

# The Washington Metrorail Safety Commission



## Safety Audit

of the Washington Metropolitan Area Transit Authority

## Audit of Rail Operations



Final Report:  
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Prepared under the authority of the Washington Metrorail Safety Commission

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# Executive Summary

**Elements of Metrorail have a culture that accepts noncompliance with written operational rules, instructions, and manuals.**

The Washington Metrorail Safety Commission (WMSC) performed this audit of Washington Metropolitan Area Transit Authority (WMATA) Metrorail's rail operations practices through in-depth interviews, site visits, and document and data reviews conducted in 2021. The scope of this audit includes rail operations and the personnel directly involved in railcar (Class 1 vehicle) movements both on mainline and in rail yards, as well as station managers and station operations. This includes interlocking operators, train operators, station managers, rail supervisors, and other associated management, training and quality assurance personnel and practices. Operational practices, procedures, equipment, modifications and associated training are assessed in relation to rules, procedures, regulations and best practices, and the related aspects of Metrorail's safety plans governing policy and procedure development, implementation and compliance, management structure, planning and governance, and associated training. The WMSC appreciates the cooperation of Metrorail personnel during this audit.

This audit demonstrates a number of areas where Metrorail is not meeting its own written requirements, does not have adequate procedures, processes or requirements, or does not have adequate training, coordination and supervision. As a result, the WMSC is issuing 14 findings requiring Metrorail to develop corrective action plans (CAPs). The WMSC is also issuing 3 recommendations that Metrorail must address.

As described in the findings below, audit interviews, site visits and document reviews demonstrate that elements of Metrorail have a culture that accepts noncompliance with written operational rules, instructions, and manuals.

In addition, Metrorail does not effectively identify, track, communicate and address operational hazards as required by its Public Transportation Agency Safety Plan (PTASP). Metrorail also has inadequate internal communication, coordination and processes to effectively manage change as required by its PTASP, the WMSC and the FTA.

This audit identifies a number of specific safety gaps related to Metrorail training and certification requirements that create safety risks due to inadequate training, knowledge, certification or oversight requirements, a failure to meet those requirements, or a lack of documented procedures and processes for personnel to be trained on including:

- Metrorail creates safety risks by not requiring and conducting territory familiarization and physical characteristics training, and not assessing knowledge of physical characteristics prior to assigning operations personnel work on a line, in a terminal or in a yard.
- Metrorail is not meeting its operational refresher training and recertification requirements.





- Metrorail is not effectively training and certifying personnel authorized to operate trains on all active railcar fleets.
- Metrorail has not documented procedures for terminal supervisors, and has not established the effective formal training for terminal supervisors needed to safely perform their duties.
- Metrorail does not have documented criteria to determine student proficiency in practical demonstrations of safety-critical operational tasks.
- Metrorail does not conduct effective oversight of training instructors.
- Metrorail does not ensure personnel serving as on-the-job training instructors, including those personnel described as line platform instructors (LPIs), are effective and have specific training and direction on what to teach and how to assess their assigned students.

With frequent modifications due to temporary and permanent orders, and outdated versions of Metrorail's rulebook being distributed to personnel when hard copies are available, the latest Metrorail rules are not easily accessible to Train Operators. This creates document control issues and makes a rule requiring personnel to carry the latest version of the Metrorail Safety Rules and Procedures Handbook (MSRPH) unrealistic.

Related to Metrorail's internal quality assurance practices, some Department of Rail Transportation (RTRA) QA/QC audits contain conclusions that do not match actual conditions. RTRA's QA/QC procedures do not include complete work instructions for all audits or specific instructions for removing personnel from service. Metrorail also closes internal corrective actions and identified issues, including those related to RTRA QA/QC audits, without fully identifying or completing required improvements or changes.

Other findings in this audit include that Metrorail does not provide safety oversight of all safety equipment that is or may be past its calibration date that may be in use by operations personnel. Specifically, the WMSC observed electrical safety gloves past their calibration date in the field. Supervisors stated they did not know the gloves had calibration dates.

Recommendations in this audit relate to effective processes to consider and act upon safety input from employees, dedicating training instructors to operations divisions, and addressing a gap relating to certification for interlocking operators to hand crank switches.

WMATA is required to propose a Corrective Action Plan (CAP) for each finding and to respond to each recommendation no later than 30 days after the issuance of this report.

**The WMSC observed electrical safety gloves past their calibration date in the field.**





## **Background** and Scope

# Background and Scope

The scope of this audit includes rail operations and the personnel directly involved in railcar (Class 1 vehicle) movements both on mainline and in rail yards, as well as station managers and station operations. This includes interlocking operators, train operators, station managers, rail supervisors, and other associated management, training and quality assurance personnel and practices. Operational practices, procedures, equipment, modifications and associated training are assessed in relation to rules, procedures, regulations and best practices, and the related aspects of Metrorail's safety plans governing policy and procedure development, implementation and compliance, management structure, planning and governance, and associated training.

This audit does not focus on the Rail Operations Control Center (ROCC), which the WMSC assessed through separate audit work conducted in 2020, but does include related practices such as communications and the cooperation between field personnel and the ROCC. Similarly, the WMSC separately issued an audit of Metrorail's Roadway Worker Protection (RWP) program as part of this triennial audit cycle in 2020, issued an audit of Metrorail's revenue vehicle (railcar) maintenance, engineering, rehabilitation and overhaul programs in 2021, and issued an audit of Metrorail's fitness for duty programs in 2021, so those elements are not a focus of this audit.

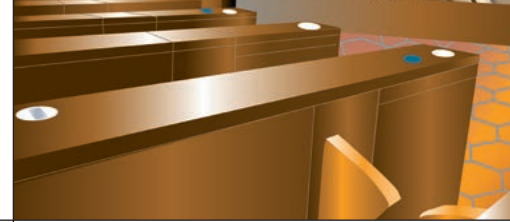
Among other areas, the audit focuses on elements of the System Safety Program Plan (SSPP) for the period through December 31, 2020, and, for more recent information, elements of WMATA's first Public Transportation Agency Safety Plan (PTASP), titled the WMATA Transit Agency Safety Plan, which replaced the SSPP on December 31, 2020. The first revision of the WMATA Transit Agency Safety Plan became effective on December 31, 2021, after the conclusion of the audit work. All references in this audit to WMATA's PTASP reflect the initial version which was in effect at the time of this audit.

Due to the timing of the PTASP's approval and the required phased approach for effective implementation, aspects of the PTASP had not yet been fully implemented at the time of this audit. The specific elements of the SSPP and PTASP covered in this audit are listed in Appendix D.

## Open Corrective Action Plans (CAPs)

Risk-based WMSC inspections linked to issues identified in investigations and through regular interactions with Metrorail personnel led to the WMSC issuing a finding on April 30, 2021 that Metrorail is not maintaining a fully functioning radio communications system in all rail yards and shops. The WMSC has approved a Metrorail corrective action plan for implementation. During this audit, numerous personnel stated that this is a persistent problem with "terrible," "horrible," and

**During this audit, numerous personnel stated that there is a persistent problem with "terrible," "horrible," and "deteriorating" radio transmission quality in yards.**





“deteriorating” radio transmission quality in yards such as West Falls Church, Greenbelt, Shady Grove and Glenmont. Similar challenges exist at some terminals such as Largo Town Center Station. Multiple operations personnel interviewed for this audit highlighted radio transmission quality as the single biggest issue they face on a regular basis. Metrorail personnel highlighted not only the direct safety risks of limited communications, but also the additional time pressures created to catch up after delays due to an inability to communicate.

Metrorail is now working to implement its corrective action plan for the April 30 finding (C-0100), which the WMSC encourages WMATA to complete with all reasonable speed. WMATA must also ensure that mitigations it has said are being implemented are fully communicated. Several personnel based at the Greenbelt Rail Yard were not aware of the “Yard Ops 3” channel that the radio communications department had described as intended for use when communication via “Yard Ops 2” was not functional. Due to the open CAP on this issue, the WMSC is not issuing a new finding in this audit.

