



## **WMSC Commissioner Brief: W-0080 – Pull-Apart – outside Glenmont Station – November 24, 2020**

*Prepared for Washington Metrorail Safety Commission meeting on May 18, 2021*

*Note: Parts of this investigation were conducted in conjunction with parts of investigation W-0079 into an October 9, 2020 pull-apart outside Glenmont Station. Multiple corrective actions and root causes for these events overlap. During this investigation, the WMSC also began a previously planned audit of Metrorail's revenue vehicle (railcar) program. The final audit report is expected to be issued this summer.*

### **Safety event summary:**

A 6000-series Red Line train that had just departed Glenmont Station toward Wheaton Station pulled apart into two sections as it crossed from Track 1 to Track 2 on November 24, 2020 at approximately 1:02 p.m. The train was traveling at 18 mph at the time of the pull-apart.

After automatic emergency braking activated, a Rail Transportation (RTRA) Supervisor who happened to be on the train walked toward the rear of the train and identified that the first four cars had separated from the trailing four cars of the train. The ROCC controller instructed the train operator to make announcements and key down. Announcements from the lead car were not possible to the trailing four cars since WMATA communications rely on the electronic coupling of the cars. At 1:04 p.m., the supervisor was directed to board the second half of the train to check on customers. The ROCC controller put protections in place on Track 2. The supervisor applied a handbrake on car 6177. A second supervisor later applied a handbrake to car 6155 at 1:08 p.m. (Note: times from different WMATA systems are not precisely synced).

Metrorail followed SOP 1A emergency procedures using the supervisor on scene. However, the 911 calls for this event were unclear and created challenges for the Montgomery County Fire and Rescue Services (MCFRS) response. At 1:06 p.m., the Rail Operations Information Center desk in the ROCC requested medics to the upper platform at Glenmont Station (there is only one platform there). At 1:08 p.m., the ROCC Assistant Superintendent reported to Montgomery County dispatchers that a train had uncoupled.

Third rail power was de-energized at approximately 1:28 p.m. and MCFRS personnel entered the roadway at approximately 1:35 p.m. to set up Warning Strobe and Alarm Devices (WSADs) and then assist customers. Due to the location of this event at an interlocking, the event required more WSADs than if the event had occurred in another part of the system. This is based on the requirement that a WSAD be placed on each segment of third rail.

Metro Transit Police arrived at the Glenmont Station platform at approximately 1:41 p.m. (The MTPD report states a sergeant met MCFRS at a bus bay outside the station at 1:31 p.m.).

Customers were evacuated through bulkhead doors using ladders as provided by SOP 4 starting at approximately 1:59 p.m. Seven of the eight customers on the rear portion of the train exited onto the roadway and reached the platform under their own power, while the eighth customer was intoxicated and therefore was brought to the platform by MCFRS using the Emergency Tunnel Evacuation Cart (ETEC) (This customer was taken to the hospital due to their intoxication, but was not injured due to the pull apart). The four customers on the first half of the train then exited to the roadway,



went back up into the second half of the train, then exited onto the roadway again to then reach the station platform. The final customer reached the platform at approximately 2:18 p.m.

The emergency response debrief in this event identified that WMATA had not worked with the jurisdictional first responders to develop a response plan for such an event. This lack of preparation also created confusion regarding what WMATA was asking the fire department for help with (i.e., evacuation, patient evaluation).

Both parts of the train were moved to the Brentwood Rail Yard under their own power at approximately 5:19 p.m.

The couplers were removed the following day at the Brentwood Service and Inspection Shop and were then securely packaged and transported to the Greenbelt Major Repair and Overhaul Shop for further investigation.

On November 30, 2020, a detailed inspection and review of the coupler was conducted at the Greenbelt MRO Shop that included the WMSC, various WMATA personnel, and the coupler manufacturer. Reviews of the coupler assembly and overall coupler rehabilitation and inspection process continued that week.

The coupler head of car 6177 was completely removed from the draft bar, and the mechanical coupler was coupled to car 6150. The threads of the coupler head showed corrosion and contamination, and there were damaged threads in the draft bar. This suggests movement and exposure over a prolonged period.

The guide rail mounted on the mechanical coupler head of car 6177 was also loose (all four bolts not properly torqued), and electrical connectors and air hoses were ripped apart and damaged.

The coupler head pinch bolt and the guide rail fasteners were not properly torqued and did not have required torque stripes, and the coupler head was not properly torqued into the draft bar. The pinch bolt showed signs of wear against the draft bar. Metrorail had not applied proper lubrication to the threaded surfaces on the coupler head and draft bar. As part of this investigation, the coupler manufacturer (Dellner) utilized a Go/No-Go thread gauge that the manufacturer representatives said are required for coupler rehabilitations, rebuilds or overhauls, but that Metrorail did not possess. WMATA was not aware these tools were needed, and the tools were not included in the original manufacturer's manual. The gauge used for this investigation showed that the threads were worn, and the coupler head was condemned.

An overall review of Metrorail's 6000 Series coupler overhaul program, which Metrorail had incorporated into a broader rehabilitation program referred to as the SMP program, identified that the rehabilitation program and related processes had not followed safety certification processes. It also identified that Metrorail had been using different bolts on the buffer tubes, coupler head and drawbars.

Special inspections conducted after this pull apart of 118 of 142 6000-series cars identified 37 cars with improperly torqued front coupler head pinch bolts, 54 cars with improperly torqued front buffer gland bolts, 43 cars with improperly torqued rear coupler head pinch bolts, 58 cars with improperly torque rear buffer gland bolts, and one car which did not meet specifications for rear coupler distance (some cars had more than one of these issues).

This event is also similar to the August 25, 2018 pull-apart of a married pair outside McLean Station (W-0011). That event, and much of the investigation into that event, occurred prior to the WMSC's certification. The investigation identified that Metrorail used improper parts and did not have appropriate coupler procedures in place. Metrorail's



investigation identified that WMATA was using incorrect bolts and did not have proper tools to ensure proper clamping force on the buffer tube.

A review of the work orders on the car involved in this pull apart also showed that Metrorail rebuilt and installed the rebuilt coupler in April 2017. This car underwent the limited inspection Metrorail conducted following the October 9 pull apart on October 10. The car also underwent a regular C4 periodic preventive maintenance inspection on October 21, 2020. The car was inspected again on November 13, 2020 after it was part of a consist that struck a customer; no anomalies were noted.

**Probable Cause:**

The probable cause of this pull apart was a lack of and incomplete inspection, maintenance and overhaul procedures including a lack of processes to ensure correct clamping, a failure to follow documented review and approval processes, and a failure to fully learn from prior events to implement systemic changes and reviews.

**Corrective Actions (as noted above, some also relate to or are solely listed in W-0079):**

Metrorail has halted 6000-series coupler overhauls and removed 6000-series cars from service. Any 6000-series trains that are being moved for work are being moved only overnight at restricted speed and after a special inspection.

Metrorail is reviewing the coupler and drawbar overhaul processes with the manufacturer, is procuring the tools required to conduct this work (including mechanical head torque wrenches and go/no-go gauges) and is determining the way it plans to examine and properly rebuild the couplers under a revised procedure that includes steps such as torque striping for all fasteners and ensuring that proper parts are used. Metrorail is also updating this procedure to correct all torque values and applications, and to require the use of adhesive on fasteners and to ensure supervisory sign-offs are completed. These changes will include maintenance demonstration and training.

Metrorail is evaluating the feasibility of having Dellner, the original manufacturer, overhaul all 6000-series couplers.

Metrorail will tear down all 6k couplers to qualify threaded surfaces and components and to ensure proper torque on all fasteners. Initial assessments will be determined based on samples tied to lifetime mileage.

Metrorail is reviewing the 7000-series coupler design, plans to conduct a teardown of the 7000-series coupler with the longest lifetime mileage for evaluation, and has considered the feasibility of installing those couplers on other fleets.

Metrorail is reviewing the 2000 and 3000 series coupler and drawbar rebuild procedures in relation to manufacturer processes, tools and torque striping requirements for all fasteners.

Metrorail is revising the 6000-series inspection procedure to require a visual inspection of couplers and fasteners, and to require physical vertical movement of the coupler horn to identify any play in the gland nut.

Vehicle Engineering plans to develop and institute a quality assurance process to ensure correct fasteners are used during the overhaul process.

Vehicle Engineering plans to develop and institute a quality assurance process to ensure correct torque and torque striping are applied during overhauls.



Vehicle Engineering has reorganized to specify a legacy vehicles engineering and new car procurement group, and has recently created a quality compliance group.

Metrorail plans to examine changes to response to ensure that needed staff respond and that train recovery staff and cleanup staff are staged in the appropriate locations, including intermediate staging areas.

Metrorail plans to ensure that there is one command post representative from each operational group, with additional representatives from SAFE, OEM and MTPD.

Metrorail plans to schedule internal emergency incident workshops for operational groups.

Metrorail plans to develop or enhance emergency response plans with Amtrak, CSX and VRE and to incorporate them into training and full-scale exercises when possible.

Metrorail plans to take steps to more clearly identify the incident command post location and responsible parties using features such as a visual landmark, signage, armbands or helmet identifiers.

Metrorail plans to establish a dedicated common radio channel for emergency incidents.

Metrorail plans to review emergency incident training to incorporate more train operators, RTRA Supervisors and similar staff.

Metrorail plans to emphasize the use of common language, particularly for personnel who are not typically involved in emergency management or response.

Metrorail plans to develop or reinforce a platform for operational stakeholders to access the incident command post.

Metrorail will review whether customer de-escalation training should be developed for train operators, road mechanics, supervisors and emergency response personnel.

The ROCC has re-committed to establishing an emergency management team for events that directly affect the controller's ability to oversee normal operations.

The ROCC will add a pull-apart scenario with smoke conditions to the skill drill scenarios developed following the WMSC's ROCC findings.

The ROCC is adding a cordless phone to assist with Fire Liaison communication improvements required under the WMSC's ROCC findings.

The ROCC plans to change managerial scheduling to ensure the equivalent of an assistant superintendent and superintendent are scheduled on each shift, in conjunction with the broad improvements required under the WMSC's ROCC findings.

RTRA developed a lessons learned related to processes and procedures during a pull-apart and smoke event, including communication responsibilities on both ends of the separated consist.

SAFE is continuing its review of the MSRPH, to include opportunities to improve ADA coverage in the event of an emergency.



### **WMSM staff observations:**

The WMSM responded to the scene.

It is important that Metrorail not treat this as a one-off pair of events, but instead broadly reviews maintenance service instructions and similar procedures to identify any gaps in other processes that may be similar to those identified in the coupler overhaul process by the WMSM.

Communications with customers is critical at any time, but particularly in an emergency. During a pull-apart or other train separation, these communications are not possible to the trailing portion of the consist. In other safety events, train malfunctions can limit communications. Metrorail may want to consider alternatives to ensure that critical safety messages can be conveyed in a timely fashion. Clear, accurate and timely communication to customers in other parts of the system or who may be arriving at the rail system can also assist the emergency response by ensuring first responders have plenty of space to do their jobs without the introduction of unnecessary hazards or risks. As noted in the corrective actions, clear communications are also critical among responding personnel. Language, including from MTPD, should be consistent with National Incident Management System (NIMS) Incident Command Structure.

The response to this event, while it had some challenges and areas for improvement, was much better than the October pull-apart. This was helped in part by the presence of a supervisor on the train at the time of the pull-apart and the availability of other personnel nearby.

The WMSM will continue reviewing 6000 Series coupler overhaul and other documentation in conjunction with regular inspection, audit and safety certification oversight activities beyond the conclusion of this investigation. Metrorail may consider whether the couplers are facing more stress than was factored in during design phases due to Metrorail's long-term use of manual train operations.

The WMSM expects the next formal update from WMATA on the status of coupler overhaul plans within the next two weeks. Metrorail has informed the WMSM that it is working with the 6000 Series coupler manufacturer, Dellner, to define a scope of work and training or implementation timelines for correct coupler work.

Due to the WMSM's October 20, 2020 finding related to the manipulation of evidence outside of the safety event investigation process during the October 9, 2020 pull-apart, Metrorail maintained the integrity of the evidence in this investigation in a much-improved fashion and followed chain of custody requirements.

**Staff recommendation:** Adopt final report.



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

**FINAL REPORT OF INVESTIGATION A&I E20464**

|                                       |  |
|---------------------------------------|--|
| <b>Date of Event:</b>                 | 11/24/2020   |
| <b>Type of Event:</b>                 | Unintentional Uncoupling/Pull-Apart                                |
| <b>Incident Time:</b>                 | 13:02 hours.   |
| <b>Location:</b>                      | Outside Glenmont Station, Track 2 at Chain Marker (CM) B2-713+00   |
| <b>Time and How received by SAFE:</b> | 13:11 hours. Automated Phone Critical Incident Notification        |
| <b>WMSC Notification Time:</b>        | 14:46 hours.   |
| <b>Rail Vehicle:</b>                  | Train ID 109<br>L6155-6154.6176- <b>6177.6150</b> -6151.6017-6016T |
| <b>Injuries:</b>                      | No   |
| <b>Damage:</b>                        | Front Coupler - #6177  |
| <b>SMS I/A Incident Number:</b>       | 20201124#90393   |

Outside Glenmont Station  
Unintentional Uncoupling/Pull-Apart  
November 24, 2020

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## **ABBREVIATIONS AND ACRONYMS**

|              |   |
|--------------|---|
| <b>AIMS</b>  | Advanced Information Management System              |
| <b>ARS</b>   | Audio Recording System                              |
| <b>CCTV</b>  | Closed-Circuit Television                           |
| <b>CENV</b>  | Vehicle Program Services                            |
| <b>CMNT</b>  | Office of Car Maintenance                           |
| <b>CMO</b>   | Chief Mechanical Officer                            |
| <b>COMM</b>  | Office of Systems Maintenance Communication Section |
| <b>FT</b>    | Foul Time   |
| <b>IC</b>    | Incident Commander                                  |
| <b>ICP</b>   | Incident Command Post                               |
| <b>MCFRS</b> | Montgomery County Fire and Rescue Service           |
| <b>MRO</b>   | Major Repair and Overhaul                           |
| <b>MSI</b>   | Maintenance and Service Instruction                 |
| <b>MSRPH</b> | Metrorail Safety Rules and Procedures Handbook      |
| <b>MTPD</b>  | Metro Transit Police Department                     |
| <b>NOAA</b>  | National Oceanic and Atmospheric Administration     |
| <b>OEM</b>   | Office of Emergency Management                      |
| <b>OJT</b>   | On-the-Job Training                                 |
| <b>OSC</b>   | On-Scene Commander                                  |
| <b>ROCC</b>  | Rail Operations Control Center                      |
| <b>ROIC</b>  | Rail Operation Information Center                   |
| <b>ROQT</b>  | Rail Operations Quality Training                    |
| <b>RTC</b>   | Rail Traffic Controller                             |
| <b>RTRA</b>  | Office of Rail Transportation                       |
| <b>SAFE</b>  | Department of Safety and Environmental Management   |
| <b>TRST</b>  | Office of Track and Structures                      |
| <b>VMS</b>   | Vehicle Monitoring System                           |
| <b>WMATA</b> | Washington Metropolitan Area Transit Authority      |
| <b>WMSC</b>  | Washington Metrorail Safety Commission              |



**EXECUTIVE SUMMARY**

On Tuesday, November 24, 2020, at 13:02 hours, Train Operator 1 of Train ID 109, an inbound Red Line 8-car 6000-series consist comprised of L6155-6154.6176-**6177.6150**-6151.6017-6016T operating in the direction of Shady Grove Terminal Station on Track 2, notified the Rail Operations Control Center (ROCC) day shift Radio Rail Traffic Controller (RTC) that their train experienced a Brakes in Emergency (BIE) condition shortly after leaving Glenmont Station, Track 1 as the consist transitioned to Track 2. Train Operator 1 attempted to recharge the train's brake system. When the brake system failed to achieve and hold brake pipe pressure, Train Operator 1 notified the ROCC. The first Office of Rail Transportation (RTRA) Supervisor aboard the train at the time of the incident checked for mechanical trouble and found that the first four cars and the last four cars were separated. The first RTRA Supervisor contacted the Radio RTC and reported that Train ID 109 had uncoupled between cars 6177 and 6150 at Chain Marker (CM) B2-713+00. The Radio RTC instructed Train Operator 1 to make announcements to the customers, key down, and investigate. The announcements over the public address system by the Train Operator 1 were not possible to rear four cars due to the pull-apart event.

Based on the Vehicle Monitoring System (VMS) data, at 12:58:54 hours, Train ID 109 departed Glenmont Station in P1 power mode at 11 mph. At 12:59:36 hours, Train ID 109 experienced a pull-apart between cars 6150 and 6177 outside of Glenmont Station platform limits. Both halves of the consist's brake pipes dumped, followed by emergency brake relay de-energization (the cars reacted as designed and went into an emergency brake application once the pull-apart occurred).

Based on Audio Recording System (ARS) playback, the ROCC Assistant Superintendent notified the Montgomery County Fire & Rescue Service (MCFRS) and Metro Transit Police Department (MTPD) to report to the scene. A review of the ARS playback [radio and ambient] at 13:02 hours revealed that the Radio RTC complied with Metrorail Safety Rules and Procedures Handbook (MSRPH) Standard Operating Procedure (SOP) 1A. The Radio RTC appointed the first RTRA Supervisor as the On-Scene Incident Commander (I/C). At 13:05 hours, the Radio RTC gave the first RTRA Supervisor Foul Time (FT) protection to perform a ground walk around and board the second half of the uncoupled train for inspection and to check on the customers. The Advanced Information Management System (AIMS) playback showed the Buttons RTC activated prohibit exits, block calls, cancellation of automatic signals, blue block, and human form status at Glenmont Station, Track 2 at 13:05 hours. Per AIMS playback, at 13:28 hours, third rail power was subsequently de-energized at Glenmont Station, Tracks 1 and 2. Based on ARS playback, the first RTRA Supervisor hot stucked and confirmed that the third rail power was de-energized at CM B2-713+00, and the second RTRA Supervisor hot stucked and confirmed that the third rail power was de-energized at CM B1-717+00.

