



**WMSC Commissioner Brief: W-0047– Collision, train routed onto dead rail during response
at Minnesota Ave. Station February 14, 2020**

Prepared for Washington Metrorail Safety Commission meeting on September 22, 2020

Safety event summary:

Numerous deficiencies in emergency response actions led to a train being routed into an area where third rail power had been de-energized that should have been protected, which put employees and customers at risk of a potential collision or electrocution.

The initial emergency was a person struck by Train 909 at Minnesota Ave. Station, Track 1 at 5:11 p.m. on Friday, February 14, 2020. CCTV recordings show this was the result of a deliberate action by that customer to put themself in the path of the train.

Power was de-energized to the station area, but Train 910 (with customers on board) was then routed onto the de-energized third rail. After a period of time, power was restored to the third rail without consideration to the safety risk that created for the Train 909 operator, the customer who had been struck by the train and first responders.

The last car of Train 909 was in the section of track where power was restored, which means the train could have bridged the third rail gap re-energizing power within the station limits where the train operator was conducting a ground walk around and the person struck by the train remained on the right of way.

With the power restored anyway, Train 910 was given permission to continue inbound toward Stadium-Armory.

The person struck by the train was taken to the hospital for treatment after being rescued by D.C. Fire and EMS.

No one involved in the event in the ROCC was removed from service for required post-incident testing. Metrorail only required the operator of Train 909 to undergo drug and alcohol testing.

Metrorail's Safety Department was not aware of the misrouted train or ROCC issues related to this event until the WMSC brought these issues to SAFE's attention. The WMSC identified these issues through its normal independent investigation, inspection and audit work.

Probable Cause:

A lack of redundant, automatic protections in the train routing, power removal and restoration process contributed to this event which was directly caused by a lack of compliance with procedures on automatic signal routing and extra radio announcements.

Corrective Actions:

Metrorail created a lessons learned bulletin to ROCC staff, and provided refresher training to the involved controller.

WMSC staff observations:



This event demonstrates that Metrorail does not take advantage of all available features of the Advanced Information Management (AIM) system, including features that could provide a redundant layer of protection against trains being routed into an area where power has been de-energized.

The event also demonstrates that Rail Operations Control Center staff who may have played a role in a safety event are not removed from service as required for post-incident drug and alcohol testing, and information regarding the ROCC's role is not always fully or immediately obtained by WMATA's internal safety investigation teams.

Staff recommendation: Adopt final report.

FINAL REPORT OF INVESTIGATION A&I E20087

SMS 20200216#86428

Date of Event:	2/14/2020
Type of Event:	Collision (Major)
Incident Time:	17:09 hrs.
Location:	Minnesota Avenue Station, Track 1
Time and How received by SAFE:	17:11 hrs. SAFE On-call Phone
WMSC Notification Time:	19:08 hrs. Via Email Notification
Responding Safety Officers:	WMATA SAFE: Yes WMSC: No Other: N/A
Rail Vehicle:	Train ID 909, 7K 8-Car Consist lead Car 7392
Injuries:	Yes
Damage:	None
Emergency Responders:	DCFD, MTPD, RTRA, ERT, ATC and CMNT

Executive Summary

On Friday, February 14, 2020, at 17:11 hrs., Rail Operations Information Center (ROIC) notified SAFE that at 17:09 hrs., Train Operator (T/O) operating Train ID 909 (lead Car 7392) outbound in the direction of New Carrollton Station reported striking a customer within the platform limits at Minnesota Avenue Station, Track 1. Based on Closed Circuit Television (CCTV) playback, the customer intentionally placed themselves within the dynamic envelope of the train fouling the roadway. Rail operation Control Center (ROCC) de-energized third-rail power in the affected area. The T/O performed a walk-around and identified signs of life. Service was suspended between Cheverly and Stadium-Armory Stations. At 17:44 hrs., the shuttle bus service was established at Stadium-Armory Station. District of Columbia Fire Department (DCFD) safely extricated the customer from the roadway, and the customer was subsequently transported to Washington Hospital Center (WHC) for further medical evaluation.

T/O was transported to JGB for post incident testing.