Metrorail has a separate open CAP related to radio communication protocols such as the use of proper terminology and identification (FTA-RED-16-004-A). This CAP, initiated in 2016, was still open at the time the WMSC assumed direct safety oversight of Metrorail from the Federal Transit Administration (FTA) in 2019. At the time of this audit, compliance checks required to demonstrate that Metrorail had implemented the proper communication protocols had shown that Metrorail had not yet achieved the required proficiency. Communications from certified rail controllers had significantly improved. However, communications by personnel in the field were not yet meeting Metrorail’s radio communications requirements that are in place to ensure clear and consistent understanding. The WMSC plans to continue close oversight of Metrorail’s work in this area even after this CAP is closed.

Radio recordings sampled during this audit identified many transmissions that complied with procedures, but a number of transmissions were deficient. For example, a review of one hour of New Carrollton Rail Yard communications on September 9-10, 2021 identified inconsistent use of proper absolute block terminology and protection, inconsistent repeat backs, and no use of “over” or “out.” A review of one hour of communications on the Ops 2 radio channel (Blue, Orange and Silver Line) on September 15, 2021 found field personnel were inconsistent with the use of “over” to complete transmissions. A review of one hour of communications to and from the Largo terminal supervisor on September 22, 2021 identified the improper granting of foul time. The terminal supervisor told an operator that they had foul time protection to access a train on the tail track, but the terminal supervisor did not establish required red signal or other protections (see Finding 7 of this audit related to a lack of training for terminal supervisors).

**Radio recordings sampled during this audit identified many transmissions that complied with procedures, but a number of transmissions were deficient.**



The WMSC recently issued an Audit of Emergency Management and Fire and Life Safety Programs. Elements of this recently issued audit, such as compliance with incident command protocols, pertain to rail operations personnel covered by this rail operations audit. Some of those individuals interviewed as part of this audit stated that they did not consistently receive training on emergency procedures or were not aware of certain procedures, including SOP 1A governing emergency response. Other events, inspections and audits, such as the Automatic Train Control and Signaling Audit issued in May 2021 and investigation W-0109 of a Roadway Maintenance Machine derailment near Farragut West Station on April 29, 2021 have also identified that some employees are not familiar with safety or emergency response requirements. Because these issues are being addressed in the Emergency Management and Fire and Life Safety Programs Audit, the WMSC is not issuing a new finding in this audit.

As identified in the WMSC's Fitness for Duty Audit issued in August 2021, Metrorail is not conducting physical examinations it requires for safety sensitive operations employees (Finding 1, C-0119), Metrorail management is not complying with its fatigue management policies for operations employees (Finding 2, C-0120), and is not consistently implementing post-event drug and alcohol testing (Finding 7, C-0125). Because Metrorail is required to address these issues through corrective action plans related to that audit, the WMSC is not issuing additional findings in this audit.

Train operators and supervisors interviewed for this audit reported multiple locations where speed commands regularly drop out. Metrorail is addressing the reporting aspects of this issue through the corrective action plan to address Finding 6 (C-0054) of the WMSC's 2020 Rail Operations Control Center (ROCC) Audit that repeated failures to address safety issues had contributed to a culture where frontline workers no longer saw any value in reporting and recording problems.

Metrorail also continues work to implement corrective action plans related to the WMSC's Roadway Worker Protection (RWP) and Training Audit issued in June 2020. Findings in that audit included that Metrorail was not following certain RWP rules on the roadway, and that practical exercises are not standardized.

Other open CAPs include requirements to develop and implement a procedure to ensure that job descriptions and responsibilities are reviewed on a specified regular basis to reflect current operating realities, current code requirements and current regulatory requirements, in response to WMSC recommendations in an Audit of High Voltage and Traction Power issued in October 2021 and the Revenue Vehicle (Railcar) Programs Audit issued in September 2021. Those audits identified that some job descriptions had not been reviewed in more than 20 or 30 years.



**The WMSC issued a finding on August 13, 2021 requiring Metrorail to develop a CAP (C-0118) to address Metrorail's noncompliance with its Safety and Security Certification Program Plan (SSCPP).**



The WMSC identified some similar concerns during this audit work, related to job descriptions for clerks and interlocking operators, but is not issuing an additional finding due to the existing open CAPs.

The WMSC issued a finding on August 13, 2021 requiring Metrorail to develop a CAP (C-0118) to address Metrorail's noncompliance with its Safety and Security Certification Program Plan (SSCPP). This finding was based on information identified during WMSC oversight work including inspections, document reviews, interactions with Metrorail personnel, and work on other audits. Safety concerns related to this finding were also identified during this audit, and are reflected in Finding 4 which pertains to the lack of communication and coordination among organizational units, including with regard to operational changes such as the addition of the stop and proceed mode awareness tool to the 6000 Series railcars.

As part of the investigation process, and following other CAPs, Metrorail has also established an operational group that reviews station overrun, red signal overrun and other events and explores prevention opportunities. The WMSC continues to emphasize the importance of these events as potential leading indicators of more serious safety event outcomes such as the July 7, 2020 Red Line derailment near Silver Spring Station, or worse. Overrunning a station or red signal can lead to derailments, or to collisions with other trains or personnel on the roadway ahead.

## History

### NTSB Investigations

National Transportation Safety Board (NTSB) investigations including those related to the fatal January 13, 1982 derailment at the Smithsonian Interlocking, the fatal January 6, 1996 collision near Shady Grove Station, the November 3, 2004 collision at Woodley Park-Zoo Station, the fatal June 22, 2009 Red Line collision near Fort Totten Station, the February 12, 2010 derailment outside of Farragut North Station, and the fatal January 12, 2015 electrical arcing and smoke accident near L'Enfant Plaza Station have identified gaps in operational training, internal oversight and supervision, rules, procedures and safety culture.

### FTA Oversight

The Federal Transit Administration's (FTA) 2015 Safety Management Inspection of WMATA identified operational issues such as poor radio discipline, poor radio system quality, a lack of industry standard rules reviews, compliance checks, and scenario testing activities such as efficiency testing, under resourced training that was over reliant on informal on-the-job training conducted without effective oversight, that training did not effectively reach all required personnel, and that train operator recertifications were not occurring as scheduled.



## TOC Audits

Tri-State Oversight Committee (TOC) Audits of rail operations issued in 2016 and 2018 identified additional safety gaps.

The TOC's 2016 report's findings included that Metrorail was no longer providing annual refresher training to train operators, train operators were signing off on rule changes without fully comprehending them, that a one-day 7000 Series railcar familiarization course was insufficient, and that training personnel did not get sufficient lead time to develop training curricula for new WMATA initiatives as they were not included in the process from the beginning.

The TOC's 2018 report found that Metrorail was not completing corrective action required by RTRA's QA/QC testing program, that observations supervisors marked as unsatisfactory did not include follow-up documentation, that rules compliance checks conducted by the Safety Department were not documented, that operations personnel were not tested annually on rules and procedures, that scoring for practical examinations in operations training was undefined, that some operators were assigned to operate 7000 Series trains before receiving training on the new railcars, that pre-trip inspections were not performed in a consistent manner, and that additional run times due to new rules and slower speed had not been applied to operating schedules or factored into operational expectations.

Relevant WMSC audits conducted since the WMSC assumed direct safety oversight of Metrorail in March 2019 are referenced above in the Open Corrective Action Plans section.

## WMATA Internal Reviews

Metrorail's most recent internal safety review of Rail Station and Train Operations (RSTO) was completed in December 2020. WMATA's Quality Assurance, Internal Compliance & Oversight (QICO) determined that Metrorail was effectively using spot checks and rail supervisor daily activity reports (RSDAR) in the 18 months prior to the public health emergency that began in March 2020. The review identified gaps in station manager awareness of the existence or locations of areas of refuge or areas of rescue assistance in their stations, which the station managers are required to inspect on a daily basis. RTRA took action to address this issue.