Based on ARS playback, Washington Metropolitan Area Transit Authority (WMATA) personnel and emergency responders complied with MSRPH SOP 4, customer evacuation procedures, and both train sections were confirmed secured after applying handbrakes before evacuating customers. At 13:34 hours, the Radio RTC contacted the third RTRA Supervisor, standing by at Glenmont Station 8-car marker with MCFRS, and instructed them to enter the roadway and escort the MCFRS. The MCFRS entered the roadway to set up Warning and Strobe Alarm Devices (WSADs). An emergency ladder was securely positioned by the first RTRA Supervisor between the car's end door and the roadway for the customers to be assisted down the ladder by MCFRS. Based on MTPD's report, the front section had four customers, and the back section had eight

customers, and one of them appeared to be intoxicated. There were no injuries sustained among the 12 customers aboard the train. MCFRS emergency responders evacuated 11 customers onto the roadway and safely escorted them to the Glenmont Station platform. The MCFRS elected to evacuate the 12th customer, who appeared intoxicated, by the Emergency Tunnel Evacuation Cart (ETEC). The intoxicated customer had no injuries; however, they were transported to Holy Cross Hospital for further medical evaluation due to their state of intoxication. After SAFE had concluded the onsite investigation and had authorized the recovery of the affected consist, the Office of Car Maintenance (CMNT) personnel contacted the ROCC and reported the train could hold a charge and get brakes off on cars 6177 and 6150. At 17:19 hours, the incident train's ID changed from 109 to 709 and cleared Glenmont Station interlocking and the entire consist was en route, non-revenue to Brentwood Rail Yard. The ROCC restored train service. RTRA removed Train Operator 1 from service for post-incident toxicology testing per RTRA's SOP 102-1 Removing an Employee from Service.

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

The probable causes of the pull-apart event on November 24, 2020, involving Train ID 109 cars 6177 and 6150, was WMATA's failure to develop, implement and adequately review the safety implications of railcar maintenance, inspection, and overhaul procedures or modifications, including identifying and obtaining the correct and complete associated parts, tools, and training. Based on the mechanical coupler head and drawbar inspection, evidence suggests that the clamping force used to secure the mechanical coupler head on the drawbar was insufficient to prevent the assembly's separation. Additionally, the threads on both the mechanical coupler head and the drawbar were worn, and both units were condemned.

The coupler overhaul procedure provided by the Original Equipment Manufacturer (Dellner) does not mention the requirement and the method of using special tools to verify the thread condition on the mechanical coupler head drawbar. Accordingly, the coupler overhaul procedure is deemed incomplete and is in the process of being updated.

## **Similar Events**

### E20385 - 20201009 - Final Report - Between Union and NoMa- Gallaudet Stations - Unintentional Uncoupling

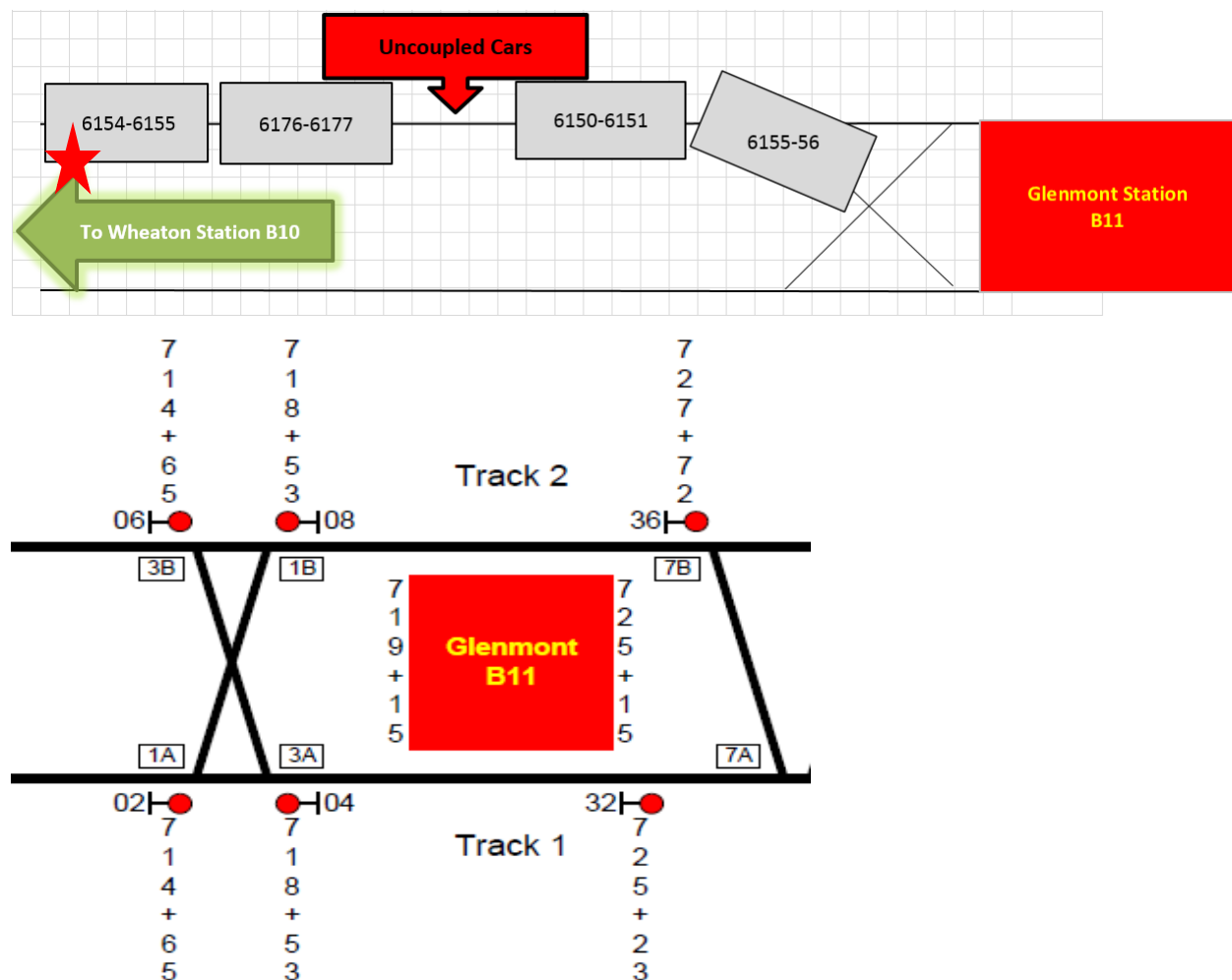
A similar event occurred on October 9, 2020, between Union and Noma – Gallaudet Stations. The probable cause of the pull-apart event that occurred on October 9, 2020, involving Train ID 108 car 6075 and car 6079, was procedural deficiencies and the absence of a Quality Management System. These led to the improper overhaul and repair during the mechanical coupler rebuild process. An inspection of the fasteners indicated the buffer stem screw was not lubricated as required per Office of Emergency Management (OEM) procedures and was dry torqued. As a result, the flange collar did not achieve adequate clamping force due to insufficient torque on the buffer tube screw, which allowed the gland nut to slowly back out over time. This caused the draft bar (and spring pack) to separate from the buffer tube, causing a pull-apart event. There is no instruction within the WMATA procedure to inspect the front-end mechanical coupler gland nut threads to identify potential movement. This was determined from the WMATA 6000 Series under-car post incident inspection.

A similar event occurred on August 25, 2018, outside of McLean Station with similar characteristics. SAFE's investigation concluded that the probable cause was incorrect hardware and power tool usage. These factors led to the buffer bolt's cross-threading that subsequently caused a false torque reading resulting in reduced clamping force on the buffer tube. In turn, this allowed the gland nut to slowly back out over time, leading to the draft arm and spring pack pulling out of the buffer tube, causing married pair Car 6038 and Car 6039 to pull-apart at the Semi-Permanent Drawbar.

## INCIDENT SITE

Outside Glenmont 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 notification of the Unintentional Uncoupling/Pull-Apart incident outside Glenmont Station, Track 2 on November 24, 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 Interview – SAFE conducted ten interviews as part of this investigation. The interviews included:
  - One RTRA Supervisor
  - Two Train Operators
  - One CENV Vehicle Engineer
  - One CMNT Major Repair and Overhaul (MRO) Supervisor
  - One CMNT MRO Lead
  - One CMNT MRO Technician
  - One CMNT Lead Mechanic
  - Two CMNT Technicians
- Informal Interviews – Collected through conversations with individuals during the course of 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
  - Certification
  - 30-Day work history review
  - Metrorail Safety Rules and Procedures Handbook (MSRPH)
  - National Oceanic and Atmospheric Administration (NOAA)
  - Rail Operations Control Center (ROCC) Procedures Manual Review
  - Office of Systems Maintenance Communication Section (COMM)
  - Office of Car Maintenance (CMNT) post-incident inspection data review
  - Vehicle Program Services (CENV) post-incident analysis data review
  - Maximo
- System Data Recording Review – A collection of information contained in Metro Data Recording Systems. This data includes:
  - Audio Recording System (ARS) playback [Radio and Phone Communications]
  - Closed-Circuit Television (CCTV) playback
  - Advanced Information Management System (AIMS)
  - Rail Operations Control Center (ROCC) SPOTS event log data review

## **INVESTIGATION**

On Tuesday, November 24, 2020, at 13:02 hours, Train Operator 1 of Train ID 109, a Red Line 8-car 6000-series, consist [L6155-6154.6176-6177.6150-6151.6017-6016T] notified the ROCC Radio RTC stating that they experienced a BIE condition. Revenue Train ID 109 experienced a BIE condition departing from Glenmont Station, Track 1, and traversing through Glenmont interlocking to Track 2. Upon further investigation, the first RTRA Supervisor, who was on-board the train during the time of the incident, walked through the train checking for mechanical trouble and found that a separation occurred between the fourth (4th) and fifth (5th) cars. The cars were identified as cars 6177 and 6150 of the 8-car train. At 13:28 hours, the AIMS playback showed the ROCC de-energized third rail power. There were 12 customers aboard Train ID 109 at the time of the incident. MCFRS safely evacuated all customers aboard Train ID 109. There were no injuries reported as a result of this event. Based on a radio communication review, the ROCC personnel followed established procedures related to Command, Control, and Coordination of Emergencies on the Rail System as defined in SOP 1A and managing a mainline with the pull-apart event in compliance with SOP 13 - Undesired Uncoupling or Pull Apart of Cars. Below is the actual incident timeline identified through data sources such as AIMS, ARS, CCTV, and other data capturing resources.

## **ADVANCED INFORMATION MANAGEMENT SYSTEM (AIMS)**

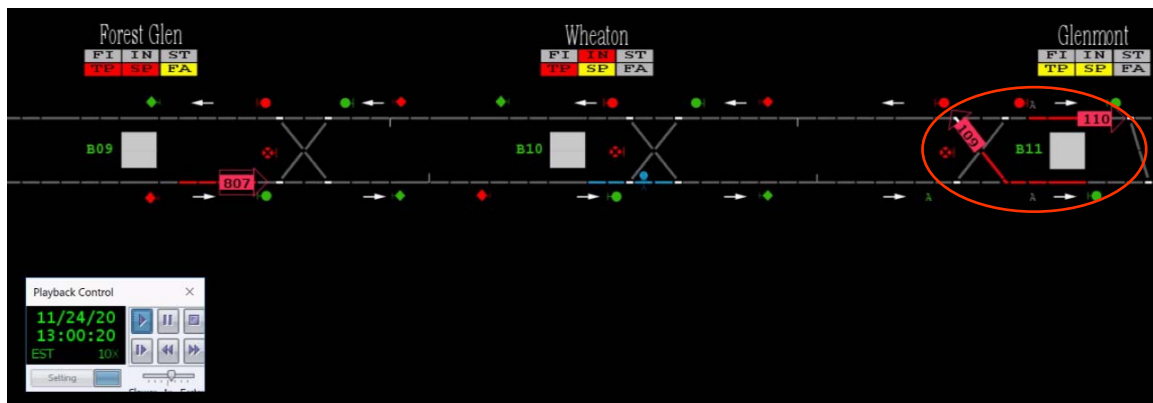


Diagram 1 - Based on the AIMS, at 13:00:20 hours, shows revenue Train ID 109 departing Glenmont Station, Track 1 and traversed through the interlocking to Track 2 in the direction of Shady Grove. The Track is red, which shows that the track Train ID 109 is on is energized.

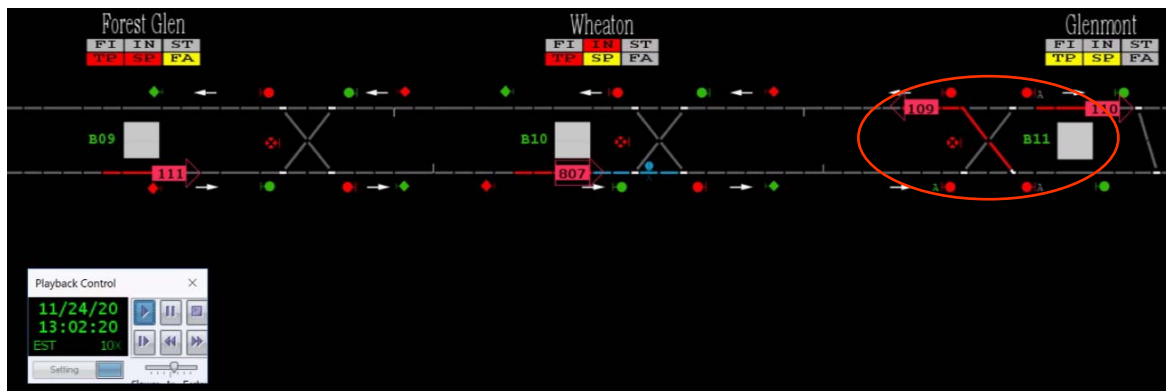


Diagram 2 – Based on the AIMS, at 13:02:20 hours, shows Train ID 109 at Glenmont Station, Track 2, appears to be when the reported unintentional uncoupling occurred per ARS.

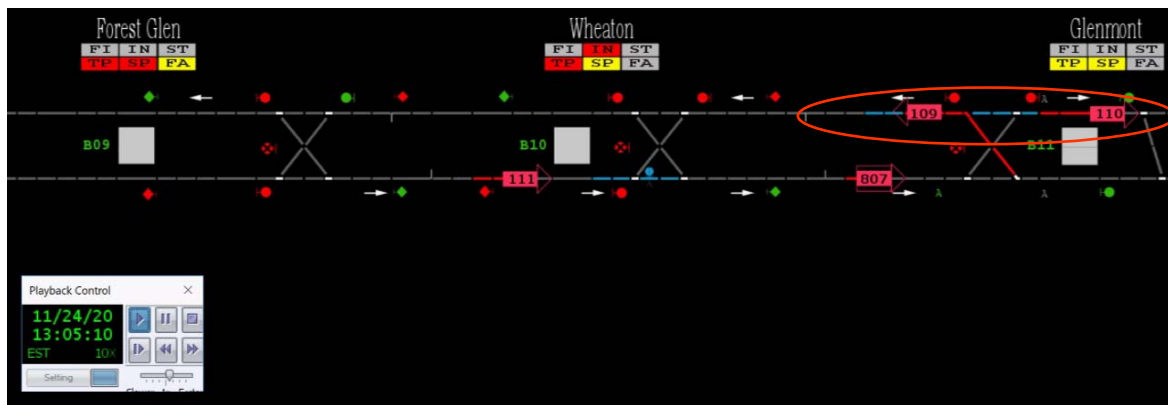


Diagram 3 – Based on the AIMS, at 13:05:10 hours, shows prohibit exits, block calls, cancellation of automatic signals, blue block, and human form status are in place at Glenmont Station, Track 2.

Based on ARS playback, at 13:19 hours, the first RTRA Supervisor contacted the Radio RTC and reported that the uncoupled cars are 6177 and 6150. Also, there were four customers on the Lead Car 6155 and eight customers on the trailing cars, totaling 12 total customers aboard Train ID 109.

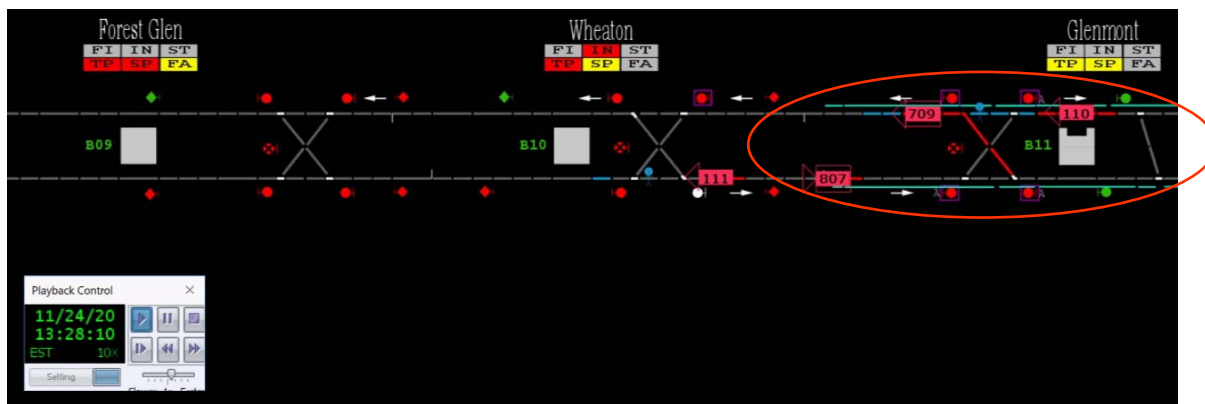
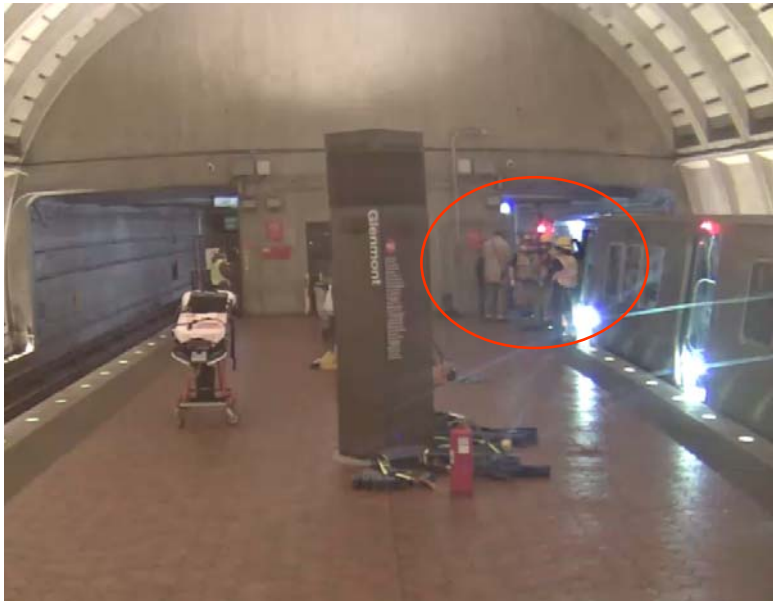


Diagram 4 – Based on the AIMS, at 13:28:10 hours, the green symbol on the AIMS power display shows that third rail power was subsequently de-energized at Glenmont Station, Tracks 1 and 2.