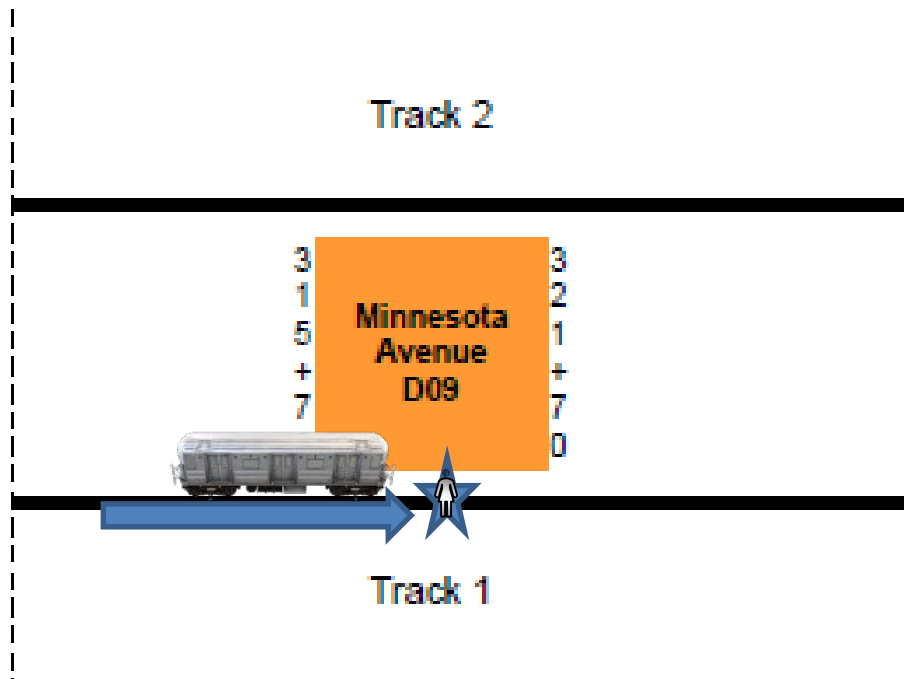
Train ID 909 was re-assigned as Train ID 709 non-revenue, and transported to New Carrollton yard with no speed restrictions after Car Maintenance (CMNT) Road Mechanic (R/M) personnel performed an under-car visual inspection and deemed the consist safe for movement. Normal rail service resumed at 1920 hrs.

Note: The On-Call Safety Officer notified a WMSC representative at approximately 17:26 hrs. Crisis Management Center (CMC) was also notified on February 14, 2020, at 19:08 hrs., via email.

Incident Site

The incident area was located at the Minnesota Avenue Station, Track 1

Field Sketch/Schematics



Investigation

On February 14, 2020, at 17:15 hrs., the Rail Operations Control Center (ROCC) received a report of a customer being struck by a train at Minnesota Avenue Station, Track 1. The Rail Traffic Controller (RTC) working on Ops 2 buttons immediately de-energized third rail power on Track 1, from the D&G to Minnesota Avenue Station. However, the RTC failed to remove the automatic routing from D98-36 signal, causing Train ID 910 to inadvertently take a lead and be routed onto the de-energized third rail with customers aboard causing a potential safety hazard and an unnecessary inconvenience to the customers. Additionally, the ROCC Supervisor failed to immediately make a blanket announcement informing all Train Operators of the emergency and location. The announcement could have alerted the operator on Train ID 910 not to accept the route. Third rail power announcements were made, and power was restored on Track 1. Train

ID 910 was given an absolute block to Track 3 of the D&G without any reported issues. Additionally, per the lessons learned report from the ROCC, prior to restoring the power to move Train ID 910 from the incident area, ROCC failed to verify the safety of Washington Metropolitan Area Transit Authority (WMATA's) employee doing the ground walk around and the customer under Train ID 909 who was reportedly showing signs of life.

SAFE performed an inspection of the station after the incident. There were no adverse safety concerns that contributed to the incident. All station Emergency Trip System (ETS) and Public Address (PA) systems were reported operational.

Closed Circuit Television (CCTV)

Based on a review of the CCTV playback of the Minnesota Avenue Station platform, it revealed the following information related to the customer who was struck by the train:

- The customer was traveling alone
- As the train entered the station, the customer stepped into the dynamic envelope, intentionally placing himself in the path of the approaching train
- DCFD safely extricated the customer from the roadway, and the customer was subsequently transported to WHC for further medical evaluation.

After a review of CCTV footage, SAFE determined there were no slip/trip hazards associated with this event. The customer intentionally entered the roadway, placing themselves within the dynamic envelope parameters of the train.

Office of Car Maintenance (CMNT)

The CMNT personnel performed an exterior and interior inspection of the affected car and found no damage.

Vehicle Program Services (CENV)

CENV completed the analysis of the downloaded Vehicle Monitoring and Diagnostic System (VMDS) and Event Recorder (ER). Details from the data analysis are as follows:

Incident timeline:

- 17:09:30 hrs. – The consist entered Minnesota Avenue Station at 28.8MPH speed and with Master Controller in B1-B3 braking position.
- 17:09:40 hrs. - When the consist was 338 feet into the station, an emergency brake application was initiated using the Master Controller while the train's speed was at 15.18MPH.

- 17:09:46 hrs. - The consist came to a complete stop at 380 feet into the station platform limits.
- 17:10:36 hrs. - The consist was keyed down.

The train responded as expected, and its performance was within design specification. No operational anomalies were noted on the VMDS fault log during the reported incident time.

Finding

- ROCC management failed to remove the RTC from service for inadvertently routing Train ID 910 onto the de-energized third rail power.

Weather

At the time of the incident, the temperature was 50°F and clear. SAFE has concluded that weather was not a contributing factor in this incident (Weather source: National Oceanic Atmospheric Administration (NOAA) – Location: Washington, DC.)

Human Factors

Post-Incident Toxicological Testing

After reviewing the T/O post incident testing results, it was determined that the T/O 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.