**WMSC inspections, other oversight work, and multiple safety event investigations have also identified areas that require improvements.**

The internal safety review identified opportunities to improve supervisory oversight of interlocking operators and other operations personnel performing their duties, to improve safety event reporting and documentation to effectively identify root causes and corrective actions (see Finding 12), and to keep policies and procedures current and up to date as required by Metrorail procedures. The review identified gaps in communication of rulebook updates (see Finding 13) and in the specific SOPs provided to station managers.

Through this internal safety review, QICO identified other operational issues such as out of date job descriptions and radio coverage problems in rail yards. Metrorail is required to address these issues on a systemic level through open corrective action plans.

The internal safety review also identified safety gaps related to fatigue and fitness for duty. As noted above, the WMSC required Metrorail to develop and implement corrective action plans addressing these issues, including through the WMSC's Fitness for Duty Audit that was issued in August 2021.

### **WMSC Inspections, Investigations and Other Oversight**

WMSC inspections, other oversight work, and multiple safety event investigations have also identified areas that require improvements.

For example, investigation W-0118 of a red signal overrun and near collision at West Falls Church Rail Yard demonstrated that operations personnel are moving trains without complete and effective communication related to absolute blocks. Absolute blocks permit movement of only one rail vehicle in a given track segment at a time and are granted to prevent collisions.

In another example, investigation W-0046 of a collision and derailment in the Alexandria Rail Yard identified that an interlocking operator was distracted by watching video on an electronic device around the time of the event, contrary to Metrorail safety policies. WMSC inspections and data reviews have identified similar issues. Based on WMSC guidance and the outcomes of these inspections and investigations, Metrorail is in the process of adding additional recording capability and documentation functions in yard towers where interlocking operators work and in blockhouses at terminal stations where terminal supervisors carry out their duties.

### **Current Organizational Structure**

Metrorail designates the Department of Rail Transportation (RTRA) as responsible for rail operations functions in the Metrorail system such as train operation, rail supervision, yard operations and terminal operations.

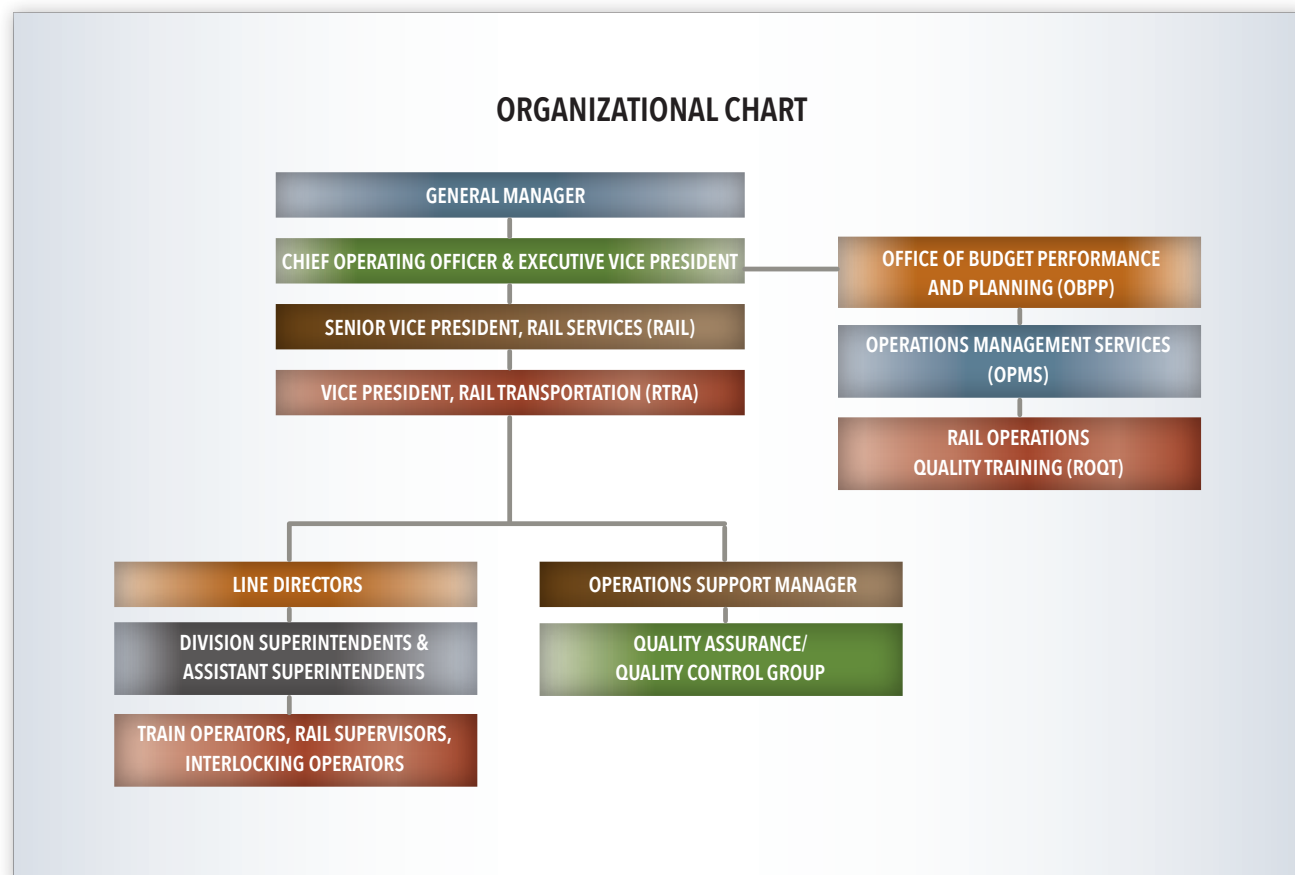


RTRA is led by the Vice President of Rail Transportation who oversees line directors who oversee the specific division superintendents and assistant superintendents who are assigned to each rail yard. Each division includes train operators, rail supervisors, interlocking operators responsible for controlling train and personnel movement in that division's rail yard, and terminal supervisors responsible for controlling train and personnel movement at terminal stations in that division's territory. At the time of this audit, Metrorail's Rail Operations Control Center (ROCC), which is responsible for controlling train and personnel movement on most mainline track, is a separate department that does not report to the Vice President of Rail Transportation.

In addition to the primary operations personnel reporting to the Vice President of Rail Transportation, there is an Operations Support Manager and associated team that includes RTRA Quality Control (QC) Officers who are part of RTRA's Quality Assurance/Quality Control (QA/QC) Group. The QC officers perform audits as assigned and are also responsible for performing certification of operations personnel.

Training for RTRA personnel is conducted by a separate department, Rail Operations Quality Training (ROQT), that is part of Metrorail's Operations Management Services (OPMS) department. ROQT is made up of training instructors and training supervisors who report to an assistant director and director.

**Training for RTRA personnel is conducted by a separate department, Rail Operations Quality Training (ROQT).**



**Legend**

- RD Red Line • Glenmont to Shady Grove
- OR Orange Line • New Carrollton to Vienna
- BL Blue Line • Franconia-Springfield to Largo Town Center
- GR Green Line • Branch Ave to Greenbelt
- YL Yellow Line • Huntington to Fort Totten
- SV Silver Line • Dulles Corridor Line

- Station Features
- P Parking
  - Connecting Rail Systems
  - AMRC

- Under Construction
- Full-Time Service
- Station in Service
- Transfer Station
- Planned Station



**The WMSC received initial documents related to this audit from WMATA in September 2021, conducted extensive interviews and site visits in October 2021, and received follow-up documents and conducted final document reviews into November 2021.**