Based on ARS playback, WMATA personnel and emergency responders complied with MSRP SOP 4, customer evacuation procedures, and both train sections were confirmed secured after applying handbrakes before evacuating customers. At 13:31 hours, the Radio RTC contacted the third RTRA Supervisor, standing by at Glenmont Station 8-car marker with MCFRS, and instructed them to enter the roadway and escort the MCFRS. The MCFRS entered the roadway to set up Warning and Strobe Alarm Devices (WSADs). The first RTRA Supervisor securely positioned an emergency ladder between the car's end door and the roadway for the customers to be assisted down the ladder by MCFRS.





*Figure 1 – Per CCTV, at 13:34 hours, the Radio RTC instructed the third RTRA Supervisor, standing by at Glenmont Station 8-car marker, to enter the roadway and escort the MCFRS down to the incident scene.*

Based on ARS playback, at 13:36:00 hours, the third RTRA Supervisor contacted the Radio RTC and reported that the MCFRS was currently on the roadway installing WSADs. At 13:59:32 hours, the second RTRA Supervisor contacted the Radio RTC and reported that they escorted the MCFRS to car 6016. The fire department safely removed eight customers with no medical requests. At 14:02:39 hours, the second RTRA Supervisor contacted the Radio RTC and reported that the last customer just exited car 6016. The first quad was now complete and clear of customers, and customers needed no medical attention. SAFE's Investigations Manager, arrived at Glenmont Station platform at approximately 14:25 hours, entered the roadway with OEM, and headed down to the affected consist to initiate the investigation.



*Figure 2 – Per CCTV at 14:07 hours, customers started to enter the Glenmont Station platform from being escorted by the emergency responders.*



Based on ARS playback, at 14:11:07 hours, the second RTRA Supervisor contacted the Radio RTC and reported four customers had been removed from 6177, and no medical attention was needed. The four customers would be boarding car 6150, walking through the consist and exiting car 6016. At 14:16:36 hours, the second RTRA Supervisor contacted the Radio RTC and reported that the four customers were exiting car 6016. At 14:18:14 hours, the second RTRA Supervisor contacted the Radio RTC and reported that all 12 customers had exited car 6016 with no medical requests and were safely heading to the Glenmont Station platform.



*Figure 3 – Per CCTV at 14:19 hours, the intoxicated customer had no injuries but was being transported to Holy Cross Hospital for further medical evaluation due to their state of intoxication.*

Based on ARS playback, at 14:25 hours, the RTRA Superintendent contacted the Radio RTC and reported that all customers had been evacuated from the train and were safely on the Glenmont Station platform. There were no issues with the evacuation process and no reported injuries to any customers. One intoxicated customer had no injuries but was transported to Holy Cross Hospital for further medical evaluation due to their state of intoxication. At 15:47 hours, the second RTRA Supervisor reported to the Radio RTC that MTPD terminated I/C, cleared the scene, and turned the scene back over to RTRA personnel.

### **SAFE ON-SITE INVESTIGATION**

Upon arrival at the scene, SAFE reported to the Incident Command Post (ICP) and then performed an on-site investigation and assessed Train ID 109 on the roadway. While under FT protection, SAFE conducted a field investigation and recorded the figures below.

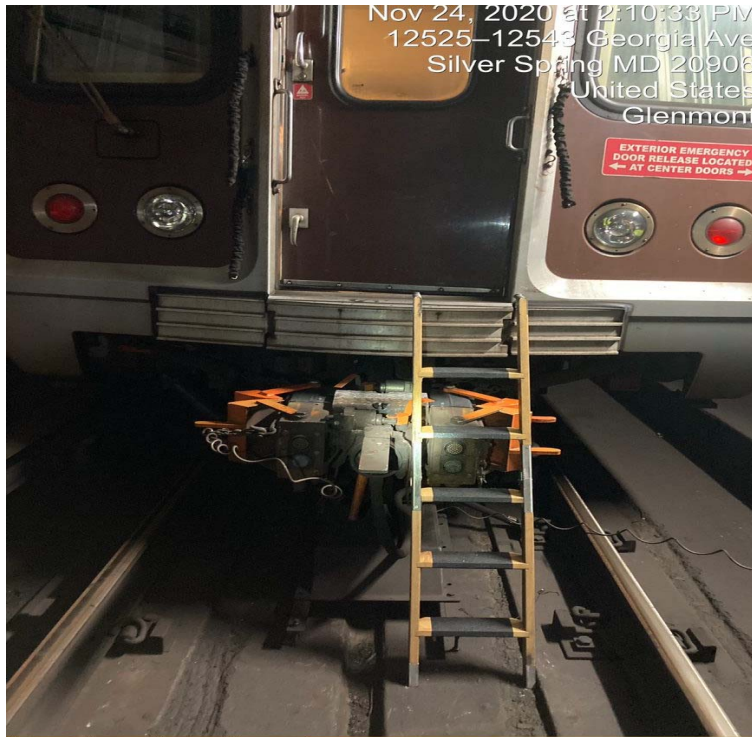


Figure 4 – The train emergency ladder stored on the car was positioned between the end door of the cars' anti-climber and the concrete roadbed.



Figure 5 – 6177 rear portions of front mechanical coupler.



Figure 6 – Pull-apart car 6150.

Based on ARS playback at 16:36 hours, the I/C reported to the Radio RTC that all personnel and equipment were clear of the roadway on Tracks 1 and 2, and third-rail power could be restored at the ROCC's discretion. At 16:55 hours, CMNT contacted the Radio RTC and reported car 6177 was able to hold a charge and get brakes off and go non-revenue to Brentwood Rail Yard. At 17:00 hours, CMNT contacted the Radio RTC and reported car 6150 was able to hold a charge and get brakes off and go non-revenue to Brentwood Rail Yard. At 17:19 hours, the incident train's ID changed from 109 to 709 and cleared the interlocking and the entire consist was en route to Brentwood Rail Yard. Train service had been restored.

On November 25, 2020, SAFE personnel responded to Brentwood Service and Inspection Shop to conduct an on-site investigation of the mechanical coupler pull-apart. Upon arrival, SAFE signed into the location and later received a safety briefing from the CMNT Shift Supervisor at Brentwood Service and Inspection Shop. SAFE, CENV, and CMNT were on site to witness removing the mechanical coupler head from car 6150 and the remaining coupler from car 6177. SAFE then authorized CMNT to transport the front couplers of car 6177 to Greenbelt MRO Shop to conduct testing in a controlled environment with appropriate calibrated tools.

On November 30, 2020, MRO personnel attempted to reassemble the affected component and perform a torque value inspection and a subsequent analysis of the installed hardware. The front coupler inspection was conducted, and testing was performed by Dellner in the presence of CENV, CMNT MRO personnel, CMNT Superintendents, SAFE, WMSC, and Hatch-LTK.

The threads on the mechanical coupler head of car 6177 showed corrosion signs (see Figure 8) and debris accumulation, which indicated exposure to ambient conditions. The drawbar had sustained damage on the first 4-5 threads, which became more apparent when the drawbar was cleaned for inspection (see Figure 10).

Dellner Technicians used Go/No-Go thread gauges to test the internal and external threads' conditions on the mechanical coupler head and the drawbar. After confirmation of failed test, the mechanical coupler head and draft bar were both condemned.

The pinch bolt that secures the mechanical coupler on the drawbar was missing a torque stripe, and two (2) wear marks were observed on the shoulder of the bolt, which appears to have been caused by the threads of the draft bar. Additionally, the four bolts that secure the guide rail were found to be torqued below the required fastening torque.

## **AUDIO RECORDING SYSTEM (ARS) CHRONOLOGICAL EVENT TIMELINE**

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

|                 |  |
|-----------------|--|
| 13:02:23 hours. | [Ops 1] Train ID 109 Train Operator 1 contacted the Radio RTC and reported that the train had a Brakes In Emergency (BIE) event and advised the first RTRA Supervisor was on board and walking through the consist.  |
| 13:02:41 hours. | [Ops 1] The first RTRA Supervisor contacted the Radio RTC and stated, "Emergency, Emergency, Emergency," and reported that Train ID 109 uncoupled between cars 6177 and 6150 at CM B2-713+00. The Radio RTC instructed Train ID 109 Train Operator 1 to make announcements to the customers and key down. SOP 1A was in effect. The Radio RTC appointed the first RTRA Supervisor as the On-Scene I/C. Note: The announcements over the public address system by the Train Operator 1 were not possible to rear four cars due to the pull-apart event.   |
| 13:04:00 hours. | Red Line train service was suspended between Glenmont Station and Wheaton Station. Shuttle bus service was requested.  |
| 13:04:03 hours. | [Phone] Red Line RTC contacted Rail Operation Information Center (ROIC) employee and reported that there was a train pull-apart event at Glenmont Station interlocking.  |
| 13:04:20 hours. | [Ops 1] The Radio RTC gave the first RTRA Supervisor permission to go onto the roadway under FT protection to perform a ground walk around and board the disabled, uncoupled train for inspection.   |
| 13:04:55 hours. | [Phone] The ROCC Assistant Superintendent contacted ROIC Assistant Superintendent and reported a train pull-apart event at Glenmont Station interlocking.  |
| 13:05:18 hours. | [Ops 1] Radio RTC announced via Ops 1, B11-08 Signal was red, prohibit exits, block calls, cancellation of automatic signals, blue block, and human form status were in place for your protection, you now have FT protection. The Radio RTC advised to let the ROCC know the disabled pull-apart train's status on Track 2. The first RTRA Supervisor acknowledged.   |
| 13:06:08 hours. | [Phone] An ROIC employee contacted Montgomery County 911 and requested medics to respond to Glenmont Station. The ROIC employee reported the address to Glenmont Station is 12501 Georgia Avenue Silver Spring, MD 20906. The 911 emergency dispatcher asked, where at Glenmont Station are we responding? The ROIC employee responded, the upper platform where the train is located. The 911 emergency dispatcher acknowledged and asked what the emergency was. The ROIC employee indicated they are not sure, but it may be a train pull-apart event, so we need medics to respond. The 911 emergency dispatcher asked the ROIC employee what type of train was involved and the ROIC employee responded to Metro Train ID 109, on Track 2 in the direction of Shady Grove Station. The 911 emergency dispatcher asked if the train was on fire. The ROIC employee responded, no, we are just requesting medics. |
| 13:06:44 hours. | [Ops 1] The first RTRA Supervisor contacted the Radio RTC and reported that they would be putting a handbrake on the disabled car 6177. The Radio RTC acknowledged and instructed the first RTRA Supervisor to determine how many customers are on board and if anyone needs medical attention. The first RTRA Supervisor acknowledged and advised that the first RTRA Supervisor was walking through the consist and will notify.   |



|                 |  |
|-----------------|--|
| 13:06:50 hours. | [Phone] Train Operator 1 contacted the ROIC employee and reported that the first RTRA Supervisor as the On-Scene I/C and the incident train is Train ID 109 on Track 2.  |
| 13:07:57 hours. | [Ops 1] The Radio RTC dispatched a second RTRA Supervisor standing by at Glenmont Station and gave them FT protection to enter Track 2 only to board the disabled train to see how many customers were aboard the train and if they needed any medical assistance. The Radio RTC instructed the second RTRA Supervisor to verify that handbrakes were applied. |
| 13:08:32 hours. | [Ops 1] Train ID 109 Train Operator 1 contacted the Radio RTC and reported that the handbrake was applied to car 6155. Train Operator 1 also said four (4) customers onboard the first four (4) cars and were not requesting any medical attention.  |
| 13:08:49 hours. | [Phone] ROCC Assistant Superintendent contacted Montgomery County 911 and reported Train ID 109 uncoupled between cars 6177 and 6150 outside of Glenmont Station at CM B2-713+00, and there are customers on the train.  |
| 13:09:05 hours. | [Ops 1] The first RTRA Supervisor contacted the Radio RTC and reported on the second set of four (4) cars that there were approximately eight (8) customers onboard, and they were not requesting any medical attention.   |
| 13:09:57 hours. | [Phone] ROIC Assistant Superintendent contacted a Bus Operation Control Center (BOCC) employee and requested shuttle service due to trains being suspended between Glenmont Station and Wheaton Station. ROIC Assistant Superintendent reported that train pull-apart event at Glenmont Station interlocking.  |
| 13:11:15 hours. | [Phone] ROIC employee contacted SAFE and reported Train ID 109 uncoupled outside of Glenmont Station, Track 2.   |
| 13:12:00 hours. | [Phone] ROIC employee contacted MTPD and reported Train ID 109 uncoupled outside of Glenmont Station, Track 2.   |
| 13:12:09 hours. | [Phone] MOC Assistant Superintendent contacted SAFE and reported Train ID 109 uncoupled between cars 6177 and 6150 outside of Glenmont Station at CM B2-713+00, and customers were on the train.   |
| 13:12:38 hours. | [Phone] MOC Assistant Superintendent contacted MTPD and reported Train ID 109 uncoupled between cars 6177 and 6150 outside of Glenmont Station at CM B2-713+00, and customers were on the train.   |
| 13:13:43 hours. | [Ops 1] The first RTRA Supervisor contacted the Radio RTC and reported that the handbrake was applied to car 6150.   |
| 13:17:05 hours. | [Ops 1] The Radio RTC dispatched a third RTRA Supervisor from an unidentified location and instructed them to go to Glenmont Station to meet the MCFRS.  |
| 13:17:54 hours. | [Phone] MOC Assistant Superintendent contacted the ERT and reported Train ID 109 uncoupled between cars 6177 and 6150 outside of Glenmont Station at CM B2-713+00, and there were customers on the train.  |
| 13:19:22 hours. | [Ops 1] The first RTRA Supervisor contacted the Radio RTC and reported that the uncoupled cars are 6177 and 6150. Also, on the lead car, there are four (4) customers, and on the trailing cars and there are eight (8) customers, so approximately twelve (12) customers remain aboard Train ID 109.  |
| 13:20:50 hours. | [Ops 1] The third RTRA Supervisor contacted the Radio RTC and reported that the MCFRS arrived on the Glenmont Station scene.   |
| 13:22:32 hours. | [Ops 1] The Radio RTC contacted the Train Operator 1 and asked whether they could get a charge on either one of the four (4) packs of cars. The first RTRA Supervisor advised to standby.  |

|                 |   |
|-----------------|---|
| 13:23:09 hours. | [Ops 1] Train ID 109 Train Operator 1 contacted the Radio RTC and reported that they were unable to charge the consist from lead car 6155.  |
| 13:23:24 hours. | [Ops 1] The fourth RTRA Supervisor contacted the Radio RTC and reported Glenmont Station was the staging location.  |
| 13:23:42 hours. | [Ops 1] The first RTRA Supervisor contacted the Radio RTC and reported that they could not get a recharge on the trailing disabled cars. Radio RTC acknowledged and announced we could not get a recharge on either one (1) of the four (4) packs of cars.  |
| 13:23:55 hours. | [Ops 1] The Radio RTC dispatched the first RTRA Supervisor and asked how far the pull-apart was. The first RTRA Supervisor responded, approximately half of a car length.   |
| 13:24:29 hours. | [Phone] ROIC employee contacted WMATA Media Relations employee and reported that there was a train pull-apart event at Glenmont Station interlocking and no reported injuries.  |
| 13:27:41 hours. | [Ops 1] The Radio RTC contacted the third RTRA Supervisor and advised that the I/C post is outside Glenmont Station bus bay.  |
| 13:28:31 hours. | [Ops 1] The Radio RTC contacted the first RTRA Supervisor and instructed them to hot stick and confirmed that third rail power was de-energized on Track 2. The Radio RTC contacted the second RTRA Supervisor and granted them FT protection into the roadway to hot stick and confirm third rail power was de-energized on Track 1. |
| 13:29:21 hours. | [Phone] WMATA employee contacted an ROIC employee and stated that the first RTRA Supervisor was the On-Scene I/C.   |
| 13:30:08 hours. | [Ops 1] The first RTRA Supervisor contacted the Radio RTC and reported that they hot stuck and confirmed that the third rail power was de-energized at CM B2-713+00.  |
| 13:30:22 hours. | [Phone] ROIC employee contacted WMATA Media Relations employee and reported there are approximately 12 to 13 customers aboard the pull-apart train with no injuries.  |
| 13:32:55 hours. | [Ops 1] The second RTRA Supervisor contacted the Radio RTC and reported that they hot stuck and confirmed that the third rail power was de-energized at CM B1-717+00.   |
| 13:33:15 hours. | [Phone] An unidentified WMATA employee contacted an ROIC employee. The ROIC employee advised the unidentified WMATA employee that we have a shuttle bus service going from Glenmont Station to Wheaton Station.   |
| 13:34:41 hours. | [Ops 1] The Radio RTC contacted the third RTRA Supervisor, who was standing by at Glenmont Station 8-car marker with the MCFRS. The Radio RTC instructed the third RTRA Supervisor to enter the roadway to walk the MCFRS down to Train Operator 2.   |
| 13:36:00 hours. | [Ops 1] The third RTRA Supervisor contacted the Radio RTC and reported that that the MCFRS was currently on the roadway installing WSADs.   |
| 13:41:29 hours. | [Ops 1] The third RTRA Supervisor contacted the Radio RTC and reported that the Office of Elevator and Escalator (ELES) and MTPD arrived on the Glenmont Station scene.   |
| 13:44:26 hours. | [Phone] ROIC employee contacted Forest Glen Station Manager and reported that train service is now suspended from Forest Glenn Station to Glenmont Station. Also, train service is now turning around at Forest Glenn Station, and they are getting shuttle buses available.  |
| 13:45:50 hours. | [Ops 1] The fourth RTRA Supervisor contacted the Radio RTC and reported that they were at the I/C post.   |

