the Train Operator had an 8-car consist. The Terminal Supervisor notified the Button Rail Traffic Controller (RTC) and instructed the Train Operator to perform a ground walk around the train. At approximately 07:54 hrs., the Terminal Supervisor exited the Terminal Block House to assist the Train Operator with the ground walk around. At 07:59 hrs., the Terminal Supervisor and the Train Operator completed the ground walk around and reported no injuries or damage to any equipment.

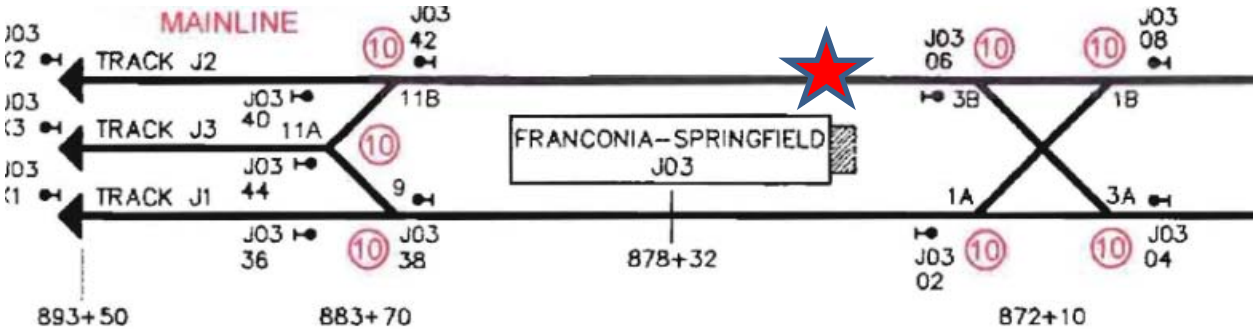
Subsequently, Rail Transportation (RTRA) removed the Train Operator from service for post-incident toxicology testing. RTRA removed the incident train from service for post-incident investigative efforts.

The probable cause of the Improper Door Operation event at Franconia Springfield Station on December 16, 2020, was due to a human performance difficulty experienced by the Train Operator when they failed to identify that their consist was comprised of 8-cars and not 6-cars. An additional contributing factor was the Train Operator's need to take a personal, which enticed them to make a short stop at the platform to get to the restroom quicker. The Train Operator was not in compliance with Metrorail Safety Rules & Procedures Handbook (MSRPH) Rule section 40.5.1.3.1, which states: *Verify the number of cars in the consist.* And Rule section 40.5.1.5.1, which states: *Make 8-car stops with all trains unless otherwise directed by ROCC (Ensure train is properly berthed on the platform for the number of cars in the consist).*

Incident Site

Franconia Springfield 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.

Investigation Process and Methods

Upon receiving the Improper Door Operation notification at Franconia Springfield station, Track #1 on December 16, 2020, SAFE dispatched a cross-functional team to assess the scene and conduct the subsequent investigation. SAFE team members worked with relevant WMATA subject matter experts to review the incident's facts and data.

Investigation Methods

The investigative methodologies included the following:

- Physical Site Assessment

- Formal Interviews – SAFE interviewed one (1) individual as part of this investigation. Interviews will include persons present during and/or after the incident and those directly involved in the response process. SAFE interviewed the following individual:
    - Train Operator

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

- Documentation Review – A Collection of relevant work history information and process documentation contained in Metro systems of record. These records include:
    - Employee Training Procedures & Records
    - Certifications
    - The 30-Day work history review
    - MSRPH
    - National Oceanic Atmospheric Administration (NOAA) data review

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

- Audio Recording System (ARS) playback (Radio and Phone Communications)

Investigation

On Wednesday, December 16, 2020, at approximately 07:49 hrs., a blue line Train Operator operating Train ID 403, an 8-car consist in approach to Franconia Springfield, contacted the Terminal Supervisor to request permission to enter Franconia Springfield Station track 2. The Terminal Supervisor provided a lunar at J03-08 signal and permitted Train ID 403 to enter the platform, properly berth their train, and service the station. At approximately 07:50 hrs., the Terminal Supervisor observed the Train Operator stop at the 6-car marker; the Terminal Supervisor attempted to contact the Train Operator on the radio to notify them that they had an 8-car consist.

The Train Operator did not respond to the Terminal Supervisor's transmission; the Train Operator proceeded to perform a door operation at the 6-car marker allowing the doors on the trailing two cars [Car 3281 and 3280] to open off the platform. Upon executing the door operation, the Train Operator contacted the Terminal Supervisor to ascertain if they were operating a 6-car consist; the Terminal Supervisor confirmed that the Train Operator had a 6-car consist. The Terminal Supervisor notified the Button Rail Traffic Controller (RTC) and instructed the Train Operator to perform a ground walk around the train. At approximately 07:54 hrs., the Terminal Supervisor exited the Terminal Block House to assist the Train Operator with the ground walk around. At 07:59 hrs., the Terminal Supervisor and the Train Operator completed the ground walk around and reported no injuries or damage to any equipment.