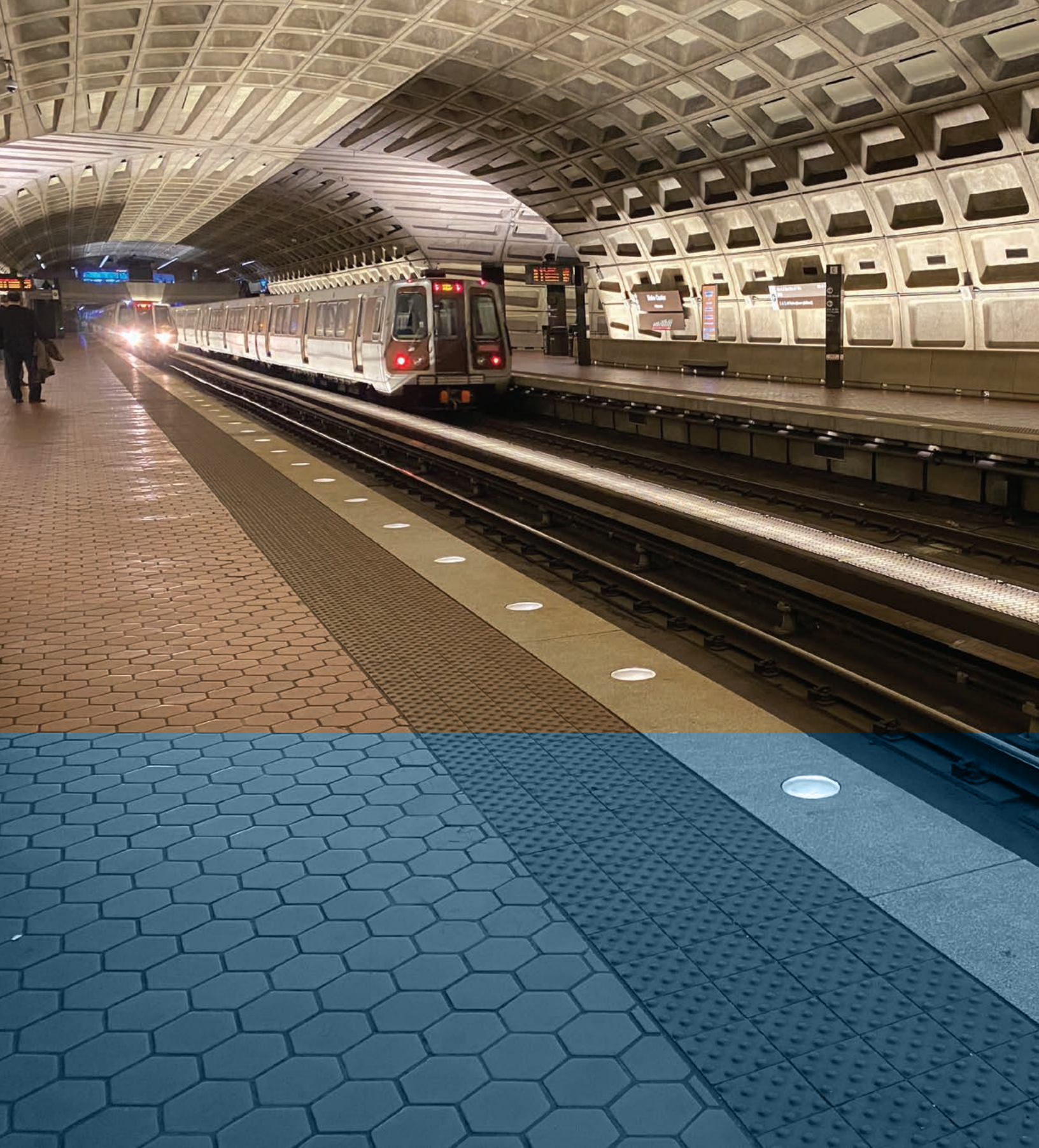
**Audit Work**

The WMSC received initial documents related to this audit from WMATA in September 2021, conducted extensive interviews and site visits in October 2021, and received follow-up documents and conducted final document reviews into November 2021.

Lists of documents reviewed, site visit locations, radio recordings audited, and personnel interviewed for this audit are provided in the appendices.

An exit conference was held on October 28, 2021 with Metrorail staff to summarize the status of the audit to that point.

The WMSC later provided a draft of this report to WMATA for technical review and incorporated any technical corrections as appropriate.



What the **WMSC** Found

**Metrorail has restored 30-day, 60-day and 90-day classes for new train operators following certification.**



## Positive Practices

The WMSC identified a number of positive practices while conducting this audit including:

- **Metrorail has restored 30-day, 60-day and 90-day classes** for new train operators following certification. This was re-instituted as part of corrective actions following several safety event investigations. Generally, the session 30 days after certification is in a classroom, the session 60 days after certification includes work with a train in a rail yard, and the session 90 days after certification is a review and opportunity for additional questions.
- **RTRA division managers (superintendents) appear to collaborate effectively.**
- **Metrorail has installed CCTV systems at several curved platforms** to improve operator visibility of riders entering and exiting trains at stations such as Silver Spring and Brookland.
- **ROQT is tracking documents such as temporary orders,** permanent orders and safety bulletins and has assigned subject-matter experts for each training discipline in an effort to ensure curricula are updated to reflect operational changes.
- **Operations support leadership** expressed a desire and long-term plan to expand exams from multiple choice to more interactive tests that include video and more fully assess knowledge, application and understanding of information at a higher level.
- **Training supervisors are responsive to student feedback** on classes and instructors.
- **Safety committees meet regularly** as scheduled.
- **RTRA resumed holding meetings with all supervisors** after suspending the all-hands meetings during the public health emergency.





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**Metrorail personnel interviewed for this audit described Metrorail's approach as focused on getting a job done, even if contrary to rules and procedures.**

## Findings and Minimum Corrective Actions

**Elements of Metrorail have a culture that accepts noncompliance with written operational rules, instructions, and manuals.**

Metrorail personnel interviewed for this audit described Metrorail's approach as focused on getting a job done, even if contrary to rules and procedures.

For example, an interlocking operator interviewed for this audit acknowledged that handbrakes are not always applied as required to railcars that are being stored in the yard. WMSC inspections earlier in 2021, prior to this audit, had identified this issue. The interlocking operator stated it was simply habit not to ensure handbrakes are applied.

Interlocking operators are also required by their training and their procedural manual to inspect their yard weekly. However, interlocking operators remain in the tower performing other duties and do not periodically walk and inspect their yards as specified by that training and the associated manual.

Interlocking operators stated that they rely on information provided by yard personnel such as train operators.

In another example of procedures not being followed, a station manager stated that they regularly recover items such as lost cell phones from the roadway utilizing a grabber tool without requesting and receiving foul time from the ROCC, as required by Metrorail's roadway worker protection rules.

Radio recordings sampled for this audit also demonstrated gaps in procedural compliance.

On September 15, 2021, communications on the Ops 2 channel (in use on parts of the Blue, Orange and Silver Lines) did not include consistent "over" terminology. RTRA QC audits have documented similar issues on a recurring basis on both mainline tracks and in rail yards.

A review of New Carrollton Yard communications from September 9-10, 2021 also included inconsistent repeat backs, inconsistent communication of absolute blocks, and no use of "over" and "out." Absolute blocks, when properly used, are designed to provide protection against collisions by ensuring that only one movement is authorized in a given track segment.



**Despite these documented issues, rail supervisor entries for their checks documented in the RSDAR system identify very few problems, suggesting a culture that expects noncompliance with rules.**

As noted in Finding 7 below, a review of one hour of communications to and from the Largo terminal supervisor on September 22, 2021 identified an incident in which a terminal supervisor improperly granted foul time to a train operator without the terminal supervisor actually establishing required protections for that train operator as the operator walked to a train in the tail track. Foul time requires red signals and stopping train movement to protect against a collision with a worker on the roadway.

In addition, safety event investigations have highlighted similar safety concerns.

For example, on February 1, 2021, a train operator in West Falls Church Yard exceeded the allowed speed and the train overran a red signal. Investigation W-0118 identified that the interlocking operator did not ensure 100 percent repeat back of radio transmissions or include proper terminology related to critical safety processes such as absolute blocks, movement and signal aspects, and that the interlocking operator changed the signal to red to avoid a potential head-on collision with a train that was in position to enter the yard. During this event, the interlocking operator was also distracted by a personal phone conversation.


In addition, investigation W-0128 into an improper movement at Franconia-Springfield Station on August 16, 2021 identified that a train operator entered stop and proceed mode without permission and moved a train with customers on board into the tail track instead of the intended movement in the opposite direction to go into service toward Largo Town Center. The investigation identified that the terminal supervisor was watching a non-work-related video during the event. Review of internet browsing history and audio recordings demonstrated that this terminal supervisor had done this on a regular basis, without the violation of Metrorail policies being corrected.