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| 13:46:17 hours. | [Ops 1] The second RTRA Supervisor contacted the Radio RTC and reported that we have an intoxicated male customer onboard, and the MCFRS is on scene conducting their assessment.   |
| 13:48:42 hours. | [Ops 1] The second RTRA Supervisor contacted the Radio RTC and reported that another WSAD was being installed on the Track 1 side.  |
| 13:50:59 hours. | [Phone] – WMATA Media Relations employee contacted ROIC Assistant Superintendent and requested them to change the Red Line alert to fire department activity.   |
| 13:52:45 hours. | [Ops 1] ATC and SAFE notified the Radio RTC of their arrival at the Glenmont Station scene.   |
| 13:53:49 hours. | [Phone] ROIC employee contacted SAFE and reported that train service is now suspended from Forest Glenn Station to Glenmont Station.  |
| 13:54:49 hours. | [Ops 1] RTRA Superintendent contacted the Radio RTC and reported that they arrived on the scene for support.  |
| 13:56:38 hours. | [Ops 1] The Radio RTC announced on Ops 1 to all Train Operators that shuttle bus services had been extended to Forest Glen Station and to make good announcements to their customers.   |
| 13:59:32 hours. | [Ops 1] The second RTRA Supervisor contacted the Radio RTC and reported that they escorted the MCFRS to car 6016. Seven (7) customers were safely removed with no medical requests.   |
| 14:02:39 hours. | [Ops 1] The second RTRA Supervisor contacted the Radio RTC and reported that the last customer just exited car 6016. The first quad was now complete and clear of customers, and no medical attention was needed. The MCFRS and SAFE headed down to the second quad on car 6150 to setup WSADs and evacuated those customers. |
| 14:11:07 hours. | [Ops 1] The second RTRA Supervisor contacted the Radio RTC and reported four (4) customers had been removed from 6177, and no medical attention was needed. The four (4) customers would be boarding car 6150, walking through the consist and exiting car 6016.  |
| 14:16:36 hours. | [Ops 1] The second RTRA Supervisor contacted the Radio RTC and reported that the four (4) customers were exiting car 6016.  |
| 14:18:14 hours. | [Ops 1] The second RTRA Supervisor contacted the Radio RTC and reported that all twelve (12) customers had exited car 6016 with no medical requests and were safely heading to the Glenmont platform.   |
| 14:24:23 hours. | [Ops 1] The Radio RTC contacted the Train ID 109 Train Operator 1 and instructed them to safely exit the consist and meet MTPD at Glenmont Station platform to be interviewed.  |
| 14:25:12 hours. | [Ops 1] The RTRA Superintendent contacted the Radio RTC and reported that all customers had been evacuated from the train and were safely on the platform. No reported injuries or medical attention was needed.  |
| 14:30:18 hours. | [Ops 1] Office of Track and Structures (TRST) contacted the Radio RTC and reported they had arrived on the scene.   |
| 14:31:12 hours. | [Ops 1] The second RTRA Supervisor contacted the Radio RTC and reported that SAFE just boarded car 6016.  |
| 14:32:10 hours. | [Ops 1] The Radio RTC announced that all Red Line train service had been suspended from Forest Glen Station to Glenmont Station due to MCFRS activity. Shuttle bus services are established at Forest Glen Station.   |
| 14:36:24 hours. | [Ops 1] The second RTRA Supervisor contacted the Radio RTC and reported that all MCFRS personnel and equipment had safely cleared the roadway and were at the Glenmont Station platform.  |



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| 14:39:19 hours. | [Ops 1] The Radio RTC contacted the first RTRA Supervisor and instructed them to make sure all handbrakes were applied and then exit the train and go to the platform so that MTPD can enter the train to start their investigation.   |
| 15:47:00 hours. | [Ops 1] The second RTRA Supervisor contacted the Radio RTC and reported that all MTPD personnel were clear of the scene and that the location had been turned back over to RTRA personnel.   |
| 15:48:05 hours. | [Ops 1] Radio RTC announced via Ops 1, B11-08 Signal is red, prohibit exits, block calls, cancellation of automatic signals, blue block, and human form status are in place. CMNT, TRST, and the Office of Traction Power Maintenance (TRPM), you now have FT protection to enter the roadway on Track 2 only to make assessments on moving the consist.                           |
| 15:56:22 hours. | [Ops 1] The Radio RTC contacted the second RTRA Supervisor and instructed them that they are now the On-Scene I/C since MTPD departed the scene.   |
| 15:57:38 hours. | [Ops 1] CMNT contacted the Radio RTC and reported that all cables for the consist were secure and the consist can be moved.  |
| 16:00:23 hours. | [Ops 1] CMNT contacted the Radio RTC and reported that all personnel were aboard the consist and relinquished their FT.  |
| 16:18:55 hours. | [Ops 1] The I/C contacted the Radio RTC and advised all personnel were safely back on the platform, and they were relinquishing their FT. The I/C requested the OEM Personnel plus two (2) to enter the roadway and remove all WSADs.  |
| 16:19:20 hours. | [Ops 1] The Radio RTC announced via Ops 1, B11-08 Signal is red, prohibit exits, block calls, cancellation of automatic signals, blue block, and human form status are in place for OEM Personnel plus two (2) protection. You now have FT protection to enter the roadway on Track 2 to remove all WSADs.   |
| 16:26:15 hours. | [Ops 1] The I/C reported to the Radio RTC that TRST confirmed a good track inspection on the roadway and tracks were revenue ready. The area was deemed safe for rail vehicle movement.  |
| 16:36:57 hours. | [Ops 1] The I/C reported that all personnel and equipment were clear of the roadway on Tracks 1 and 2, and third-rail power could be restored at the ROCC's discretion. The Radio RTC acknowledged and announced third rail restoration efforts are in effect on Tracks 1 and 2.   |
| 16:46:58 hours. | [Ops 1] The I/C contacted the Radio RTC and advised ATC personnel is requesting to enter the roadway to check switches. Radio RTC responded B11-08 Signal is red, prohibit exits, block calls, cancellation of automatic signals, blue block, and human form status are in place for ATC protection, you now have FT protection to enter the roadway on Track 2 to check switches. |
| 16:55:25 hours. | [Ops 1] CMNT contacted the Radio RTC and reported car 6177 was able to hold a charge and get brakes off and was able to go non-revenue to Brentwood Rail Yard.   |
| 16:56:36 hours. | [Ops 1] The I/C contacted the Radio RTC and advised ATC was clear of the roadway, and they were relinquishing their FT protection.   |
| 17:00:00 hours. | [Ops 1] CMNT contacted the Radio RTC and reported car 6150 was able to hold a charge and get brakes off and was able to go non-revenue to Brentwood Rail Yard.   |
| 17:19:51 hours. | [Ops 1] Incident Train ID changed from 109 to 709 and cleared the interlocking, and the entire consist is en route to Brentwood Rail Yard. Train service has been restored.  |

**Note:** No radio communication issues reported or identified during this investigation

## **OFFICE OF VEHICLES PROGRAM SERVICES (CENV) REVIEW**

Dellner Couplers provide the 6000 Series coupler system. The design is based on a Married Pair system, which includes coupler equipment for the Front (F-end) automatic coupler and the Rear (R-end) semi-permanent coupler. Both couplers are anchored to the underframe of the railcar.

The automatic coupler is designed to enable the F-End of two rail cars to couple automatically. This coupler provides fully automatic mechanical, electrical, and pneumatic connections between married pairs. The automatic coupler consists of a mechanical hook coupler, two (2) side-mounted electrical couplers (which carry train line electrical signals), various pneumatic valves (duplex solenoid, shut-off, rotary switch), and a draft gear/drawbar with an emergency release feature.

The semi-permanent coupler is a flanged drawbar used to connect two rail cars' rear end within a married pair. The drawbar is comprised of two semi-permanent halves (i.e., short couplers). The short coupler anchors, drawbar/draft gear are the same as those used on the automatic coupler.

Coupling is accomplished by bringing the F-end of two railcars together at low speeds. As mechanical coupling occurs, the 'battery (B+)' contact pins of the electrical couplers engage and initiate the "coupling cycle." Power is applied to the Time Delay Relay to prevent false mechanical coupling. The duplex solenoid valve is energized and provides air to the rotary switch, which train lines the electrical signals, and to the airline shut-off valve opens the brake pipe cut-out cock, thereby sealing the pneumatic connection.

When the "Uncouple" signal is given from the cab, the duplex solenoid valve provides air to the airline shut-off valve, closing the brake pipe cut-out cock. Simultaneously the rotary switch is activated, which causes the uncouple valve to move, thereby breaking the connection of the electrical train line signals and disengaging the mechanical hooks. Uncoupling of the mechanical and electrical coupler can be accomplished remotely from the operator's cab or at the coupler itself, using a manual release.

The November 24, 2020, Pull-Apart incident involved the draft bar of the front mechanical coupler and occurred when the "Front Mechanical Coupler Head" (1) and the "Guide Rail" (4) separated from the "Draft Bar" (2) and "Buffer tube" (3). (See Figure 8).

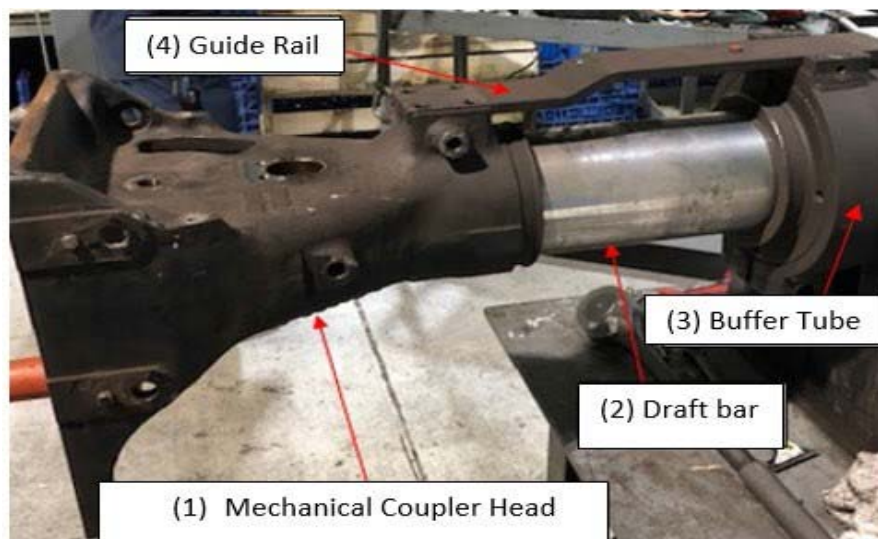


Figure 7 – Front-End Mechanical Coupler

## EVENT RECORDER (ER) DATA GRAPH/SEQUENCE OF EVENTS

Based on CENV analysis of the downloaded Vehicle Monitoring System (VMS) and ER, details from the data analysis are as follows:

| TIME            | Description   |
|-----------------|---|
| 12:58:54 hours. | Train ID 109 (L6155-6154x6176-6177x6150-6151x6017-6016T) departed Glenmont Station with P5 power rate command and train length indicating an 8-car consist.   |
| 12:59:35 hours. | The consist continued moving in P5-Coast-P4 power rate commands. The consist train length indication changed from 8-cars to a 4-car consist when the train was 790 feet away from the station platform. This is the estimated time and location of where the pull-apart incident occurred. The train was traveling at a speed of 18mph at the time of the incident. One second later, the train consist brake pipe dumped, initiating an emergency brake application. The Master Controller was also placed in a B4 full-service brake application. |
| 12:59:43 hours. | The consist lead Car 6155 came to a complete stop after traveling an additional 114 feet from the location where the pull-apart was estimated to have occurred. (See VMS Graph below).  |

**Note:** The VMS data does not show any abnormalities with the railcar's operations contributing to this incident. All the subsystems' safety components such as ATC, Brakes, and Propulsion acted as designed to bring the consist to a complete stop.

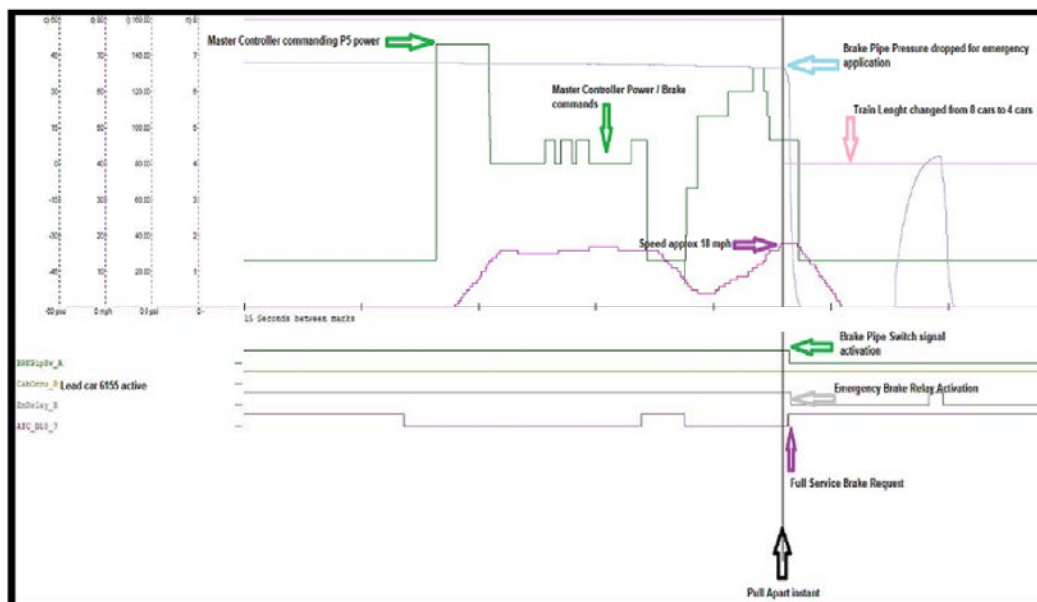


Diagram 5 – ER Graphical Analysis

## ADDITIONAL CENV FINDINGS

- Car 6177 was separated approximately 50 feet from car 6150, and the front mechanical coupler head of car 6177 was completely removed from the draft bar portion.
- The consist dumped the air, and as designed, applied the emergency brake in all cars.
- The consist buffer tube/draft bar remained attached to car 6177, while the front mechanical coupler was coupled to car 6150.

- All the consist fasteners and nuts were intact on the coupler of car 6150.
- Corrosion and contaminants were found on the threads of the front mechanical coupler head of car 6177. See figure 8-9. Damaged threads were found on the draft bar. See figure 10.
- The guide rail mounted on the front mechanical coupler head of Car 6177 was slightly loose.
- Due to the separation, the consist F-end coupler electrical head cannon plug connectors and car to car air hose were ripped apart and damaged.
- VMS data from lead A car 6154 was downloaded and analyzed.

## **CENV CONCLUSION**

The investigation of the pull-apart of Train ID 109 (L6155/54x6176/77x6150/51x6017/16T) culminated with the finding of the mechanical coupler head and draft bar threads being worn beyond specifications. The root cause is undetermined; however, evidence suggests that WMATA's maintenance, overhaul, and inspection processes, procedures, and available tools were insufficient, in part because they were developed without proper review, collaboration and approval. Additionally, the inadequate clamping force of the mechanical coupler head onto the draft bar assembly allowed the draft bar to back out over time. Factors that contributed to the lack of clamping force are as follows:

- Worn threads on both the mechanical coupler head & draft bar.
- Improper torque application of the coupler head pinch bolt.
- Improper torque application of the coupler head onto the draft bar.
- The guide rail not being properly torqued, thereby allowing movement of the draft bar.
- Lack of lubrication on threaded surfaces of the coupler head and draft bar.

## **OFFICE OF CAR MAINTENANCE (CMNT)**

As a result of this event, CMNT inspected the couplers on the 6000 Series fleet. CMNT inspected 118 cars out of 142 cars, which equates to 83% of the 6000 Series cars. CMNT identified the following deficiencies:

- Thirty-seven (37) cars Front Coupler Head Pinch Bolt Torque failed under torque value.
- Fifty-four (54) cars Front Buffer Gland Bolt Torque failed under torque value.
- Forty-three (43) cars Rear Coupler Head Pinch Bolt Torque failed under torque value.
- Fifty-eight (58) cars Rear Buffer Gland Bolt Torque failed under torque value.
- One (1) car Rear Coupler Distance Measurement failed at 7.875 (see page 7 of Appendix A).

Currently, the 6000 Series fleet is grounded, and there have been no further inspections conducted. On January 11, 2021, Service Bulletin E-136, 6000 Series Coupler Inspection, was distributed and discussed in the daily safety meeting. The purpose of the new Service Bulletin is to assist qualified personnel on how to perform a more thorough inspection before moving any 6000 Series vehicles either in the yard or for transport to any yard.

## **COST ANALYSIS**

| CMNT Incident Cost Estimate |                          |                            |           |       |             |       |         |             |            |
|-----------------------------|--------------------------|----------------------------|-----------|-------|-------------|-------|---------|-------------|------------|
| <b>Incident#:</b>           | 8512825                  |                            |           |       |             |       |         |             |            |
| <b>Failure:</b>             | Train Coupler Pull Apart |                            |           |       |             |       |         |             |            |
| <b>Date:</b>                | 11/24/2020               |                            |           |       |             |       |         |             |            |
| <b>Shop:</b>                | Brentwood MRO            |                            |           |       |             |       |         |             |            |
| <b>Prepared by:</b>         |                          |                            |           |       |             |       |         |             |            |
| <b>Rate:</b>                | \$76.00                  |                            |           |       |             |       |         |             |            |
| Car(s)                      | Defect                   | Part                       | Cost each | Items | Total Parts | Hours | Rate    | Total Labor | Total Cost |
| 6150                        |                          |                            |           |       |             |       | \$76.00 | \$0.00      | \$0.00     |
| 6151                        |                          |                            |           |       |             |       | \$76.00 | \$0.00      | \$0.00     |
| 6016                        | LABOR                    |                            |           |       | \$0.00      | 1.5   | \$76.00 | \$114.00    | \$114.00   |
| 6017                        | LABOR                    |                            |           |       | \$0.00      | 1.5   | \$76.00 | \$114.00    | \$114.00   |
| 6176                        | LABOR                    |                            |           |       | \$0.00      | 2     | \$76.00 | \$152.00    | \$152.00   |
| 6177                        | LABOR                    | SPRING: CENTERING, 5K, CAF | \$527.31  | 2     | \$1,054.62  | 108.5 | \$76.00 | \$8,246.00  | \$9,300.62 |
| 6154                        | LABOR                    |                            |           |       | \$0.00      | 1.5   | \$76.00 | \$114.00    | \$114.00   |
| 6155                        | LABOR                    |                            |           |       | \$0.00      | 1.5   | \$76.00 | \$114.00    | \$114.00   |
|                             |                          |                            |           |       |             |       |         |             |            |
|                             |                          |                            |           |       |             |       |         |             |            |
|                             |                          |                            |           |       |             |       |         |             |            |
|                             |                          |                            |           |       |             |       |         |             |            |
| <b>Totals</b>               |                          |                            |           |       | \$1,054.62  | 116.5 |         | \$8,854.00  | \$9,908.62 |

### CAR 6177 FRONT MECHANICAL COUPLER MAXIMO WORK ORDER HISTORY

The Maximo history was reviewed for the incident car and identified several inspections and work performed on car 6177, leading up to the pull-apart event.