At the time of this incident, ROCC managerial staff did not remove any ROCC staff for post-incident testing. Based on SAFE's investigative findings and Metro's drug and alcohol policy, ROCC managerial staff should have removed ROCC personnel from service for post-incident testing given the known facts at the time of the incident.

Conclusion

Based on the salient facts as part of this investigation, SAFE concludes, there were no safety deficiencies related to any WMATA station facility, vehicle, or human factor components that contributed to the person being struck by the train. SAFE personnel inspected the station upon arrival and after the event. SAFE personnel did not identify any tripping or slipping hazards. The station was well lit, the Radio/PA system was fully operational, and the Emergency Trip Station (ETS) box was operating properly.

Additionally, CENV and CMNT performed a post-incident inspection of the affected-consist, and no operational anomalies were identified.

As part of the ROCC response to the handling of this collision, Train ID 910 inadvertently being routed onto the de-energized third rail power was a result of human error. The RTC failed to remove the automatic routing from the signal that caused a train to be routed onto the de-energized third rail power. The RTC actions created a unsafe condition. The RTC employee has received refresher training, and the ROCC completed a lessons learned report and administered it to all staff for review and their signature for the preventable incident.

Corrective Action

RTRA shall take the appropriate action deemed necessary to support the prevention of any train being routed into a de-energized third rail power incident:

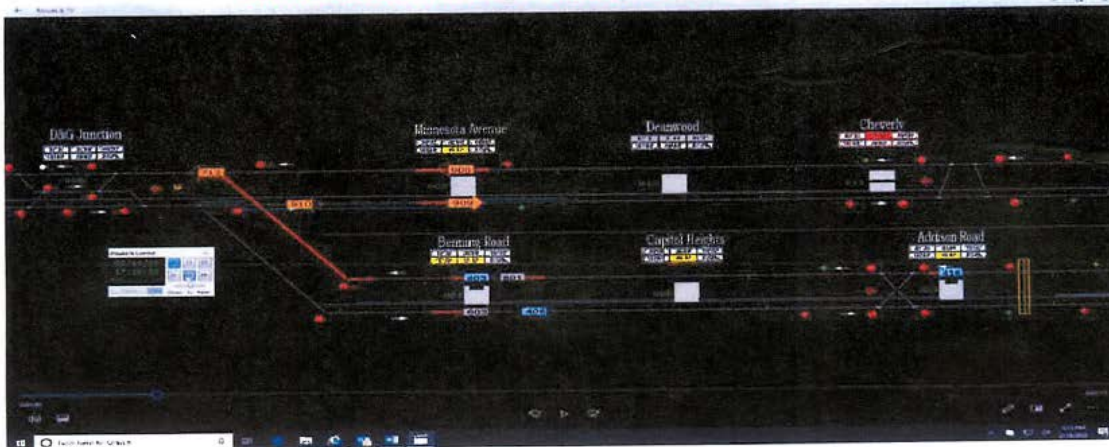
- 1. The ROCC completed a lessons learned and administered it to all staff for review and signature. See attachment 1.**
- 2. The RTC was referred to training and received refresher training on specific MSRPH rules and procedures violated as an effort to understand duties and responsibilities when an incident of this nature transpires.**

Attachments



Lessons Learned

Train Routed into De-Energized 3rd Rail Power



- 1.4.1 states that the ROCC Supervisors shall be in charge of and responsible for all mainline operations and all ROCC functions during their tour of duty.
 - 1.4.4.1 Initiate and establish train routes at the intermediate interlocking locations and terminals; establish other interlocking functions at interlocking locations from the Rail Operations Control Center;
 - 1.4.12 The ROCC Supervisor shall have knowledge of track switches and interlocking operating procedures and other interlocking features
- On February 14, 2020 approximately 5:10pm, Train operator on 909 track # 1 Minnesota Avenue reported a customer was struck by his Train. 3rd rail power was de-energized; a ground walk around was performed; the operator reported the trailing 2 cars were off the platform. The following Train 910 was routed onto de-energized 3rd rail power with customers aboard. ROCC restored 3rd rail power to move Train 910 back to the D&G. AIM indicated the trailing car was on energized track.
- ### Root Cause
- Once notified of the emergency condition, the ROCC Supervisor failed to protect the incident area, by removing the automatic routing from D98-36 signal and placing a prohibit exit on D98-38 signal. As a result, Train 910 was routed onto de-energized 3rd rail. The ROCC Supervisor failed to immediately make blanket announcements informing all operators of the emergency and location. The announcement could have alerted the operator on Train 910 from accepting the alignment. Prior to restoring power to move Train 910 from the incident area, ROCC failed to verify, the Safety of WMATA's employee doing the ground walk around and the customer under Train 909 which was reported showing signs of life.
- ### ROCC Responsibility
- When notified of an emergency condition, the ROCC Supervisor shall be responsible for coordinating all activities to alleviate the condition. The ROCC Supervisor's primary concern shall be the Safety of customers and employees and the protection of property and equipment.
 - ROCC shall cancel all automatic signals. If any interlocking of any diverging, universal or pocket track is contained within working limits.

Attachment 1 – Train Routed into De-Energized Third Rail Power Lessons Learned