Subsequently, RTRA removed the Train Operator from service for post-incident toxicology testing. RTRA removed the incident train from service for post-incident investigative efforts.

SAFE investigations from the ARS include phone recordings from OPS 3 and Ambient recording from the Terminal Supervisor Block House at Franconia Springfield.

Based on the findings, SAFE determined the Train Operator did not verify the number of cars in the consist. Additionally, the Train Operator did not properly berth their train at the 8-car maker per MSRPH Rule section 40. 5.1.5.1, which states: *Make 8-car stops with all trains unless otherwise directed by ROCC (Ensure train is properly berthed on the platform for the number of cars in the consist).*

Chronological ARS Timeline

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

Time	Description
07:49:15 hrs.	• Train Operator of Train ID 403: Contacted the Terminal Supervisor to berth on the platform properly. • Terminal Supervisor: Granted the Train Operator permission. [Ambient]
07:50:48 hrs.	• Terminal Supervisor: Observed Train ID 403 stop short of the 8-car marker and attempted to contact the Train Operator via radio to no avail. [Ambient] • Note: The Terminal Supervisor observes the train doors open off the platform.
07:51:15 hrs.	• Train Operator: Contacted the Terminal Supervisor to ascertain if they had eight cars in their consist. • Terminal Supervisor: confirmed that the Train Operator had eight cars. [Ambient]
07:51:22 hrs.	• Terminal Supervisor: Notified the Button RTC that there was a door operation off the platform limits. • Terminal Supervisor: Reported that the Train Operator stated that they were unaware they had an 8-car consist. [Phone]
07:52:00 hrs.	• Terminal Supervisor: Instructed the Train Operator to perform a ground walk around. [Ambient]
07:52:21 hrs.	• Button RTC: Notified the ROCC Assistant Superintendent. [Phone]
07:54:48 hrs.	• Terminal Supervisor: Exited the Terminal Block House to assist in the ground walk around.
07:59:30 hrs.	• Terminal Supervisor: Reported a good ground to walk around.
07:59:46 hrs.	• Button RTC: Reported a good ground walkaround to the ROCC Assistant Superintendent. [Phone]

Vehicles Program Services

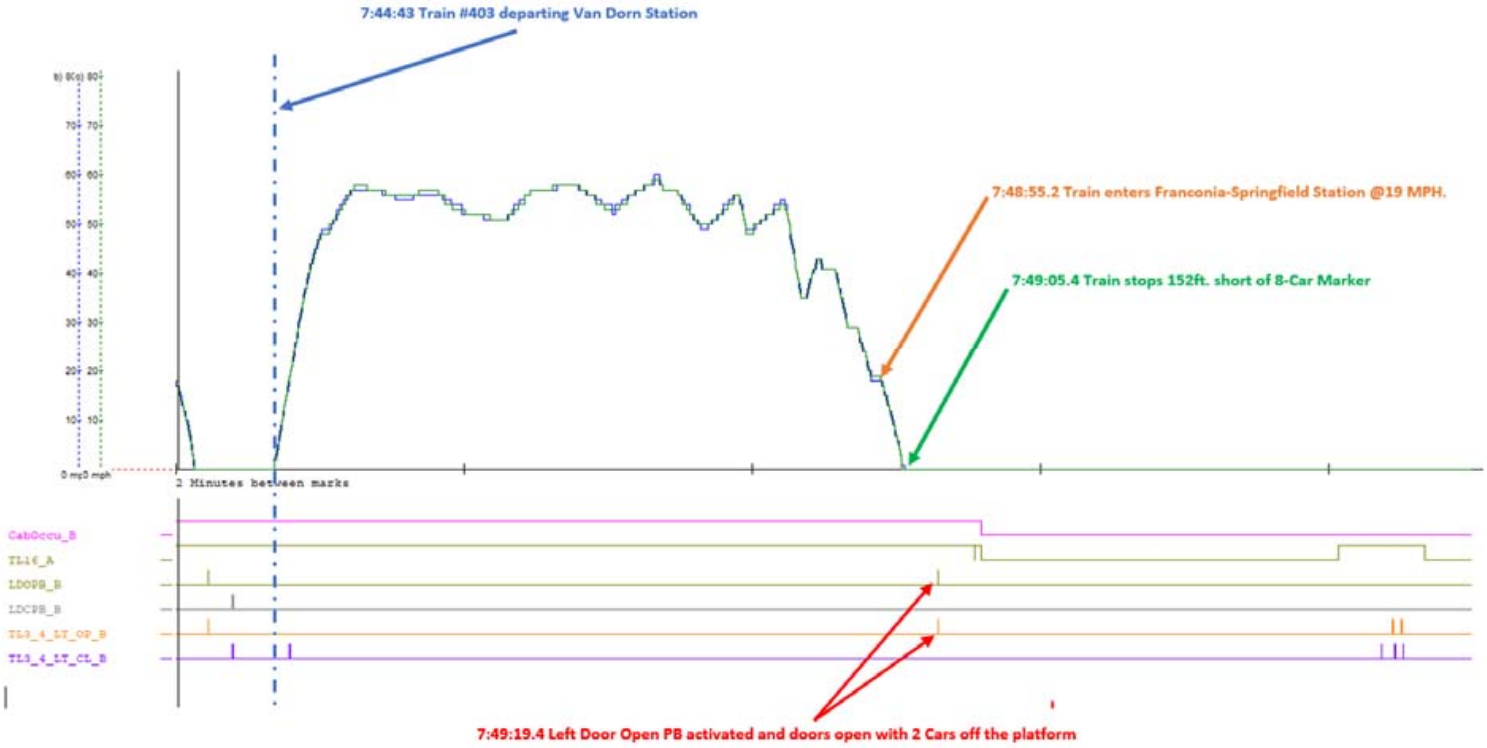
Event Recorder (ER) Data Graph/Sequence of Events