- On April 12, 2017, CMNT personnel finalized the Front Mechanical Coupler last rebuild (Asset 433153).
- On April 23, 2017, CMNT installed the asset on car 6177. The coupler bolts/nuts were torqued 425 ft/lb during the front coupler's installation.
- On May 27, 2018, car 6177 was involved in an undesired coupling event with no anomalies identified during the inspection.
- On October 10, 2020, CMNT personnel performed a coupler inspection on car 6177 as a precautionary measure from the previous pull-apart event. The Technician stated they inspected and torqued the coupler Buffer Tube Pinch Bolt to 226 ft/lb., applied torque stripe, inspected the couplers and drawbars, and the Technician identified no anomalies, and it was deemed safe for service.
- On October 21, 2020, last C-4 Periodic Preventive Maintenance Inspection. CMNT performed a scheduled C4 Periodic Preventive Maintenance Inspection on car 6177 with related Post Preventive Maintenance Inspection details noted. On November 13, 2020, car 6177 was involved in a customer struck by train event. CMNT personnel did not identify any anomalies during the inspection.

### GREENBELT MAJOR OVERHAUL AND REPAIR (MRO) SHOP INSPECTION

The front mechanical coupler of 6177, the associated buffer tube, and the front mechanical coupler head assembly (coupled with car 6150) was removed by CMNT personnel at the



Brentwood workshop and transported to the Greenbelt coupler overhaul shop. Additional analysis and testing of the mechanical coupler heads/drawbar assembly continued the morning of 11/30/2020 at the Greenbelt MRO Coupler Shop.

The front coupler inspection was conducted, and testing was performed by Dellner in the presence of CENV, CMNT MRO personnel, CMNT Superintendents, SAFE, WMSC, and Hatch-LTK.

The threads on the mechanical coupler head of car 6177 showed corrosion signs (see Figure 9) and debris accumulation, which indicated exposure to ambient conditions. The drawbar had sustained damage on the first 4-5 threads, which became more apparent when the drawbar was cleaned for inspection (see Figure 10).



*Figure 8: Corrosion and contaminants were found on the threads of the mechanical coupler head on car 6177.*



*Figure 9: Corrosion and contaminants were found on the threads of the mechanical coupler head on car 6177.*



*Figure 10: Damaged threads were found on the draft bar on car 6177.*

Dellner Technicians used Go/No-Go thread gauges to test the internal and external threads' conditions on the mechanical coupler head and the drawbar. After confirmation of failed test, the mechanical coupler head and draft bar were both condemned.



*Figure 11 - While using the Dellner supplied Go/No-Go thread gauges on the mechanical coupler head threads, it was determined the threads were worn. The coupler head must be condemned.*





*Figure 12 – While using the Dellner supplied Go/No-Go thread gauges on the draft bar threads, it was determined that the threads were worn. The draft bar must be condemned.*



*Figure 13 - A torque test was performed on the four guide rail bolts. The resulting torque was measured at 5 ft/lbs. Dellner documentation states torque should be 27 ft/lbs. The inspection of the coupler/drawbar revealed a lack of torque stripes on guide rail fasteners.*

The pinch bolt that secures the mechanical coupler on the drawbar was missing a torque stripe, and two (2) wear marks were observed on the shoulder of the bolt, which appears to have been caused by the threads of the draft bar. Additionally, the four bolts that secure the guide rail were found to be torqued below the required fastening torque.



Figure 14 – A visual inspection revealed marks on the mechanical coupler head “pinch bolt” and identified that it did not have a torque stripe. Once removed, the bolt had two parallel indentations, which appear to have been caused by the threads of the draft bar.

## **RAIL OPERATIONS CONTROL CENTER (ROCC) SPOTS REPORT**

Based on SPOTS event log data, SAFE came to the following conclusion related to the rail vehicle involved:

- Train ID 109 platform side doors commanded closed at 13:00:01 hours.
- Train ID 109 tail cleared Glenmont Station at 13:00:40 hours.

## **METRO TRANSIT POLICE DEPARTMENT (MTPD)**

Based on the MTPD police report, the MTPD provided the following written statement: On November 24, 2020, at approximately 13:08 hours, the MTPD received a report for Train ID 109, a 6000-series train that uncoupled outside of Glenmont Station at CM B2-713+00. Passengers were on board the train. Upon arrival at the scene, MTPD Sergeant initiated I/C with the MCFRS in Glenmont Station bus bay at 13:31 hours. MTPD Lieutenant responded to the Glenmont Station platform, became the forward liaison on the Glenmont Station platform, and provided the MCFRS with additional WSADs to go with the three WSADs the MCFRS already had. The incident occurred in Glenmont Station interlocking, which required more WSADs. A member from the Washington Metrorail Safety Commission (WMSC) reported to the I/C post and was escorted to the scene with Safety Officers. The WMSC member stated they observed no issues with the incident scene management. The WMSC member stated that all roadway personnel should have a visible vest once the emergency has been mitigated.

MTPD reported that the train was pulled apart approximately 50 feet apart. The front car had four customers, one employee, and Train Operator 1. The back half had eight customers, one of whom was very intoxicated. Eleven customers were evacuated onto the roadway and walked to the platform. The MCFRS elected to evacuate the 12th customer, who was intoxicated, by way of the ETEC. The intoxicated customer was transported to Holy Cross Hospital with non-life-threatening injuries for further medical evaluation. There were no issues with the evacuation process and no reported injuries to any customers. MTPD terminated I/C at 14:58 hours. MTPD personnel were clear of the scene and turned the scene back over to RTRA personnel.

## **OFFICE OF SYSTEMS MAINTENANCE COMMUNICATION SECTION (COMM)**

COMM performed a comprehensive radio operational test from Glenmont Station to Wheaton Station, Tracks 1 and Track 2. The test was successful, and the Signal was at an optimal level.

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

## **OFFICE OF TRACK AND STRUCTURES (TRST)**

At approximately 15:48 hours, TRST personnel inspected all the track's infrastructure elements following WMATA's specifications for track inspection as per the TRST-1000 Standard. TRST reported no signs of defective tracks, and after reporting, a good track inspection deemed tracks were safe for train movement. See Appendix B – TRST Track Inspection Report.

## **INCIDENT EMERGENCY RESPONSE DEBRIEF (49 CFR 239) REVIEW**

On January 14, 2021, WMATA hosted an after-action brief. Participants included the WMSC, the Office of Emergency Management, MCFRS and internal WMATA stakeholders. The brief's purpose was to determine the effectiveness of emergency preparedness activities to improve or amend current processes. Recommendations developed as a result of this brief are included in the Recommendations / Corrective Action section below.

1. Communication among all groups at the scene, internal and external, can be improved. It is critical that appropriate department decision-makers arrived on the scene promptly and are prepared to make appropriate decisions.
2. Conveying accurate information regarding the nature of a possible emergency to jurisdictional emergency responders is critical to assisting these jurisdictions in determining their response postures. From the initial train operator report, the manner messages are received at the ROCC and finally conveyed to the jurisdictions; all information must be timely and accurate.
3. Internal WMATA groups talking on different radio channels can't talk to each other. We need a dedicated incident command channel.
4. It is difficult for some operational groups to identify the command post location.
5. Personnel must use approved common language among all parties. This applies to describing the nature of the emergency incident, what is needed from others to mitigate or assist with the incident, progress reports as the incident progresses, and any incident closeout matters that need attention.
6. RTRA supervisors do not typically have the means to get to the command post if not at a station. They ride the train rather than have vehicles. They might need MTPD or others to get them to the command post.
7. Timely and effective hot sticking, WSAD placement, and ETEC cart access/usage continue to be among the most critical baseline aspects of rail incidents that need to be emphasized and practiced among the jurisdictions.
8. WMATA roadways are commonly found proximal to other railroad systems (CSX, VRE, Amtrak, etc.), and opportunities exist for WMATA to give or receive assistance during emergencies in conjunction with these rail systems.
9. Conveying information and providing updates to customers on the disabled train was an issue during this incident. Provisions need to be developed or reinforced for conveying accurate and timely information to customers, especially when power is down on the consist.
10. Radio traffic and emergency scenes tend to become bustling locations and can easily become hectic. Evacuees, media crews, and others need to be directed by appropriate WMATA staff.

## **INTERVIEW FINDINGS**

SAFE conducted ten interviews via virtual Microsoft Teams. These interviews identified the following key findings associated with this event and are as follows:

Train Operator 1 indicated on November 24, 2020, that they notified the ROCC that they experienced a BIE condition. The Train Operator 1 was operating an 8-car train comprised of all 6000-series cars and reported mechanical trouble shortly after departing Glenmont Station in the direction of Shady Grove, Track 2 at approximately 13:00 hours. The first RTRA Supervisor onboard Train ID 109, when it departed Glenmont Station, indicated they heard the train dump, and Train Operator 1 attempted to recharge. The first RTRA Supervisor stated that they opened the Operator's cab to inform Train Operator 1 that they could walk through the train to check for illuminated lights. When the first RTRA Supervisor reached the train's belly car, they observed that the train had pulled apart. The first RTRA Supervisor notified the ROCC immediately of the pull apart. Emergency responders evacuated customers, and no one was injured as a result of this event.

The CENV Vehicle Engineer indicated that their responsibilities with the Maintenance and Service Instructions (MSI) 150088 and 150091 document review are to make necessary updates according to Dellner's Manufacturer documentation they provide to WMATA. The CENV Vehicle Engineer indicated that they identified discrepancies with the current MSI, such as CMNT technicians using different bolts on the buffer tubes, coupler head, and drawbars. The CENV Vehicle Engineer indicated that they sent the bolts off to a lab to get analyzed to ensure the bolts were authorized to be used, and torque striping was applied to all fasteners and components to identify undesired movement between maintenance cycles easily. The CENV Vehicle Engineer indicated that WMATA was not aware they had to measure mechanical coupler and drawbar because this information was not in Dellner Manufacturer's Manual. The CENV Vehicle Engineer indicated that the department had purchased the Go/No-Go thread gauges to make proper measurements and to eliminate or mitigate a reoccurrence permanently (exact date of the purchase was not specified). CENV Vehicle Engineer indicated that they should have all specialized tools required by mid-February 2021. The CENV Vehicle Engineer indicated that Dellner provides all MRO Mechanics training sessions when the revisions are complete. The CENV Vehicle Engineer indicated a Quality Management process included within the revised procedure, which includes the torque settings to be verified by a supervisor and the torque stripe to be verified after application on the bolts by a second employee or supervisor. The CENV Vehicle Engineer indicated that the supervisors plan to develop a checklist and signoff sheet to ensure quality and confirm that these activities are being performed.

The MRO Supervisor indicated that the procedures are made readily available. The procedures are in the shop and are with the technician during the overhaul process. The MRO Supervisor indicated that the only specialized tool required and not available was the Go/No-Go thread gauges. CMNT has ordered the Go/No-Go thread gauges and is waiting on them to come in. The MRO Supervisor indicated that the Go/No-Go thread gauges required for the overhaul were not made known to CMNT personnel. All work has been stopped on the 6K couplers due to not having the required specialized tools required (go, no go gauges and additional tools to be determined). The CMNT Lead Mechanic indicated that all tools have a sticker that confirms the calibration date. If any specialized tools' (Go/No Go thread gauges and Torque Wrenches) calibration was past due, which refers to a situation where an instrument was not checked for calibration at the designated interval, the tools will be reported to the CMNT supervisor for resolution.

## **INVESTIGATIVE FINDINGS**

- Based on MTPD's report, the front quad had four customers, and the back quad had eight customers, one of which was very intoxicated. MCFRS emergency responders evacuated 11 customers onto the roadway and safely escorted them to the Glenmont platform. The MCFRS elected to evacuate the 12th customer, who was intoxicated, by way of the ETEC.



The intoxicated customer was transported to Holy Cross Hospital with non-life-threatening injuries for further medical evaluation.

- There is no procedure within the MSRPH under “Pull-Apart” that defines the trains’ processes when damaged during an event that details steps and movement, as well as communicating with both ends of the separated consist.
- Based on a review of ARS, CCTV, and Interviews, MCFRS evacuated customers from the affected consist as outlined in the MSPRH 4.5.6.3, which states, *“An emergency ladder stored in the end car, shall be securely positioned between the end door of the car and the roadbed.”*
- The total distance the lead car of the consist traveled and made a complete stop from the Glenmont Station platform was 904 feet.
- Based on ARS, RTRA On Scene I/C reported to the ROCC while under FT protection ATC entered the roadway at Glenmont Station, Track 2 to check switches with no issues to report. Additionally, TRST confirmed a good track inspection on the roadway, and tracks were revenue ready. The area was deemed safe for rail vehicle movement.
- The ROCC SPOTS report indicated that Train ID 109 platform side doors commanded closed at 13:00:01 hours. Additionally, Train ID 109 tail cleared Glenmont Station at 13:00:40 hours.
- At 13:00:05 hours, CCTV recording revealed Train Operator 1 operating Train ID 109 (lead car 6155) departing Glenmont Station, Track 1, 8-car marker. Additionally, CCTV recording revealed Train Operator 1 of Train ID 109 (lead car 6155) tail cleared Glenmont Station at 13:00:40 hours.
- SAFE identified through ten interviews conducted and after requesting the employees’ training records that CMNT did not have adequate documentation to reflect if any On-the-Job Training (OJT) had taken place.
- SAFE could not find a conversation via ARS playback that indicates how the ROIC employee received the notification of the Unintentional Uncoupling/Pull-Apart event and what information they were given and not given that may have impacted full, accurate communication being provided to the Montgomery County 911. SAFE identified that the ROIC employee did not solicit the correct information needed so that the Montgomery County 911 emergency dispatcher can send the appropriate response team. SAFE could not determine if the ROIC employee had any distractions present at the time of the event.
- At 13:06:08 hours, an ROIC Specialist contacted Montgomery County 911 and requested medics to respond to Glenmont Station. The ROIC employee took approximately 3 minutes and 20 seconds to complete the transmission with the 911 Emergency Dispatcher.
- The affected MSI 150088 has been updated to include Mechanical Coupler Overhaul, with Dellner identifying and correcting deficiencies in the overhaul process. CENV and Dellner had a discussion on industry best practices and lessons learned and incorporating them into the WMATA overhaul process. However, the documents have not been released. Conversations with the OEM and the receipt of the revised Dellner Operations and Maintenance manual on April 27, 2021, require additional changes to the affected MSIs. The MSI will be finalized after the OEM training. The expected completion date is July 2021.
- On December 18, 2020, the Chief Mechanical Officer (CMO) issued a service bulletin to cease all overhaul work performed on 6K couplers. Additionally, all the overhauled couplers within the WMATA’s storerooms system shall be removed from stock.
- On January 11, 2021, Service Bulletin E-136, 6000 Series Coupler Inspection, was distributed and discussed in the daily safety meeting. The purpose of the new Service Bulletin is to assist qualified personnel on how to perform a more thorough inspection before moving any 6000 Series vehicles either in the yard or for transport to any yard.

- Per the Deputy Chief of CENV, the special tools manufactured in-house have been completed. The last of the Go/No-Go gauges are expected to arrive by May 17, 2021. **Note:** CENV inspected and identified that the gauge vendor manufactured and shipped incorrect gauges. The change has been made, and correct gauges are being manufactured and shipped.
- On March 5, 2021, CENV completed the teardown of all 6K couplers to qualify the threaded surfaces and components and ensure proper torqueing is achieved on all fasteners. CENV identified statistical populations of couplers based on the lifetime mileage accrued. Additionally, a sample size had been selected based on each population size, and the couplers were torn down and evaluated.
- On April 9, 2021, CENV conducted an executive meeting with Dellner to discuss the general terms of training. Internal discussions with the Office of Procurement and Materials (PRMT) led to developing a Scope of Work (SOW) for this effort. CENV first submitted the SOW to Dellner for review on April 16, 2021. CENV revised the SOW due to exceptions taken by Dellner, and the revised SOW was re-submitted to Dellner, for review, on May 7, 2021. PRMT is waiting on a response from Dellner. Training is expected to occur in July of 2021.
- Per CENV, they completed an engineering review of the 7K coupler design and the feasibility of applying a 7K coupler on the 6K fleet. CENV conducted a teardown of a WMATA 7K coupler with the greatest lifetime mileage and evaluated the component's wear to determine if the 7K coupler design was superior to that of the existing 6K and would achieve the desired service life.
- CENV/CMNT has initiated discussions with OEM and Dellner on the procurement of spare parts and the feasibility of Dellner overhauling all 6K couplers. Dellner currently estimates a lead time of 8-10 months on mechanical heads and drawbars. Discussions are now ongoing to expedite the availability of parts. Per CENV, an emergency procurement was initiated to add critical coupler parts to the ongoing parts acquisition contract with Dellner. **Note:** An overhaul of couplers will be performed because of Dellner's proposal to begin the overhaul as early as February of 2022 after all parts are procured and delivered.

## **WEATHER**

At the time of the incident, NOAA recorded the temperature as 52°F with scattered clouds and 42% humidity. SAFE has concluded that weather was not a contributing factor in this incident (Weather source: NOAA – Location: Silver Spring, MD.)

## **HUMAN FACTORS**

### **Fatigue**

Based on SAFE's review of Train Operator 1's 30-day work history, SAFE determined Train Operator 1's 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 fatigue was discounted as a contributing factor for this event.

### **Post-Incident Toxicological Testing**

#### **Train Operator 1**

After reviewing the Train Operator 1's post-incident testing results, it was determined that Train Operator 1 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.

### **IMMEDIATE MITIGATION TO PREVENT RECURRENCE**

- SAFE removed Train ID 109 from service for Post-Incident Inspection.
- Based on WMATA executive management's decision, all 6000-series cars were removed from service due to this being the second related event involving 6000-series cars.