Multiple other investigations have identified train operators entering stop and proceed mode without permission and moving without verification of the proper signal aspect, rail alignment and speed commands, and events where train operators have operated at excessive speed past roadway workers.

Despite these documented issues, rail supervisor entries for their checks documented in the RSDAR system identify very few problems, suggesting a culture that expects noncompliance with rules. The gap between what is documented in the supervisory checks and what is occurring in reality provides evidence of deficiencies in supervisory oversight and primary operational rule checks.

Metrorail also has the opportunity to more fully utilize available data for supervisory oversight and compliance monitoring. Metrorail does not regularly and consistently review cab video of operators or CCTV video as part of a performance monitoring and hazard identification program outside of safety event investigations. The WMSC reviewed video and Metrorail's associated audit reports as part of Metrorail's CAP closure request for C-0019, and identified that Metrorail was only documenting and addressing personal electronic device policy violations, and that there were no





**Interlocking operators communicated safety concerns related to worker protection features that were not in place.**

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other actions as part of these or other internal oversight to address and mitigate other safety items that were visible on the cameras such as operators who were not complying with Metrorail rules such as rules prohibiting sunglasses in tunnels, smoking, or drinking coffee and soda. National Transportation Safety Board (NTSB) safety recommendation R-17-013 recommended the installation and use of inward- and outward-facing audio and image recorders to verify train crew actions and train operating conditions both for the investigation of accidents and as a tool to improve operational safety. The FTA issued a safety bulletin on December 30, 2020 highlighting the benefits of such recorders, including for hazard identification and safety performance monitoring and measurement through efficiency testing or other checks of procedural compliance and signs of fatigue (See WMSC Audit of Revenue Vehicle (Railcar) Programs issued September 14, 2021, Recommendation 1 regarding physical installation of such recording devices).

Metrorail has outlined phased implementation plans for its safety management system committed to in its Public Transportation Agency Safety Plan (PTASP), but had not yet effectively implemented these changes for operations personnel at the time of this audit.

**Minimum Corrective Action:** Metrorail must provide consistent supervisory oversight and effective training and safety promotion to ensure that personnel follow all rules and procedures, document compliance with rules and procedures, and ensure that the “just culture” and other principles embodied in the safety management system Metrorail has committed to in its Public Transportation Agency Safety Plan (PTASP) are implemented.

**Metrorail does not effectively identify, track, communicate and address operational hazards as required by its Agency Safety Plan.**

Prior to reopening the Alexandria Rail Yard following a major rehabilitation project in early 2021, interlocking operators communicated safety concerns related to worker protection features that were not in place on the new digital yard control board to mitigate the risk of collisions between rail vehicles or with personnel on the tracks, and to mitigate the risk of railcars entering an area where power is de-energized. However, this hazard was not addressed. More than a month after an Interlocking Operator escalated this hazard report to the Line Director in March 2021, Rail Operations QA/QC identified the same safety issue in May 2021 (see Finding 12), and a meeting was then held later in May 2021 that Metrorail stated included discussion of the hazard. Nearly five months later, the Safety Department separately identified this safety issue in September 2021, which had still not been addressed. The WMSC then independently identified this safety concern during the course of this audit, and confirmed the safety deficiency by visiting the yard tower.

**Interlocking operators stated they had previously raised the safety concern in other discussions with managers because they would have no way to protect any workers in the yard.**



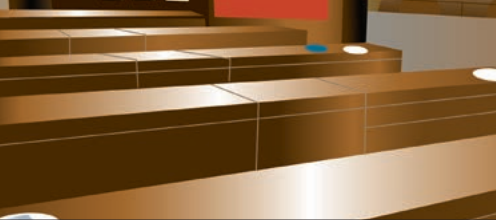
Upon the WMSC's discovery of this hazard in October 2021 during this audit, the WMSC quickly notified RTRA management of the lack of worker protection system in place on the control board, with the only documentation of worker movement and positioning on the yard tracks being handwritten notes in a binder. This binder is not part of the control screen, and there are no visual indications or other redundant protections in place against routing a train into an area with workers. Redundant protection features are available via a drop-down menu on the similar West Falls Church Rail Yard digital control board to establish prohibit entry and prohibit exit protections. Prohibit entry and prohibit exit functions prevent an interlocking operator who is using a digital control board from setting a route for a train to move into a specific area. Similar redundant protections are available at yards with the older yard control boards via the clips that are manually applied to indicate to the interlocking operator that they should not adjust a switch or signal and to provide a physical action that must be taken to remove that protection.

The requirements for this safety function had not been properly included in the yard rehabilitation contract (see WMSC finding related to Metrorail not following its safety certification process issued on August 13, 2021), and Metrorail did not act on this or other notifications from frontline personnel of this hazard, including concerns raised during training on the new yard systems. Metrorail had the protections in place as part of the West Falls Church Yard upgrades but did not include them in the Alexandria Rail Yard project, which creates a human single point of failure in the safety critical process.

Upper level RTRA management stated in interviews for this audit that they only learned about this hazard when the WMSC notified them of this safety issue in October 2021. In a written response to the WMSC's notification and additional requests for documentation, Metrorail stated that RTRA management was informed of the hazard when an interlocking operator contacted the Line Director directly on March 26, 2021. Interlocking operators stated they had previously raised the safety concern in other discussions with managers because they would have no way to protect any workers in the yard, relying only on their memory of allowing workers in a particular area. Interlocking operators stated they had resorted to trying not to move trains at all when people were on the tracks or to not allowing people on the tracks to work when they expected they might be allowing trains to move.

After SAFE identified the concern in September 2021, RTRA management stated that RTRA began using the paper log of worker locations in the yard, which was housed in a binder in the yard tower. Interlocking operators said that this log does not provide adequate protection, particularly because, it is not linked with the control board.

When the WMSC communicated the hazard in October 2021, RTRA management stated that RTRA would be developing a safety process and procedure including the paper log in an effort to mitigate the risks until the prohibit entrance and prohibit



**WMATA's Transit Agency Safety Plan (PTASP) specifies that managers are to be trained to respond to and investigate hazards, deploy resources at their disposal, and, when additional resources are needed, inform executive management in a timely manner.**

exit features are added to the board. At the time of this audit, RTRA expected these features to be in place in December 2021.

### Other Hazards

In addition to this example at Alexandria Rail Yard, RTRA managers interviewed for this audit were not familiar with the existence of hazard logs that Metrorail submitted to the WMSC as part of this audit, and several managers were not sure what hazards are supposed to be reported to them.

WMATA's Transit Agency Safety Plan (PTASP) specifies that managers are to be trained to respond to and investigate hazards, deploy resources at their disposal, and, when additional resources are needed, inform executive management in a timely manner of the need for additional resources and why.

"Executive Management," WMATA's PTASP states, "must allocate resources based on risk, and if resources are not available, ensure that no activities take place until risk is mitigated to an acceptable level."

WMATA's PTASP also charges executives with ensuring that employee reports of hazard and risk are properly investigated, mitigated as appropriate and reported to executive management; and employees are kept apprised of activities concerning their reports. The plan also requires executives to ensure that effective mitigations and corrective actions are developed and implemented in a timely fashion and monitored appropriately to assure safety is maintained through the mitigation and corrective action process.

Technical managers are listed as responsible for coordinating implementation of safety mitigations in their areas, ensuring that safety assurance activities are robust for continuous improvement of safety and control of practical drift away from documented procedures, and for monitoring change and change management activities appropriately.