Based on CENV analysis of the downloaded Vehicle Monitoring and Diagnostic System (VMDS). Details from the data analysis are as follows:

Timeline of Events

Time	Description
07:44:43 hrs.	Train ID 403, Lead Car 3169 departed Van Dorn Station, Track 2 towards Franconia-Springfield.
07:48:55 hrs.	The Train Operator of Train ID 403 enters Franconia-Springfield Station at 19 MPH, with Master Controller in the B2 position.
07:49:05 hrs.	Train ID 403 Train Operator Stops on Franconia-Springfield platform, 152 ft. short of the 8-car marker.
07:49:19 hrs.	The Train Operator depressed the Left Door Open push button; doors opened with trailing two cars off the platform.
07:49:37 hrs.	The Train Operator keyed down Train ID 403.

Data Analysis



Interview Findings

Based on the investigation launched into the Improper Door Operation, SAFE conducted one virtual interview, including the investigation team and relevant Metro management. The interview was conducted over one week after the event and identified the following key findings.

At the time of the incident, the Train Operator assumed that they had a 6-car consist and did not stop at the 8-car marker due to having a quick turn at the Largo Town Center terminal.

Weather

At the time of the incident, NOAA recorded the temperature at 47° F and clear. SAFE has concluded that weather was not a contributing factor in this incident (Weather source: NOAA) – Location: Franconia, VA.)

Human Factors

Fatigue

Based on SAFE interview question related to Fatigue Factors and a review of the employee's 30-day work history, SAFE determined, the employees' hours of service were in accordance with WMATA's *Fatigue Risk Management Policy 10.6/1* and *Hours of Service Limitations for Prevention of Fatigue Policy 10.6/1* and discounted Fatigue as a contributing factor for this event.

Post-Incident Toxicology Testing

After reviewing the employee's post-incident testing results, SAFE determined that the employees involved were not violating 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.

Findings

- The Train Operator reported to the Terminal Supervisor that they were not aware they were operating an 8-car consist.
- The Train Operator did not properly berth at the 8-car marker to prevent a door operation off the platform.
- The Train Operator did not request a personal from ROCC after departing Largo Town Center.

Probable Cause Statement

The probable cause of the Improper Door Operation event at Franconia Springfield Station on December 16, 2020, was due to a human performance difficulty experienced by the Train Operator when they failed to identify that their consist was comprised of 8-cars and not 6-cars. An additional contributing factor was the Train Operator's need to take a personal, which enticed them to make a short stop at the platform to get to the restroom quicker. The Train Operator was not in compliance with Metrorail Safety Rules & Procedures Handbook (MSRPH) Rule section 40.5.1.3.1, which states: *Verify the number of cars in the consist.* And Rule section 40.5.1.5.1, which states: *Make 8-car stops with all trains unless otherwise directed by ROCC (Ensure train is properly berthed on the platform for the number of cars in 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
90453_SAFECAPS_ RTRA_001	Train Operator shall undergo re-training, door operations per SOP #40 rules and procedures.
90453_SAFECAPS_ RTRA_002	Provide lessons learned to discuss the event and findings to include previous Improper Door Operations.

Appendix A - Interview Summaries

Rail Transportation (RTRA)

Train Operator

The Train Operator is a WMATA employee with one year of experience as a Train Operator and three years of service as a Bus Operator.

The Train Operator stated they operated a 6-car from Franconia Springfield to Largo Town Center station based on the SAFE interview. The Train Operator reported that when they arrived at Largo Town Center, the Terminal Supervisor notified them they would switch trains and be dispatched on track 2 due to the terminal re-blocking for an on-time dispatch. The Train Operator reported they were unaware that the consist they were operating as an 8-car consist and assumed they were operating another 6-car consist. The Train Operator stated that at Pentagon Station, they needed a personal relief but did not make a request to the Rail Operations Control Center (ROCC). The Train Operator reported that they felt they would be able to make it to Franconia Springfield Station to take a personal before their next dispatch. The Train Operator reported that they could hear the Terminal Supervisor attempting to contact them on the radio and had the intention of responding to the Terminal Supervisor once they have serviced the station. The Train Operator stated that they were aware that Train Operators are to make an 8-car platform stop; however, they stated they felt they could save time by stopping at the 6-car marker to have their personal.