### **PROBABLE CAUSE**

The probable causes of the pull-apart event on November 24, 2020, involving Train ID 109 cars 6177 and 6150, was WMATA's failure to develop, implement and adequately review the safety implications of railcar maintenance, inspection, and overhaul procedures or modifications, including identifying and obtaining the correct and complete associated parts, tools, and training. Based on the mechanical coupler head and drawbar inspection, evidence suggests that the clamping force used to secure the mechanical coupler head on the drawbar was insufficient to prevent the assembly's separation. Additionally, the threads on both the mechanical coupler head and the drawbar were worn, and both units were condemned.

The coupler overhaul procedure provided by the Original Equipment Manufacturer (Dellner) does not mention the requirement and the method of using special tools to verify the thread condition on the mechanical coupler head drawbar. Accordingly, the coupler overhaul procedure is deemed incomplete and is in the process of being updated.

### **RECOMMENDATIONS/CORRECTIVE ACTIONS**

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

| <b>Corrective Action Code</b> | <b>Description</b>   |
|-------------------------------|--|
| 90393_SAFECAPS_CENV_001       | Conduct a review of existing Maintenance and Service Instructions (MSI) 150088, Front Mechanical Coupler Overhaul with OEM to identify and correct deficiencies in overhaul process. Discuss with OEM industry best practices and lessons learned and incorporate into WMATA overhaul process.   |
| 90393_SAFECAPS_CENV_002       | Revise affected MSIs (150088 and 150090). The MSIs shall be revised to require the application of lubrication to all fasteners and mating surfaces, torque striping of all fasteners, and application of Loctite 243, medium-strength adhesive. The MSI shall further be revised to clearly require the use of special tools for torquing of the mechanical head. Lastly, the MSI shall be revised to require gauging of all threaded surfaces/components. |



|                         |  |
|-------------------------|--|
| 90393_SAFECAPS_CENV_003 | Develop and issue a service bulletin to cease all overhaul work performed on 6K couplers and to remove all coupler from the WMATA's store room system from stock.  |
| 90393_SAFECAPS_CENV_004 | Identify and procure all special tools required – mechanical head torque wrench, go/no-go gauges, to accomplish overhaul and initiative procurement of tools as required. In-house production of tools will also be performed as necessary.  |
| 90393_SAFECAPS_CENV_005 | Teardown of all 6K couplers shall be performed to qualify the threaded surfaces and components and ensure proper torque is achieved on all fasteners. CENV will identify statistical populations of couplers based on the lifetime mileage accrued. Sample size will be selected based on each population size and the couplers torn down and evaluated.                             |
| 90393_SAFECAPS_CENV_006 | Develop a Maintenance demonstration program utilizing special tools and revised MSI documentation as well as training of coupler overhaul personnel by OEM.  |
| 90393_SAFECAPS_CENV_007 | CENV Shall undertake an engineering review of the 7K coupler design and feasibility of installing a 7K coupler on the 6K fleet. CENV will conduct a teardown of a WMATA 7K coupler with longest lifetime mileage and perform an evaluation of component wear to determine if the 7K coupler design is superior to that of the existing 6K and will achieve the desired service life. |
| 90393_SAFECAPS_CENV_008 | Shall initiate discussions with the coupler OEM, Dellner, on procurement of spare parts as well as the feasibility of Dellner overhauling all 6K couplers. Dellner currently estimates a lead time of 8-10 months on mechanical heads and drawbars. Discussions are currently on-going to expedite the availability of parts.  |
| 89444_SAFECAPS_OEM_015  | Establish a dedicated common radio channel for appropriate operational groups during emergency incidents.  |
| 89444_SAFECAPS_RTRA_024 | Develop lessons learned to discuss processes and procedures during a pull-apart and smoke event to include communication responsibilities on both ends of the separated consist.   |
| 89444_SAFECAPS_ROCC_022 | Undertake a review of communication processes with the Fire Liaison and the ROCC Assistant Superintendent during emergency events. Incorporate a WMATA cordless desk phone to communicate changes with the OSC, Fire Liaison, and ROCC Assistant Superintendent to streamline information during the ROCC Assistant Superintendent's engagement with the affected console.           |

## APPENDIX A – CMNT SBE-136 6K DELLNER COUPLER INSPECTION

SBE-136 Page 1 of 12


ALWAYS CHECK SOURCE DOCUMENT FOR CURRENT REVISION

| WMATA - VEHICLE PROGRAM SERVICES  |                               |
|---|-------------------------------|
| <b>SERVICE BULLETIN</b>   |                               |
| <b>ATTENTION RAIL EMPLOYEES</b>   |                               |
| TITLE:  | 6K DELLNER COUPLER INSPECTION |
| SB <b>E-136</b> Rev <b>00</b>   | INITIATING DOCUMENT(S): N/A   |
| ASSOCIATED SBs:   | N/A                           |
| <input checked="" type="checkbox"/> SB to be tracked as a campaign <input type="checkbox"/> Manuals are affected (ECN Required) |                               |
| <input type="checkbox"/> Information (APPLICABLE FOR QUICKFLOW ONLY)  |                               |
| CENV/RAIL VEHICLE ENGINEER  | DATE: Dec 18, 2020            |
| PROGRAM/CENV MANAGER APPROVAL   | DATE: Dec 18, 2020            |
| INDEPENDENT QUALITY CONTROL FUNCTION APPROVAL   | DATE: Dec 28, 2020            |
| SAFE APPROVAL   | DATE: 01/11/2021              |
| CMNT APPROVAL   | DATE: 1/11/2021               |
| DEPUTY CMO, CENV APPROVAL   | DATE: Jan 11, 2021            |

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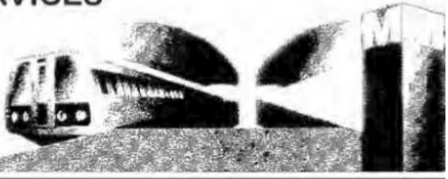
Uploaded to Document Control on 01/11/2021

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|   |                                 |
|---|---------------------------------|
| <b>WMATA - VEHICLE PROGRAM SERVICES</b><br><h1 style="margin: 0;">SERVICE BULLETIN</h1>   |                                 |
| <b>ATTENTION RAIL EMPLOYEES</b>   |                                 |
| <b>DELLNER COUPLER INSPECTION</b><br><br><b>ALSTOM 6K SERIES RAIL CARS</b>  | <b>SBE 136</b><br><b>Rev 00</b> |
| <p><b>1.0 PURPOSE</b></p> <p>The purpose of this Service Bulletin is to provide special instructions to CMNT for the inspection of 6000 series fleet automatic and semi-permanent couplers before attempting to transfer any 6K series railcar from yard to yard safely. The in-house coupler inspection procedure steps are indicated in this SB. This SB is written to be performed at yards with access to a shop and will be performed in-house only. A separate Service Bulletin will be created for yards with no shop access.</p> <p><b>2.0 BACKGROUND</b></p> <p>Due to the recent Pull Apart incidents that occurred on 10/9/20 (at the NoMa station) and 11/24/20 (at the Glenmont station), the 6000 series fleet has been removed from revenue service. Additional safety precautions are being implemented to ensure the automatic and semi-permanent couplers are inspected and either overhauled or certified for use prior to returning to revenue service.</p> <p>The 6K series railcars will be transferred to the assigned S&amp;I Shop and all Dellner automatic &amp; semi-permanent couplers shall be scheduled for removal, tear down and inspection using the go/no-go gauges, to either certify or condemn the couplers.</p> |                                 |
| Page 2 of 12  |                                 |

Uploaded to Document Control on 01/11/2021

ALWAYS CHECK SOURCE DOCUMENT FOR CURRENT REVISION

|   |                                 |
|---|---------------------------------|
| <b>WMATA - VEHICLE PROGRAM SERVICES</b><br><b>SERVICE BULLETIN</b> <br><b>ATTENTION RAIL EMPLOYEES</b>  |                                 |
| <b>DELLNER COUPLER INSPECTION</b><br><b>ALSTOM 6K SERIES RAIL CARS</b>  | <b>SBE 136</b><br><b>Rev 00</b> |
| <b>3.0 IN-HOUSE COUPLER INSPECTION PROCEDURE</b><br><p><b>NOTE:</b> Train movements from the yard to the workshop should be done with separate married pairs. This inspection is to be performed by qualified/trained personnel. Use the attached 6K Coupler Inspection Record Sheet to record findings.</p> <p><b>3.1 6K Front Mechanical Coupler</b></p> <ul style="list-style-type: none"> <li>3.1.1 Perform a general inspection of the entire coupler assembly, including the coupler case, spherical bearing, coupler head insulation blocks, pins and covers, leaf spring, assembly, centering springs and hook uncoupling mechanism hook throat and face, cables, seals and other hardware related.</li> <li>3.1.2 Visually inspect coupler hoses for wear and deterioration. Check air coupling gasket at the coupler face for deterioration.</li> <li>3.1.3 Inspect gauge, hook, coupler buff face, and hook pulling face for any metal buildup or rolled edges.</li> <li>3.1.4 Ensure that the coupler droop limiting cable is in place and properly routed.</li> <li>3.1.5 Inspect buffer to ensure there is no movement of drawbar with respect to buffer tube.</li> <li>3.1.6 Inspect the coupler Guide Rail to verify no loose or any damage condition is present.</li> <li>3.1.7 Inspect the coupler Shear Bolts for damaged (sheared)/missing safety wire.</li> <li>3.1.8 Check torque stripe on Mounting Bolts and nuts.</li> </ul> |                                 |
| <p style="text-align: center;">Page 3 of 12</p>   |                                 |

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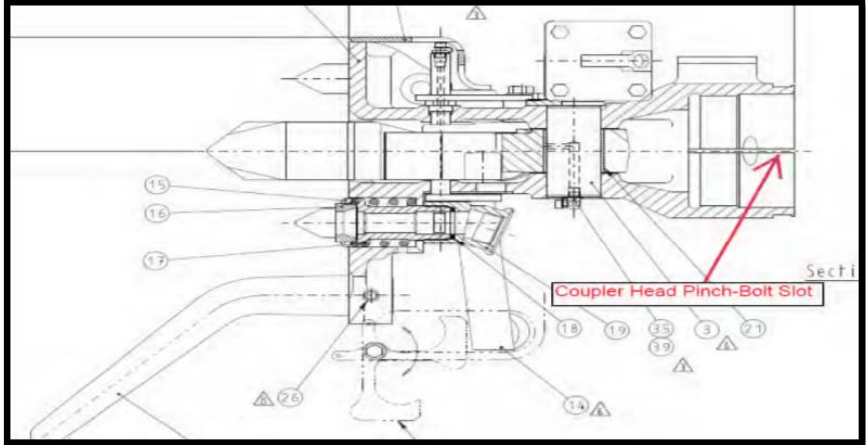
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|---|---------|
| SERVICE BULLETIN  |         |
| ATTENTION RAIL EMPLOYEES  |         |
| DELLNER COUPLER INSPECTION  | SBE 136 |
| ALSTOM 6K SERIES RAIL CARS  | Rev 00  |
| <p>3.1.9 Using a calibrated torque wrench verify that the Coupler Head Pinch Bolt is torqued to 245 ft-lbs. (332 N.m).</p> <p>3.1.9.1 Initially set the torque wrench to 200 ft-lbs. Increment by 10 ft-lbs. after each check until the desired 245 ft-lbs. is reached.</p> <p><b>NOTE:</b> If torque measurements are found to be non-compliant, record measured torque value and torque fastener to required value.</p> <p>3.1.9.2 Reapply torque stripe to head and nut of Pinch Bolt.</p> <p>3.1.10 Using the provided Go/NoGo gauge, check the gap in the Coupler Head Pinch Bolt slot. (See figure 1). Record as Pass/Fail</p> <p><b>NOTES:</b></p> <p>A. Remove only enough sealant at the front of the slot to insert the gauge.</p> <p>B. If the gap fails, perform the following steps.</p> <p>3.1.10.1 Use a standard set of feeler gauges to measure the gap, record the measurement and notify the supervisor. This measurement should not exceed 0.14" + 0.1 (3.6 mm + 2.5).</p> <p>3.1.10.2 Replace fastener with new fastener and torque to 245 ft-lbs. Apply torque stripe to hardware.</p> <p>3.1.10.3 Re-measure gap.</p> <p><b>NOTE:</b> If gap check still fails, record value, notify supervisor and CENV. Based on further evaluation, car movement may be allowed as Lead or Trailing car only.</p> |         |
| Page 4 of 12  |         |

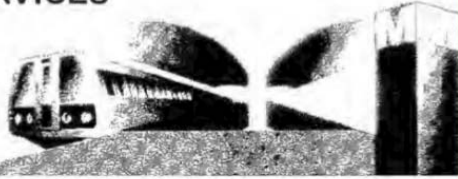
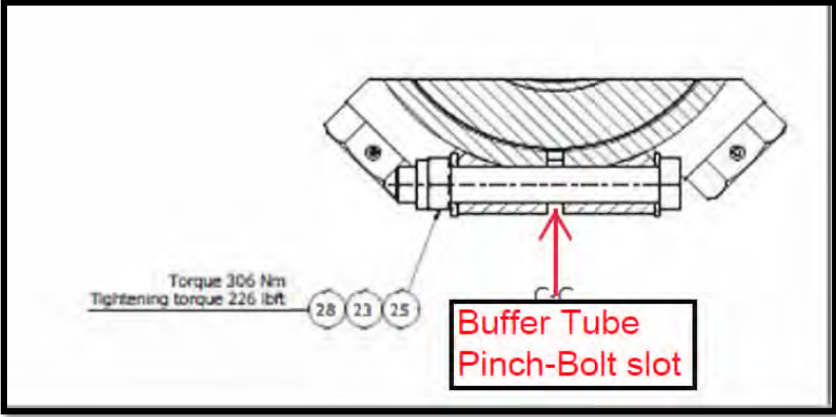
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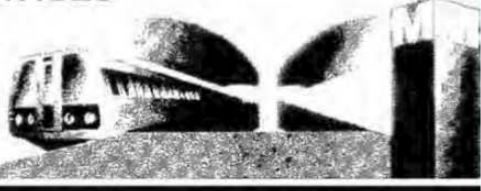
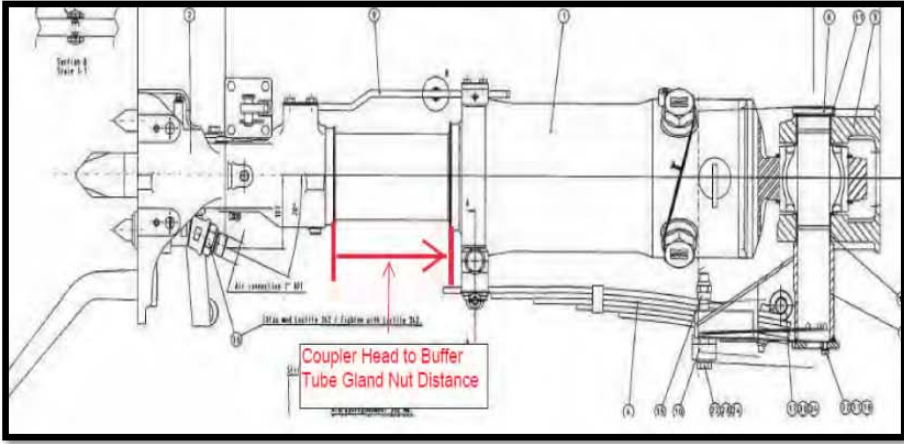
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| <b>WMATA - VEHICLE PROGRAM SERVICES</b><br><h1 style="margin: 0;">SERVICE BULLETIN</h1>  |                                 |
| <b>ATTENTION RAIL EMPLOYEES</b>  |                                 |
| <b>DELLNER COUPLER INSPECTION</b><br><br><b>ALSTOM 6K SERIES RAIL CARS</b>   | <b>SBE 136</b><br><b>Rev 00</b> |
| <div style="text-align: center;">  </div> <p style="text-align: center;"><b>Figure 1. Front Coupler Head Assembly</b></p> <div style="margin-left: 20px;"> <p>3.1.11 Using a calibrated torque wrench verify that the Buffer Gland Bolt is torqued to 225 ft-lbs. (305 N.m).</p> <div style="margin-left: 20px;"> <p>3.1.11.1 Initially set the torque wrench to 200ft-lbs. Increment by 10ft-lbs after each check until the desired 225 ft-lbs. is reached.</p> <p>3.1.11.2 Re-apply torque stripe to head and nut of Gland Bolt.</p> <p><b>NOTE:</b> If torque measurements are found to be non-compliant, record measured torque value and torque fastener to required value.</p> </div> <p>3.1.12 Using the provided Go/NoGo gauge, check the gap in the Gland Bolt slot. (See Figure 2). Record as Pass/Fail.</p> </div> |                                 |
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| <b>ATTENTION RAIL EMPLOYEES</b>  |                                     |
| <b>DELLNER COUPLER INSPECTION</b><br><br><b>ALSTOM 6K SERIES RAIL CARS</b>   | <b>SBE 136</b><br><br><b>Rev 00</b> |
| <p><b>NOTE:</b> If the gap check fails, perform the following steps.</p> <ul style="list-style-type: none"> <li>3.1.12.1 Using a standard set of feeler gauges, measure the gap in the Gland Bolt slot, record value and notify supervisor. This measurement should not exceed 0.32" + 0.1 (8.1mm + 2.5)</li> <li>3.1.12.2 Replace fastener with new fastener and torque to 225 ft-lbs. Apply torque stripe to hardware.</li> <li>3.1.12.3 Re-measure gap.</li> </ul> <p><b>NOTE:</b> If gap check still fails, record value, notify supervisor and CENV. Based on further evaluation, car movement may be allowed as Lead or Trailing car only.</p> |                                     |
|  <p style="text-align: center;"><b>Figure 2. Buffer Tube</b></p>   |                                     |
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| <b>DELLNER COUPLER INSPECTION</b><br><br><b>ALSTOM 6K SERIES RAIL CARS</b>   | <b>SBE 136</b><br><br><b>Rev 00</b> |
| <p>3.1.13 Visually inspect the gland nut to ensure no more than one (1) thread is visible.</p> <p>3.1.14 Using the provided Go/NoGo gauge, check the distance between the coupler head and the buffer gland nut. Record as Pass/Fail. (See Figure 3)</p> <p><b>NOTE:</b> If Go/NoGo gauge measurement fails, the distance must be measured using a calibrated caliper. Acceptable distance is <math>8 \frac{3}{8}" (+\frac{3}{8}" / -0)</math>.</p> <p><b>NOTE:</b> If the distance check fails or more than one (1) gland nut thread is visible, notify supervisor and CENV.</p>  <p><b>Figure 3. Coupler Head to Buffer Tube Gland Nut</b></p> |                                     |
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| <b>DELLNER COUPLER INSPECTION</b><br><br><b>ALSTOM 6K SERIES RAIL CARS</b>   | <b>SBE 136</b><br><br><b>Rev 00</b> |
| <p>3.1.15 On the KL auxiliary control panel, lift the guard, press and hold the UNCOUPLING CONTROL ACTUATOR switch. Observe the coupler function in front of the operating cab, checking for smooth operation.</p> <p>3.1.16 Release the ACTUATOR switch. The coupler hook should return to the normal coupled position.</p> <p><b>3.2 REAR SEMI-PERMANENT COUPLER INSPECTION</b></p> <p>3.2.1 Perform a general inspection of semi-permanent coupler assembly, including the coupler case, spherical bearing, and flange collar. Check for signs of deformation, rust, or damages.</p> <p>3.2.2 Check torque stripe on Mounting Bolts and nuts.</p> <p>3.2.3 Inspect the coupler Guide Rail to verify no loose or damaged condition is present.</p> <p>3.2.4 Inspect the coupler Shear Bolts for damaged (sheared) and missing hardware and safety wire.</p> <p>3.2.5 Inspect Buffer to ensure no movement. The buffer is designed so that no axial or radial movement is possible if buffer is in good condition.</p> <p>3.2.6 Move the coupler up and down, check for excessive play and noise from the spherical bearing.</p> <p>3.2.7 Ensure the coupler droop limiting cable is in place and properly routed.</p> <p>3.2.8 Using a calibrated torque wrench verify that the Coupler Tube Pinch Bolt is torqued to 245 ft-lbs. (332 N.m)</p> <p>3.2.8.1 Initially set the torque wrench to 200 ft-lbs. Increment by 10 ft-lbs. after each check until the desired 245 ft-lbs. is reached.</p> |                                     |
| Page 8 of 12   |                                     |