WMATA's PTASP also requires engineering control for changes implemented to the system, and specifies that each WMATA organizational unit is responsible for identifying hazards in its daily activities and responsibilities, including ensuring

METRO RAIL STATION CHECKLIST				DEPARTMENT OF RAIL SERVICES		
WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY				Office of Rail Transportation		
Station Manager's Name		Station				
Date	Time	Mezzanine No.	Employee No.			
<b>A. OPENING STATION CHECKLIST: To be completed by Opening Station Managers daily.</b>						
<b>REPORT ON DUTY/CONTACT:</b>		Logged on SOC/Kiosk PC		Check AFC configuration		
<input type="checkbox"/> Depot Clerk/ROCC/ROIC (work train)	<input type="checkbox"/> Inspect Log Books (Main/ELES)	<input type="checkbox"/> Turn on ELES Equipment		<input type="checkbox"/> Inspect Area of Refuge (AOR)		
<input type="checkbox"/> Depot Clerk/ROIC (direct report)			<input type="checkbox"/> Complete Station Inspection			
<b>B. GENERAL STATION CHECKLIST: To be completed by every Station Managers daily.</b>						
	Good	Needs Attn or Repair	Inoper/Unavail.	Good	Needs Attn or Repair	Inoper/Unavail.
<b>Station Kiosk</b>						
Station PA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	AED	<input type="checkbox"/>	<input type="checkbox"/>
Kiosk Intercom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Fire Extinguisher	<input type="checkbox"/>	<input type="checkbox"/>
Fire/Intrusion Panel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Kiosk Cabinet	<input type="checkbox"/>	<input type="checkbox"/>
Kiosk PC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Kiosk Chair	<input type="checkbox"/>	<input type="checkbox"/>
CCTV Monitors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Station Radio	<input type="checkbox"/>	<input type="checkbox"/>
SOC PC	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Wireless Microphone	<input type="checkbox"/>	<input type="checkbox"/>
First Aid Kit	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Brochures/Schedules/Supplies	<input type="checkbox"/>	<input type="checkbox"/>
Kiosk Counter Top	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	AC/Heating	<input type="checkbox"/>	<input type="checkbox"/>
Kiosk Floor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Station Swing Gate(s)	<input type="checkbox"/>	<input type="checkbox"/>
Spare Master Locks (x2)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Bulbhorn-Operational	<input type="checkbox"/>	<input type="checkbox"/>
Blood Borne Pathogen Bag	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Station Signs	<input type="checkbox"/>	<input type="checkbox"/>
<b>Station Equipment</b>						
Station Heating/Cooling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Exit Fare	<input type="checkbox"/>	<input type="checkbox"/>
Escalators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Faregates	<input type="checkbox"/>	<input type="checkbox"/>
Elevators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Mezzanine	<input type="checkbox"/>	<input type="checkbox"/>
Elevator Intercoms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Platform/Platform Edge Lights	<input type="checkbox"/>	<input type="checkbox"/>
Station Lights	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Track Bed	<input type="checkbox"/>	<input type="checkbox"/>
Smart Trip Vendors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Electrical Outlets (Covered)	<input type="checkbox"/>	<input type="checkbox"/>
PIDS/KIDS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	PERS	<input type="checkbox"/>	<input type="checkbox"/>
<b>Ancillary Rooms/Beyond End Gates (Safety Vest Required)</b>						
Platform Fire Equip. Cabinets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ancillary Rooms	<input type="checkbox"/>	<input type="checkbox"/>
ETS Phones	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ancillary Fire Equip. Cabinets	<input type="checkbox"/>	<input type="checkbox"/>
<b>C. CLOSING STATION CHECKLIST: To be completed by Closing Station Managers nightly.</b>						
<input type="checkbox"/> Verify location of last rev. train	<input type="checkbox"/> Exit fare vendors locked/secured	<input type="checkbox"/> Kiosk lights are off				
<input type="checkbox"/> Station closing PA announcements	<input type="checkbox"/> AFC intrusion zones reset	<input type="checkbox"/> Logged off of SOC/Kiosk PC				
<input type="checkbox"/> Station entrance gates are locked	<input type="checkbox"/> Elevators in override/at mezz. level	<input type="checkbox"/> Called Terminal Supv and reported off duty				
<input type="checkbox"/> Check station for customers	<input type="checkbox"/> All escalators are off	<input type="checkbox"/> Reported personnel working in station after close to ROIC				
<input type="checkbox"/> Faregates secured/in AM config	<input type="checkbox"/> Kiosk heater/AC unit off					
<input type="checkbox"/> Fare vendors locked/secured	<input type="checkbox"/> Radio secured in kiosk					
<i>Please provide comments for remediation efforts of all inoperative equipment identified above:</i>						
Reviewed by Station Supervisor Name				Date	Time Completed	



**Metrorail neither provides nor requires proactive training on physical characteristics of the entire system.**

3

effective management of change. According to WMATA's PTASP, "formal hazards and resulting mitigations identified as part of the Safety Risk Management component will be made available for employees to query by location and/or department through the risk register/hazard management database. Additionally, employee safety reporting hazards will be communicated to personnel through a quarterly newsletter published by SAFE."

Documents reviewed and interviews conducted during this audit demonstrated that Metrorail does not coordinate to ensure that SAFE and RTRA fully communicate hazards identified during safety event investigations or internal audits.

RTRA leadership was not familiar with investigation outcomes, and stated that RTRA and SAFE essentially conduct separate investigation processes. QC officers who conduct audits and identify hazards stated that they are not included in meetings about hazards or rule change discussions, and other departments do not always work closely with them even on issues that the QC officers identify (see Findings 4 and 12).

**Minimum Corrective Action:** WMATA must develop, document and effectively communicate processes to ensure that hazards are identified, tracked, communicated and addressed on a consistent, ongoing basis. This must include the documentation, review and consideration of these hazards, risk ratings and mitigation plans by personnel from frontline workers and line managers through middle management and departmental leaders to ensure that all reported hazards, even those reported verbally to frontline or middle managers, are documented, tracked and appropriately managed. Metrorail must assess all locations (towers, terminals, etc.) with digital control boards to determine whether adequate protections are in place and available to ensure safety of personnel, and must address any improvements required and ensure that such improvements are incorporated into all future similar projects.

**Metrorail creates safety risks by not requiring and conducting territory familiarization and physical characteristics training, and not assessing knowledge of physical characteristics prior to assigning operations personnel work on a line, in a terminal or in a yard.**

Metrorail only provides limited line familiarization to operational personnel after they are involved in a safety event or are documented to have violated a rule or procedure, and neither provides nor requires proactive training on physical characteristics of the entire system. Initial train operator training includes only short visits to each yard and line, and there is no required additional or refresher training.

The lack of effective territory familiarization for personnel such as train operators, interlocking operators, supervisors and terminal supervisors affects both new employees and employees who are shifted either through a long-term job assignment based at a new location, or those shifted temporarily to new work assignments such



**This computer-based training is very limited, and does not include hands-on familiarization training or knowledge testing that would be part of a meaningful familiarization and territory certification program.**

as working extra shifts to cover for colleagues or being rerouted to a different line due to service disruptions.

Training records provided to the WMSC as part of this audit showed less than 10 percent of train operators (54 of 566) have taken what Metrorail describes as a computer-based Blue Line familiarization training, and less than five percent of train operators (27 of 566) have taken a similar Green Line training. These consist only of simple forward-facing video footage of a trip recorded from a train operator's perspective. There is no narration, read along material or other documents or information provided.

Training department personnel expressed a desire for all operators and supervisors to at least review the computer-based training, particularly when moving to a different division, but stated that they are not permitted to institute training requirements (see Finding 4) and can only make recommendations to RTRA.

This computer-based training is very limited, and does not include hands-on familiarization training or knowledge testing that would be part of a meaningful familiarization and territory certification program. In response to the draft of this report, Metrorail highlighted the specific questions utilized in the online assessment at the end of each line's computer-based training. Some of these questions assess important general Metrorail terminology or devices, but the assessments as a whole do not assess territory familiarization or knowledge of different physical characteristics of different parts of the system.

Personnel interviewed for this audit expressed sentiments such as the "railroad is the same no matter where you go" or "the line is the line." However, personnel acknowledged that there are important nuances to each part of the system such as areas where it is more difficult to stop a train due to issues such as the physical characteristics of the system, wet weather, or slip-slide conditions due to leaves or leaf oil on the rails.