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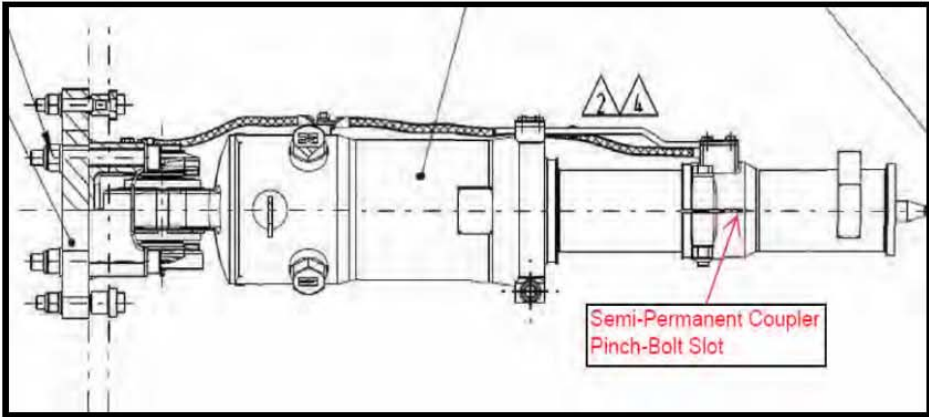


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| <b>DELLNER COUPLER INSPECTION</b><br><br><b>ALSTOM 6K SERIES RAIL CARS</b>  | <b>SBE 136</b><br><br><b>Rev 00</b> |
| <p><b>NOTE:</b> If torque measurements are found to be non-compliant, record measured torque value and torque fastener to required value.</p> <p>3.2.8.2 Reapply torque stripe to head and nut of Coupler Tube Pinch Bolt.</p> <p>3.2.9 Using the provided Go/NoGo gauge, check the gap in the Coupler Tube Head Pinch Bolt slot. Record as Pass/Fail. (See Figure 4)</p> <p><b>NOTES:</b></p> <p>A. Remove only enough sealant at the front of the slot to insert the gauge.</p> <p>B. If the gap check fails, perform the following steps.</p> <p>3.2.9.1 Use a standard set of feeler gauges to measure the gap, record the measurement and notify the supervisor. This measurement should not exceed 0.14" + 0.1 (3.6 mm + 2.5).</p> <p>3.2.9.2 Replace fastener with new fastener and torque to 245 ft-lbs. Apply torque stripe to hardware.</p> |                                     |
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| <b>ATTENTION RAIL EMPLOYEES</b>  |                                 |
| <b>DELLNER COUPLER INSPECTION</b><br><br><b>ALSTOM 6K SERIES RAIL CARS</b>   | <b>SBE 136</b><br><b>Rev 00</b> |
| <p style="text-align: center;">3.2.9.3 Re-measure gap. If the gap measurement still fails, record value, notify supervisor and CENV.</p> <div style="text-align: center; margin: 20px 0;">  </div> <p><b>Figure 4. Semi-Permanent Coupler-Coupler Tube Attachment</b></p> <p>3.2.10 Using a calibrated torque wrench verify that the Buffer Gland Bolt is torqued to 225 ft-lbs. (305 N.m).</p> <p style="margin-left: 40px;">3.2.10.1 Initially set the torque wrench to 200 ft-lbs. Increment by 10ft-lbs after each check until the desired 225 ft-lbs. is reached.</p> <p><b>NOTE:</b> If torque measurements are found to be non-compliant, record measured torque value and torque fastener to required value.</p> <p style="margin-left: 40px;">3.2.10.2 Reapply torque seal to head and nut of Buffer Gland Bolt.</p> |                                 |
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| <b>ATTENTION RAIL EMPLOYEES</b>   |                                     |
| <b>DELLNER COUPLER INSPECTION</b><br><br><b>ALSTOM 6K SERIES RAIL CARS</b>  | <b>SBE 136</b><br><br><b>Rev 00</b> |
| <p>3.2.11 Using the provided Go/NoGo gauge, check the gap in the Gland Bolt slot. (See Figure 2) Record as Pass/Fail.</p> <p>NOTES:</p> <p>A. Remove only enough sealant at the front of the slot to insert the gauge.</p> <p>B. If the gap measurement fails, perform the following steps.</p> <p>3.2.11.1 Using a standard set of feeler gauges, measure the gap in the Gland Bolt slot, record value and notify supervisor. This measurement should not exceed 0.32" + 0.1 (8.1mm + 2.5)</p> <p>3.2.11.2 Replace fastener with new fastener and torque to 225 ft-lbs. Apply torque stripe to hardware.</p> <p>3.2.11.3 Re-measure gap.</p> <p><b>NOTE:</b> If gap check still fails, record value, notify supervisor and CENV.</p> <p>3.2.12 Using the provided Go/NoGo gauge, measure the distance between the buffer gland nut and the short coupler. Record as Pass/Fail If the distance check fails, notify supervisor and CENV.</p> <p><b>NOTE:</b> Once the trains are ready to be transported, it is highly recommended to have a certified Road Mechanic aboard each train consist. Transportation of each train consist shall be performed following MSHRP SOP 32, SOP 34 and Cardinal Rules Section 3. Train speeds should not exceed 15 mph during transport.</p> |                                     |
| <p>Page 11 of 12</p>  |                                     |

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## APPENDIX B – TRST TRACK INSPECTION REPORT

### Track Inspection Report Page 1 of 6

#### WMATA Track Inspection Report

Inspector: [REDACTED]  
Start Date and Time: 11/24/2020 9:56:24 PM  
End Date and Time: 11/25/2020 12:20:48 AM  
Segment: B08-B11 Track 2 451+00-725+18

The inspection has been completed per TRST-1000 (Circle one): Yes / No  
If "No", include the Out Of Compliance Track Inspection Form (found on TRST's home page).  
Notes: Held a safety toolbox meeting, defects have been verified by WMATA 1000 Standards.

| Unique Id | Date                      | Status     | Priority | Component                           | Problem                  | Description   | Value                    | Line            | Track | Rail | Start CM                                 | End CM               | Image   | Optram  |
|-----------|---------------------------|------------|----------|-------------------------------------|--------------------------|---|--------------------------|-----------------|-------|------|--|----------------------|---|---|
| 323a2217  | 11/24/2020<br>10:22:15 PM | UNASSIGNED | Yellow   | 200-X01-<br>CROSS TIES<br>8 ft 6 in | D55-<br>SAFETY<br>HAZARD | Ballast on top of ties unsafe to walk on, it's a safety hazard. To avoid any future injuries. Needs proper maintenance to clear ties for a proper and clear safety walk from tie to tie for all personnel. (Top priority) | 1000.0<br>Linear<br>Feet | B -<br>Glenmont | 2     | Both | 583.00<br><br>Has been updated to 460.00 | 573.00<br><br>473.00 |  |  |

**Note 1:** Track has been inspected in accordance with WMATA's specifications for track inspection as per the TRST-1000. WMATA Track Personnel are responsible for taking corrective action on observed conditions/defects and to notify operations of slow orders and or other corrective measures that are required for the safe passage of trains based on TRST-1000 Standards.

**Note 2:** If no new defects are found, no defects appear above and personnel's signature indicates the inspection was fully performed for the segment. If defects are found, personnel's signature indicates that they have verified the defects found in the report were found during the inspection and they are reflected in the Optram system (link available in the "Optram" column).

Track Inspector:

Supervisor:

Asst. Supt. / Superintendent:



Date:

### Track Inspection Report Page 2 of 6

#### WMATA Track Inspection Report

Inspector: [REDACTED]  
Start Date and Time: 11/25/2020 8:50:06 PM  
End Date and Time: 11/25/2020 11:25:38 PM  
Segment: B08 Track 3 460+69-467+69, B11-B08 Track 1 725+18-451+00

The inspection has been completed per TRST-1000 (Circle one): Yes / No  
If "No", include the Out Of Compliance Track Inspection Form (found on TRST's home page).  
Notes: Held a safety toolbox meeting, defects have been verified by WMATA 1000 Standards.

| Unique Id | Date                      | Status     | Priority | Component                           | Problem                  | Description   | Value                    | Line            | Track | Rail | Start CM | End CM | Image   | Optram  |
|-----------|---------------------------|------------|----------|-------------------------------------|--------------------------|---|--------------------------|-----------------|-------|------|----------|--------|---|---|
| a876771c  | 11/25/2020<br>10:16:17 PM | UNASSIGNED | Yellow   | 200-X01-<br>CROSS TIES<br>8 ft 6 in | D55-<br>SAFETY<br>HAZARD | Ballast on top of ties unsafe to walk on, it's a safety hazard. To avoid any future injuries. Needs proper maintenance to clear ties for a proper and clear safety walk from tie to tie for all personnel. (Top priority) | 1000.0<br>Linear<br>Feet | B -<br>Glenmont | 2     | Both | 460.00   | 473.00 |  |  |

**Note 1:** Track has been inspected in accordance with WMATA's specifications for track inspection as per the TRST-1000. WMATA Track Personnel are responsible for taking corrective action on observed conditions/defects and to notify operations of slow orders and or other corrective measures that are required for the safe passage of trains based on TRST-1000 Standards.

**Note 2:** If no new defects are found, no defects appear above and personnel's signature indicates the inspection was fully performed for the segment. If defects are found, personnel's signature indicates that they have verified the defects found in the report were found during the inspection and they are reflected in the Optram system (link available in the "Optram" column).

Track Inspector:

Supervisor:

Asst. Supt. / Superintendent:

Date:



## WMATA Track Inspection Report

Inspector: [REDACTED]  
 Start Date and Time: 11/28/2020 7:57:56 PM  
 End Date and Time: 11/28/2020 9:59:13 PM  
 Segment: B08-B11 Track 2 451+00-725+18

The inspection has been completed per TRST-1000 (Circle one): Yes / No  
 If "No", include the Out Of Compliance Track Inspection Form (found on TRST's home page).

Notes:

No Defects Recorded

**Note 1:** Track has been inspected in accordance with WMATA's specifications for track inspection as per the TRST-1000. WMATA Track. Personnel are responsible for taking corrective action on observed conditions/defects and to notify operations of slow orders and or other corrective measures that are required for the safe passage of trains based on TRST-1000 Standards.

**Note 2:** If no new defects are found, no defects appear above and personnel's signature indicates the inspection was fully performed for the segment. If defects are found, personnel's signature indicates that they have verified the defects found in the report were found during the inspection and they are reflected in the Optram system (link available in the "Optram" column).

Track Inspector:

Supervisor:

Asst. Supt./ Superintendent:

Date:

## WMATA Track Inspection Report

Inspector: [REDACTED]  
 Start Date and Time: 12/1/2020 10:24:27 PM  
 End Date and Time: 12/2/2020 12:58:55 AM  
 Segment: B08 Track 3 460+69-467+69, B11-B08 Track 1 725+18-451+00

The inspection has been completed per TRST-1000 (Circle one): Yes / No  
 If "No", include the Out Of Compliance Track Inspection Form (found on TRST's home page).

Notes: Held a safety toolbox meeting. defects have been verified by WMATA 1000 Standards.

| Unique Id | Date                  | Status     | Priority | Component     | Problem            | Description   | Value        | Line         | Track | Rail | Start CM | End CM | Image                      | Optram                      |
|-----------|-----------------------|------------|----------|---------------|--------------------|---|--------------|--------------|-------|------|----------|--------|----------------------------|-----------------------------|
| dc9f10bf  | 12/1/2020 10:41:05 PM | UNASSIGNED | Yellow   | 200-F06-STUDS | D03-BROKEN/SHEARED | Hixon fasteners broken bolts gauge side field side 2 Fasteners not in a row | 2.0 Quantity | B - Glenmont | 1     | Left | 714.90   | 714.90 | <a href="#">Image Link</a> | <a href="#">Optram Link</a> |

**Note 1:** Track has been inspected in accordance with WMATA's specifications for track inspection as per the TRST-1000. WMATA Track. Personnel are responsible for taking corrective action on observed conditions/defects and to notify operations of slow orders and or other corrective measures that are required for the safe passage of trains based on TRST-1000 Standards.

**Note 2:** If no new defects are found, no defects appear above and personnel's signature indicates the inspection was fully performed for the segment. If defects are found, personnel's signature indicates that they have verified the defects found in the report were found during the inspection and they are reflected in the Optram system (link available in the "Optram" column).

Track Inspector:

Supervisor:

Asst. Supt./ Superintendent:

Date:



## Track Inspection Report Page 5 of 6


### WMATA Track Inspection Report

Inspector: [REDACTED]  
 Start Date and Time: 12/2/2020 9:00:15 PM  
 End Date and Time: 12/3/2020 2:06:45 AM  
 Segment: B08-B11 Track 2 451+00-725+18

The inspection has been completed per TRST-1000 (Circle one): Yes / No

If "No", Include the Out Of Compliance Track Inspection Form (found on TRST's home page).

Notes: Held a safety toolbox meeting. defects have been verified by WMATA 1000 Standards.

| Unique Id | Date                 | Status     | Priority | Component            | Problem      | Description  | Value        | Line         | Track | Rail  | Start CM | End CM | Image   | Optram                      |
|-----------|----------------------|------------|----------|----------------------|--------------|--|--------------|--------------|-------|-------|----------|--------|---|-----------------------------|
| 56fe3693  | 12/3/2020 1:25:07 AM | UNASSIGNED | Yellow   | 200-R01-RUNNING RAIL | D06-CORRODED | Rail base corroded to its thin point, under Wmsta 1000 Table 107.10B pg 33 severe (Rail Base corrosion) (Remedial Action To be Taken) A and or B. Replacement of Rail is Needed. Also pg 44 Table 107.10G Rail Base Corrosion Standards. | 1.0 Quantity | B - Glenmont | 2     | Right | 501.60   | 501.60 |  | <a href="#">Optram Link</a> |

**Note 1:** Track has been inspected in accordance with WMATA's specifications for track inspection as per the TRST-1000. WMATA Track. Personnel are responsible for taking corrective action on observed conditions/defects and to notify operations of slow orders and or other corrective measures that are required for the safe passage of trains based on TRST-1000 Standards.

**Note 2:** If no new defects are found, no defects appear above and personnel's signature indicates the inspection was fully performed for the segment. If defects are found, personnel's signature indicates that they have verified the defects found in the report were found during the inspection and they are reflected in the Optram system (link available in the "Optram" column).

Track Inspector:

Supervisor:

Asst. Supt. / Superintendent:

Date:

## Track Inspection Report Page 6 of 6

### WMATA Track Inspection Report

Inspector: [REDACTED]  
 Start Date and Time: 12/4/2020 12:18:04 AM  
 End Date and Time: 12/4/2020 2:11:56 AM  
 Segment: B08 Track 3 460+69-467+69, B11-B08 Track 1 725+18-451+00

The inspection has been completed per TRST-1000 (Circle one): Yes / No

If "No", Include the Out Of Compliance Track Inspection Form (found on TRST's home page).

Notes: Held a safety toolbox meeting. defects have been verified by WMATA 1000 Standards. Personnel was able to complete A track inspection from (B11-B09). Do to Radio Comm having the work area from (B09-B08) personnel was unable to proceed with inspection do to Radio communication being down.

**No Defects Recorded**

**Note 1:** Track has been inspected in accordance with WMATA's specifications for track inspection as per the TRST-1000. WMATA Track. Personnel are responsible for taking corrective action on observed conditions/defects and to notify operations of slow orders and or other corrective measures that are required for the safe passage of trains based on TRST-1000 Standards.

**Note 2:** If no new defects are found, no defects appear above and personnel's signature indicates the inspection was fully performed for the segment. If defects are found, personnel's signature indicates that they have verified the defects found in the report were found during the inspection and they are reflected in the Optram system (link available in the "Optram" column).

Track Inspector:

Supervisor:

Asst. Supt. / Superintendent:

Date:

## **APPENDIX C – INTERVIEW SUMMARIES**

### **CENV**

#### **CENV VEHICLE ENGINEER**

The CENV Vehicle Engineer is a WMATA employee with 19 years of service. The CENV Vehicle Engineer started off as an Electrician in July 2001.

During the virtual interview, the CENV Vehicle Engineer indicated that their responsibilities with the review of MSI 150088 and 150091 documents is to make necessary updates according to Dellner Manufacturer's documentation provided to WMATA. The CENV Vehicle Engineer indicated that they are using email documentation from the Dellner Manufacturer Manual-Revision 6 and other documents provided by the manufacturer to develop the coupler rebuild process. The CENV Vehicle Engineer indicated that they identified discrepancies with the current MSI, such as CMNT technicians using different types of bolts on the buffer tubes, coupler head and drawbars. The CENV Vehicle Engineer indicated that they sent the bolts off to a lab to get analyzed to make sure the bolts were authorized to be used and torque striping was applied to all fasteners and components to easily identify undesired movement between maintenance cycles. The CENV Vehicle Engineer indicated that WMATA was not aware they had to measure the mechanical coupler and drawbar because this information was not in the Dellner Manufacturer Manual. CENV is now purchasing the Go/No-Go thread gauges to make those measurements. The CENV Vehicle Engineer indicated that they have been working on the MSI revision for approximately a month now. The CENV Vehicle Engineer indicated that they should have all specialized tools required by mid-February 2021. The CENV Vehicle Engineer indicated that a deadline was not set for the MSI revision when it was first assigned, but now the deadline is mid-February 2021. The CENV Vehicle Engineer indicated that one obstacle they have faced to complete the MSI revisions is getting the specialized tools required from Dellner Manufacturer. CENV Vehicle Engineer indicated after completion of the MSI revision, WMATA will be able to perform the required steps within the Dellner Rebuild process. The CENV Vehicle Engineer indicated that Dellner is providing training sessions to all MRO Mechanics when the revisions are complete. The CENV Vehicle Engineer indicated that there is a Quality Management process included in the revised procedure, which requires the torque settings to be verified by a supervisor and the torque stripe to be verified after application on the bolts by a second employee or supervisor. The CENV Vehicle Engineer indicated that the supervisors plan on developing a checklist and signoff sheet to ensure quality.

## CMNT

### CMNT MRO SUPERVISOR

The MRO Supervisor is a WMATA employee with two years of experience as a Supervisor and seven years of service. The MRO Supervisor held various positions, such as Inspection Office Mechanic and Leadman positions.

During the virtual interview, the MRO Supervisor indicated their role and responsibility as a supervisor is to ensure they maintain a safe work environment for the work crew and make sure everyone is following SOPs. The MRO Supervisor stated that there are written procedures for the rebuild process in place, such as Service Bulletin SBE-132 revision 01. The MRO Supervisor stated that the procedures are made readily available. The procedures are in the shop and are with the technicians during the overhaul process. The MRO Supervisor advised the specialized tools that are required for the rebuild process are torque wrench and coupler gauges that are inspected and verified and calibrated by assigned CMNT personnel. The MRO Supervisor indicated that the only specialized tool required that is not available is the Go/No-Go thread gauge. CMNT has ordered them and are waiting on them to come in. The MRO Supervisor indicated that the Go/No-Go thread gauges that were required for the overhaul and the torque wrench for the coupler head was not made known to CMNT personnel. All work has been stopped on the 6K couplers as a result of not having the required tools. The Leadman acquires all parts for the rebuild process and based on this interview; the MRO Supervisor verifies if the correct hardware was provided before installation. The MRO Supervisor indicated they are aware of a quality management process for safety-critical components to identify possible deficiencies with processes, tools, hardware and alignment with the manufacturer's rebuild processes. The MRO Supervisor indicated that training is administered by self-study, reviewing service bulletins, heavy repair manual, MSI and other documents. The MRO Supervisor indicated that during the OJT process, a senior technician is trained by the manufacturer and then that senior technician will conduct OJT with CMNT technicians. The MRO Supervisor indicated that they did not recall signing an OJT form for coupler rebuild training or anyone receiving certification from the manufacturer. The MRO Supervisor indicated that there is a walkthrough of the entire process with engineering and key stakeholders of the assembly of couplers before the MSI and service bulletin procedures were implemented. The MRO Supervisor indicated during their audits, they witness and verify the torque wrench is being set at its proper value. The MRO Supervisor indicated they do not sign the final approval of the audit; a third party does. The MRO Supervisor indicated they rebuilt more than ten (10) couplers. The MRO Supervisor indicated they are involved in the development of the new MSI procedures. The MRO Supervisor indicated they have a list of rail cars they repaired documented in Maximo.

## CMNT MRO COUPLER SHOP LEAD REBUILT MECHANIC

The MRO Coupler Shop CMNT Lead Mechanic is a WMATA employee with five years of experience as an MRO Coupler Shop CMNT Lead and 22 years of service. The MRO Coupler Shop CMNT Lead Mechanic held various positions, such as Bus Mechanic, Mechanic B, Mechanic C and Mechanic D.

The MRO Coupler Shop CMNT Lead Mechanic stated they have been rebuilding couplers for ten (10) years. The MRO Coupler Shop CMNT Lead indicated that their role and responsibility is to rebuild couplers since they have the most experience. The MRO Coupler Shop CMNT Lead Mechanic stated that since they are one of the senior leads, they went to receive hands-on training from Dellner Manufacturer at their facility. The MRO Coupler Shop CMNT Lead Mechanic indicated that they would then conduct hands-on OJT with the CMNT technicians that did not receive the hands-on training from Dellner Manufacturer. The MRO Coupler Shop CMNT Lead Mechanic indicated that there are written procedures for the rebuild process. The MRO Coupler Shop CMNT Lead Mechanic indicated that the engineers write their procedures based on observing the senior lead mechanics teardown and rebuild the coupler. The MRO Coupler Shop CMNT Lead Mechanic stated they provide engineers with recommendations on what to include in the procedures, but the engineers still write the procedures their way. The MRO Coupler Shop CMNT Lead Mechanic indicated that they believe the procedures can be improved. The MRO Coupler Shop CMNT Lead Mechanic indicated that the only specialized tool required per Dellner Manufacturer's recent recommendation is the Go/No-Go thread gauges. The MRO Coupler Shop CMNT Lead Mechanic indicated that the Go/No-Go thread gauge is a good tool to use to measure the threads but is not available for WMATA's use. Additionally, WMATA personnel never used the Go/No-Go thread gauges before. When the MRO Coupler Shop CMNT Lead Mechanic and other CMNT personnel went to Dellner Manufacturer machine shop for training, Dellner Manufacturer never mentioned the Go/No-Go thread gauges. The MRO Coupler Shop CMNT Lead Mechanic indicated that they do verify if the correct hardware was provided before installation. The MRO Coupler Shop CMNT Lead Mechanic indicated there is no process on when a preventive maintenance inspection is performed. The inspectors report their findings back to the MRO Coupler Shop.

**Note:** *The following mechanic was involved in the rebuild of the couplers (work order number: 12424570) on April 12, 2017, from car 6177, which was associated with the pull-apart incident.*

## CMNT LEAD MECHANIC

The CMNT Lead Mechanic is a WMATA employee with 14 years of service. The CMNT Lead Mechanic held various positions such as Mechanic AA, Mechanic A, Mechanic B, Mechanic C, Mechanic D and Mechanic Helper.

During the virtual interview, the CMNT Lead Mechanic stated before their coupler inspection they received a safety bulletin from their supervisor with instructions and steps to follow during the inspection. The CMNT Lead Mechanic indicated they received OJT on how to perform their inspections, but there were no sign off sheets for OJT. The CMNT Lead Mechanic indicated that they are not familiar with Service Bulletin SBE-120 and Service Bulletin SBE-132, and they don't know if these bulletins have been incorporated in their preventative maintenance inspection

procedure. The CMNT Lead Mechanic indicated during their inspection routine they look for any defects with bolts, torque stripes and if there are any loose components. If there are any defects noted, it is reported to their supervisor and the supervisor will make the determinations on next steps. The CMNT Lead Mechanic indicated that all tools have a sticker that confirms the calibration is valid or not expired. The CMNT Lead Mechanic stated that all specialized tools required for their task are made readily available. The CMNT Lead Mechanic could not properly explain how to check to see if the gland nut is loose on a coupler. The CMNT Lead Mechanic indicated during their 6000 series couplers and drawbar inspection on October 10, 2020, they noticed that the coupler nut was under torque value and they made the torque value correction and let their supervisor know.

**Note:** *The following mechanic performed a 6000 series couplers and drawbar inspection (work order number: 15932362) on October 10, 2020, on car 6177, which was associated with the pull-apart incident.*

#### CMNT MECHANIC AA

The CMNT Mechanic AA is a WMATA employee with 20 years of service. The CMNT Mechanic AA held various positions such as Mechanic A, Mechanic B, Mechanic C, Mechanic D and Mechanic Helper.

During the virtual interview, the CMNT Mechanic AA stated they have been performing C4 inspections for approximately twenty (20) years. The CMNT Mechanic AA indicated while performing the coupler inspection, they use the gauges and will issue a fail or pass rating. The CMNT Mechanic AA indicated they had been trained over the years several different times on coupler inspections and they always have the procedures with them as a reference on how to properly perform the measurements. The CMNT Mechanic AA indicated they start by checking the face and coupler pinheads for any defects. Then they perform a function and movement inspection on the coupler and then a visual inspection of the coupler's body and hardware, looking for any defects. After the coupler inspection is completed, the CMNT Mechanic AA indicated that they check wheel measurements and brake disc checks and outside inspections of the trucks. The CMNT Mechanic AA advised they then complete the undercar inspection and make necessary documentations. The CMNT Mechanic AA stated they perform Task 20, trucks and coupler inspection often. The CMNT Mechanic AA indicated they had not identified any gaps with the 6000 Series preventative maintenance inspection procedure. The CMNT Mechanic AA indicated they received OJT on Task 20, trucks and coupler inspection. The CMNT Mechanic AA indicated that there were no sign-in sheets for OJT. The CMNT Mechanic AA indicated that the tools used for the inspection process were provided. The tools used were the torque wrench for the coupler bolts to set the torque on the collector assembly components and gauges for the couplers and caliber pins. The CMNT Mechanic AA indicated they use all tools that are required to be used. The CMNT Mechanic AA indicated the only secondary checks are for the brake disc and not the torque applied collector shoe assembly. The CMNT Mechanic AA indicated when they inspect the couplers, they inspect every nut and every bolt for missing torque stripes or being loose. The CMNT Mechanic AA indicated that checking every nut and every bolt should be included in the procedures since they have torque value. The CMNT Mechanic AA indicated that there is no one coming back to perform a check on their inspection when completed. The CMNT



Mechanic AA indicated if they find a bolt or nut with a broken torque stripe, the process for repairing them is to report and write up the defect to their supervisor and the supervisor will make the determinations on the next steps. The CMNT Mechanic AA indicated that they had no idea what the tube bolt torque was until this last pull apart incident, but there are still no procedures on how to check the torque during an inspection. The CMNT Mechanic AA indicated if they identified that the gland nut in the draft bar was broken, they would just report the defect to their supervisor and the next shift will make the repairs. The CMNT Mechanic AA indicated that they record all deficiencies to their supervisor to assist with repeat deficiencies. Sometimes they make recommendations to their supervisor to contact MRO when they rebuild couplers to make sure the deficiencies are repaired. The CMNT Mechanic AA indicated since the pull-apart, they are inspecting every inch of the couplers now. The CMNT Mechanic AA indicated Service Bulletin SBE-132 and SBE-120 had not been implemented to their preventative maintenance inspection procedure.

**Note:** *The following mechanic was involved in the inspection of the Trucks and Couplers (work order number: 15894397) C4 inspection on October 17, 2020, from car 6177, which was associated with the pull-apart incident.*

#### CMNT MECHANIC AA

The CMNT Mechanic AA is a WMATA employee with six years of service. The CMNT Mechanic AA held various positions such as Mechanic A, Mechanic B, Mechanic C, Mechanic D and Mechanic Helper.

During the virtual interview, the CMNT Mechanic AA stated during their coupler inspection routine, they inspect the bolts for defects, make sure gland nuts are flush and hardware is properly torqued. The CMNT Mechanic AA indicated that they use Service Bulletin SBE-120 for their preventative maintenance inspection procedure. The CMNT Mechanic AA indicated that they normally perform the C4 inspection and this was the first time they performed a *6000 series couplers and drawbar inspection*. The CMNT Mechanic AA stated they received OJT on how to perform their inspections, but there were no sign-off sheets for OJT. The CMNT Mechanic AA indicated that they only know about Service Bulletin SBE-120 and have not received the updated Service Bulletin SBE-132 for their preventative maintenance inspection procedure. The CMNT Mechanic AA stated that the tool they used are gauges, torque wrench and Go/No-Go thread gauges. The CMNT Mechanic AA indicated that all tools have a sticker that confirms the calibration is valid and not expired. The CMNT Mechanic AA stated all parts are received from the storeroom. The CMNT Mechanic AA indicated that they assumed they were using the tools required but found out after the pull apart that they were not. Not having Go/No-Go thread gauges was identified as a gap with the 6000 Series preventative maintenance inspection procedure. The CMNT Mechanic AA indicated that if they find any defects when conducting an inspection, they will fill out a form and submit it to their supervisor. The supervisor will then determine if they can correct the defect immediately or have it resolved on the next shift.

**Note:** *The following mechanic performed a 6000 series couplers and drawbar inspection (work order number: 15932362) on October 10, 2020, from car 6177, which was associated with the pull-apart incident.*

## CMNT MRO MECHANIC B

The CMNT Mechanic B is a WMATA employee with a few months of experience building couplers and eight years of service.

During the virtual interview, the CMNT Mechanic B stated they have not worked in the coupler shop for approximately three years. The CMNT Mechanic B indicated that when they first got assigned to the coupler shop, they were not building couplers because there was no procedure available back then. During that time, the only work that was being performed was tearing down couplers, cleaning them and storing them away. The CMNT Mechanic B indicated that there were no sign-in sheets for OJT regarding the coupler rebuild process. The CMNT Mechanic B advised that none of the Mechanics wanted to rebuild the couplers without procedures, but management was trying to force the Mechanics to rebuild the couplers anyway. The CMNT Mechanic B indicated that a CMNT Mechanic AA agreed to rebuild the couplers but advised they would not sign off on them, but another CMNT Mechanic AA agreed to sign off on rebuilding the couplers without a procedure in place. Additionally, the CMNT Mechanic B indicated they did not even have the proper tools to rebuild the couplers. The CMNT Mechanic B advised the Leadman acquires all parts for the rebuild process and the mechanics would take a cart to retrieve the parts. The CMNT Mechanic B indicated they did not recall verifying that the correct parts were being used. The CMNT Mechanic B advised they do not have access to enter data in the Maximo database.

**Note:** *The following mechanic was involved in the rebuild of the couplers (work order number: 12424570) on April 12, 2017, from car 6177, which was associated with the pull-apart incident.*

## **RTRA**

### TRAIN OPERATOR 1

Train Operator 1 is a WMATA employee with six years of service. The Train Operator started off as a Bus Operator then certified as a Train Operator in December 2016. The Train Operator re-certified in November 2020.

During the virtual interview, Train Operator 1 stated on November 24, 2020, that at approximately 13:00 hours, they started their first trip to Shady Grove Station after receiving permission from Glenmont Station Terminal Supervisor. Train Operator 1 indicated that they departed from Glenmont Station Track 1 with a lunar signal, correct rail alignment, and had speed commands. Train Operator 1 stated their train experienced a BIE condition, so they attempted to recharge but was unsuccessful. Train Operator 1 indicated that they contacted the ROCC. Additionally, Train Operator 1 indicated that they lost all doors, brakes on, and brake pipe pressure. Train Operator 1 indicated the first RTRA Supervisor who was on board at the time of the event, began walking through the consist and contacted the ROCC about the train pull apart between cars 6177 and 6150. At that time, Train Operator 1 indicated they made announcements to their customers, applied handbrakes to open-ended quad cars 6155, 6154, and 6176. Train Operator 1 indicated that Train Operator 2 was on the consist at the time of the incident and cushioned towards Brentwood Rail Yard. Train Operator 2 applied handbrakes to car 6177. Train Operator 1 spoke with the customers to see if they were okay, and all customers denied medical assistance. Train Operator 1 had all four (4) customers walk up to car 6177 to await the MCFRS response. Train Operator 1 indicated the fire department installed the emergency ladder that was securely positioned on lead car 6155 and placed the ladder on the roadway for the customers to be assisted down the ladder when they arrived on the scene.

## TRAIN OPERATOR 2

Train Operator 2 is a WMATA employee with 16 years of service. Train Operator 2 started off as a Bus Operator and then was certified as a Train Operator in 2006.

During the virtual interview, Train Operator 2 stated on November 24, 2020, they got off their train and boarded the incident train, which was Train ID 109, to cushion towards Brentwood Rail Yard. When Train Operator 1 departed Glenmont Station, while the train was crossing the interlocking, Train Operator 2 heard the train dump. Train Operator 2 indicated that the first RTRA Supervisor started walking through the train to investigate and reported the train pulled-apart. Train Operator 2 was instructed by the first RTRA Supervisor to put the hand brake on car 6177 and Train Operator 2 was also instructed to keep the customers updated. Train Operator 2 advised there were no radio issues.

## FIRST RTRA SUPERVISOR

The first RTRA Supervisor is a WMATA employee with 16 years of experience as a Supervisor and 21 years of service. The first RTRA Supervisor held various positions, such as Bus Operator, Train Operator and Station Manager.

The first RTRA Supervisor stated on November 24, 2020, at approximately 13:00 hours, they were onboard Train ID 109 when it departed Glenmont Station. While the train was crossing the interlocking, the first RTRA Supervisor heard the train dump, and Train Operator 1 attempted to recharge. The first RTRA Supervisor indicated that they opened the Operator's cab to inform Train Operator 1 that they would walk through the train to check for illuminated lights. When the first RTRA Supervisor reached the belly of the train, they observed that the train had pulled apart. ROCC was notified of the pull apart. At approximately 13:06 hours, the first RTRA Supervisor instructed Train Operator 1 to make announcements to the customers and walk through the train to get a count of the customers aboard the train. At approximately 13:15 hours, the hand brake was applied to car 6150 by Train Operator 2. At approximately 13:20 hours, the first RTRA Supervisor was given FT protection to go on the roadway and board the train. The first RTRA Supervisor checked on the customers, and no medical assistance was needed on either consist. At approximately 13:24 hours, an attempt to recharge on both consists failed. At approximately 13:25 hours, the first RTRA Supervisor hot stick and confirmed third rail power was de-energized at CM B2-173+00. The first RTRA Supervisor indicated they installed the emergency ladder that was securely positioned between the car's end doors and placed the ladder on the roadway for the customers to be assisted down the ladder by the fire department.