Interlocking operators also have no familiarization requirements when they work in a new yard. Personnel interviewed for this audit stated there are sometimes informal opportunities provided to observe another interlocking operator in that yard for 1 to 5 days, but that it is not consistent, structured or required. Those interlocking operators being observed do not have specific instructions or guidance on this process (see Finding 9). This includes no specific training for interlocking operators new to a yard on power controls to ensure that third rail is safely energized and de-energized.

Terminal supervisors have no formal training class or instruction on their job as a terminal supervisor, and receive only unstructured on-the-job training (OJT) (see Finding 7). Terminal supervisors and interlocking operators do not receive refresher training.



**Although Metrorail has certification processes, those processes do not include specific requirements for territory familiarization or physical characteristics knowledge.**

Although Metrorail has certification processes, those processes do not include specific requirements for territory familiarization or physical characteristics knowledge.

Multiple recent safety event investigations have identified concerns related to physical characteristics knowledge and training for Metrorail employees that could lead to more serious consequences.

Investigation W-0128 of improper vehicle movement at Franconia-Springfield Station on July 16, 2021 demonstrates the risks of assigning employees work without proper familiarization. A Train Operator assigned to the Shady Grove Division was working an additional, overtime shift out of the Alexandria Division when they improperly moved a train in revenue service into the tail track with passengers on board. The Train Operator stated they did not know they had to reverse ends at Franconia-Springfield Station to operate in service back toward Largo Town Center. At Shady Grove Station, a train operator going into service from the rail yard would not have to reverse ends to enter revenue service.

Investigation W-0093 demonstrated that a train operator who had been instructed to stop at U Street Station and reverse ends to move back toward Mt. Vernon Square Station instead continued toward Columbia Heights Station and into a single-tracking area without speed commands. The train operator's partial radio repeat back of the instructions suggested that the operator believed Mt. Vernon Square Station was ahead of them, north of U Street Station, and did not recognize that Mt. Vernon Square Station was, in fact, behind them and required reversing ends.

Investigation W-0094 involving improper movement from King St. Station on February 18, 2021 demonstrated confusion related to the proper signals and rail alignment for the route to Franconia-Springfield Station when the train operator incorrectly followed a route that had been wrongly set for Huntington Station.

Similar issues have contributed to fatal accidents elsewhere, such as the fatal Amtrak Train 501 derailment in DuPont, Washington on December 18, 2017. The NTSB found that the probable cause of the derailment included inadequate training for the engineer on the territory (RAR-19/01).

RTRA personnel interviewed for this audit said that there has been what they believe is an effective, informal territory familiarization program only for those Red Line operators based out of Shady Grove. When the WMSC requested documentation about this program as part of this audit, Metrorail could not provide any documentation. According to those interviewed for this audit, the informal program includes specific training on areas such as the connector tracks between the Red Line and other lines, pocket tracks, terminals and yard signals, and provided important detailed information and knowledge to operators.





**Train operators were not informed of or trained on the addition of the stop and proceed mode awareness tool to 6000 Series railcars, and many instead discovered the feature while operating the trains in revenue service.**

**Minimum Corrective Action:** Metrorail must develop, require, and implement effective territory familiarization and physical characteristics training and take steps such as territory-specific certification to ensure adequate knowledge of physical characteristics prior to assigning operations personnel (such as train operators, rail supervisors, terminal supervisors, and interlocking operators) work on a line, in a terminal or in a yard.

**Metrorail has inadequate internal communication, coordination and processes to effectively manage change as required by its PTASP, the WMSC and the FTA.**

Organizational units operate in silos, leading to unnecessary hazards and preventing effective coordination to prevent and mitigate safety issues, despite WMATA's PTASP specifying requirements for managers to monitor change and change management activities appropriately, and for departments to proactively identify hazards.

"A robust SMS requires that the agency understand that all change introduces risk, and that risk must be managed appropriately through the SRM process," WMATA's PTASP states. However, Metrorail has not demonstrated that it has reached that robust safety management system and safety risk management approach.

For example, train operators were not informed of or trained on the addition of the stop and proceed mode awareness tool to 6000 Series railcars, and many instead discovered the feature while operating the trains in revenue service. Some training instructors were also not told about the change, which Metrorail had made with the intent to reduce the risk of improper movement without speed commands. Frontline personnel said they found out about the stop and proceed function on the 6000 Series cars only from trial and error after encountering the need to use the system. Personnel responsible for training and certification said they are often not sufficiently informed about engineering and car maintenance changes that affect operations.

This type of deficiency in interdepartmental coordination, planning and cooperation is also reflected in the WMSC's August 13, 2021 finding requiring Metrorail to develop a CAP to address Metrorail's noncompliance with its Safety and Security Certification Program Plan (SSCPP). Properly following the safety certification process includes ensuring that frontline personnel get the information, training and skills they need to effectively and safely carry out their duties.

Station managers the WMSC spoke with during this audit stated that they have had similar challenges with new fare gates that were installed in multiple stations without specific training for station managers. They stated that they received a manual, but had to train themselves, including to ensure that they could open the fare gates as required in an emergency. Two station managers asked to demonstrate that function with the new fare gates were able to show that they could open the fare gates in

**Managers were either unsure who determines what training is required for operational personnel, or believed the other department (ROQT or RTRA) determined the training requirements for each position.**



an emergency as required. Station managers also expressed concerns that most personnel working in stations do not report to the kiosk when work is completed.

In rail yards, only some operations personnel at Greenbelt Yard were familiar with a Yard Ops 3 channel that the radio communications department had previously told the WMSC was instituted so that those personnel could work around radio system issues on the channels that are normally used in the yard.

During site visits for this audit, the WMSC observed poor radio system coverage in parts of Landover Station and an inoperable public address system from the station kiosk. The Communications Department stated that the Elevator and Escalator department would be responsible for addressing the issue as the communications station had been moved into the elevator and escalator control panel area.

When hazards are identified, they are sometimes dismissed by other departments. For example, a rail brace supporting the outside of a rail that RTRA personnel identified was facing the wrong way and creating a tripping hazard in a rail yard was dismissed as acceptable by Track and Structures. In addition, Greenbelt Rail Yard personnel reported to the WMSC that a main interlocking near the paint booth and body shop is regularly out of correspondence (not responding to commands from yard control board), and workarounds are required to minimize this, such as staggering train movements, but that the problem has not been effectively addressed.

Coordination is a challenge even at higher levels of the organization. An RTRA Line Director had not been aware of a major shutdown planned in 2022 that had been publicly announced multiple times, but that had not been effectively communicated internally. Managers and frontline personnel stated that Metrorail would benefit from more transparent, clear and timely communication during service disruptions to allow for proactive steps to provide for their own safety and that of Metrorail riders.

RTRA management outlined during audit interviews a series of plans such as changes to training, that the training department (ROQT) personnel separately said in audit interviews that they were unaware of. These challenges are compounded by confusion over who is responsible for setting training requirements and standards. ROQT personnel stated that they have made recommendations for training courses or requirements that RTRA has not acted on, while RTRA personnel stated that they have requested adjustments that have not been implemented.

Managers were either unsure who determines what training is required for operational personnel, or believed the other department (ROQT or RTRA) determined the training requirements for each position.

In response to a draft of this report, Metrorail provided records of a series of coordination meetings involving RTRA and ROQT that were scheduled after the WMSC raised these concerns during on-site activities for this audit. Metrorail stated



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**Metrorail’s railcar operations training and certification is heavily focused on the 7000 Series fleet, with little focus on other “legacy” railcar fleets (2000, 3000 and 6000 Series) that have very different features and system characteristics.**

these meetings would address training needs or changes and aim to help ensure effective communication and consistent understanding.

As described in Finding 1 and in the WMSC’s August 13, 2021 finding that Metrorail is not following its safety certification procedures, the lack of interdepartmental coordination also extends to capital projects. During this audit, interviews identified that new train operation simulators would not be available upon installation in late 2021 due to a lack of coordination of the required power supply to the installation location. The issue was only identified after work began on the room, which will mean that only four of the eight simulators planned for one room in the Carmen Turner Facility will be in use until power upgrades are completed, likely in late 2022.

**Minimum Corrective Action:** Metrorail must develop and implement effective processes to manage change and risk as specified in its PTASP. This must include developing and implementing a process to ensure consistent, effective communication across all levels of each department and sub-department. Metrorail must clearly define responsibilities for management of change, including the process and authority to add or adjust training requirements, to allow all affected departments to provide input on planned changes and to manage the communication of changes to affected employees.

### **Metrorail is not effectively training and certifying personnel authorized to operate trains on all active railcar fleets.**

Metrorail’s railcar operations training and certification is heavily focused on the 7000 Series fleet, with little focus on other “legacy” railcar fleets (2000, 3000 and 6000 Series) that have very different features and system characteristics.

Personnel interviewed for this audit across multiple roles and levels of the Metrorail organization from train operators and instructors to supervisors and management acknowledged that the minimal ongoing training on legacy fleets has created operational challenges. These issues were further highlighted as the on-site portion of this audit was concluding when, based on the facts and clear safety issues identified in the initial days of the NTSB investigation into an October 12, 2021 derailment, the WMSC on October 17, 2021 ordered Metrorail to remove all 7000 Series cars from revenue service until Metrorail developed a plan to assess the cause, and to provide for the detection of wheel gauge anomalies in 7000 Series railcars and Metrorail implemented a plan that provides for the safe return to revenue service of each 7000 Series railcar. This led to more legacy railcars being put into revenue service that Metrorail had previously placed in long-term storage due to reduced service after the COVID-19 public health emergency began in March 2020.

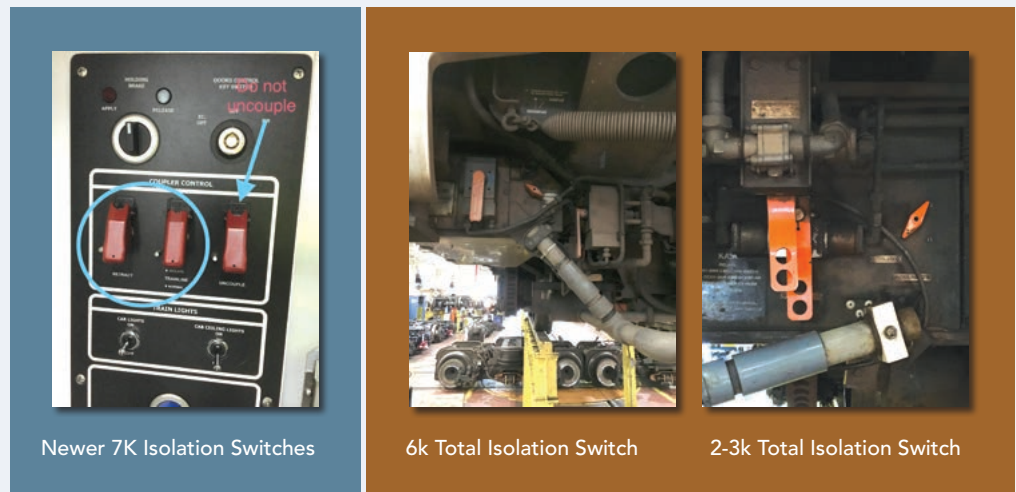
Some of the most immediate safety issues related to the minimal training on legacy cars relate to preparedness for troubleshooting, responding or self-recovering the

**Metrorail procedures are designed so that the rail controller and operator both have the necessary knowledge to follow and convey procedures, instructions and train status.**

train in an emergency. Other safety issues include communication differences to passengers on legacy railcars since announcements are made by operators through the PA system rather than automatically through the train's computer system.

Train operators are the Metrorail personnel on the train when troubleshooting is required. Timely and proper troubleshooting and communications are critical to ensuring timely response and to mitigating the risk of rider self-evacuation.

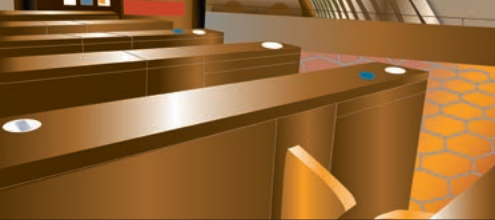
For example, during recovery operations, the uncouple switch in a 7000 Series operating cab is immediately adjacent to the retract and trainline (isolate) switches, which all look similar, so training is critical to ensure that the correct switch is activated. The trainline switch electrically isolates the cars, and the retract switch retracts the electrical coupler pin boxes. The uncouple switch mechanically uncouples the train. On older railcar fleets, the uncouple switch is in the same location, but the switch needed to isolate a car is located under the cab of the train and can only be accessed from outside the railcar.



Even on 7000 Series trains, familiarization courses for existing train operators are a set length, and do not include sufficient opportunities for students who need additional time to get that additional support they require to effectively carry out the tasks on mainline. Several individuals expressed a desire for more training for train operators.

Frontline operations personnel expressed confidence that they would be able to rely on the Rail Operations Control Center (ROCC) to direct them through troubleshooting processes, but Metrorail procedures are designed so that the rail controller and operator both have the necessary knowledge to follow and convey procedures, instructions and train status, and to be a check to ensure the process is proceeding properly. On 7000 Series trains, this includes scrolling all the way down the train control display screen to see all listed faults. On legacy trains, this includes properly identifying changes in the operating cab such as small indicator lights that turn on or off depending on the status of Automatic Train Operation (ATO) functions.





**Refresher training for train operators, when conducted, is also focused on 7000 Series cars, and there is only very limited information related to the legacy fleet (2000, 3000 and 6000 Series cars).**



Investigation W-0116 of customer evacuations and a runaway train event on March 26, 2021 that was reported and investigated due solely to the WMSC's oversight demonstrated that the train operator of the initial disabled train did not properly identify the long list of faults displayed by the train, and instead eventually reported only a stuck holding brake. In fact, the fifth and sixth cars of the train had lost power due to a tripped circuit breaker that had overheated.

These gaps in knowledge on the 7000 Series trains exist even though, prior to the removal of the 7000 Series from revenue service due to wheel gauge anomalies, Metrorail was performing practical certification observations of train operators only on 7000 Series trains, and was not performing any certification on legacy fleets. However, Metrorail's train operation certification is a blanket certification that permits operating all trains.

Metrorail's certification requirements for operational personnel include, depending on the specific position, initial certification through a practical exercise or observation and/or written test and recertification through a practical observation and/or written test.

For new train operator certification, Metrorail requires a "precertification" observation shortly before the actual certification observation or exercise. For operator recertification, this "precertification" is conducted only if the operator requests it. Precertifications are similar to a dry run of the practical portion of the certification process.

For train operation, certification and recertification require both a written test and practical certification observation. The observation includes pre-trip inspection, coupling, recovery and troubleshooting. Metrorail train operation certifications are valid for two years.

Metrorail has documented refresher training requirements, which those interviewed for this audit confirmed are intended to be conducted for train operation at minimum every other year, in the year opposite certification. That refresher training has not been conducted on that schedule.

Refresher training for train operators, when conducted, is also focused on 7000 Series cars, and there is only very limited information related to the legacy fleet (2000, 3000 and 6000 Series cars).

"We have totally forgot about legacies," one person interviewed for this audit said, emphasizing that the legacy fleets and the 7000 series are totally different trains to operate.

The 7000 Series train control display screen usually informs an operator of what and where a problem is. Operators on a legacy train must utilize deeper system

troubleshooting knowledge to determine the problem for themselves. Due to Metrorail's fleet size and operational decisions, many train operators had gone for extended periods operating only 7000 Series trains prior to the October 12, 2021 derailment and subsequent WMSC safety order that Metrorail remove the 7000 Series from revenue service until WMATA developed and implemented a plan for the safe return to service of each car.

Metrorail has considered shifting to a schedule of certification on 7000 Series railcars every two years with refresher training on legacy cars in the intervening years but has not made that transition or effectively implemented refresher training. Frontline personnel interviewed for this audit were not familiar with refresher training being anything other than recertification every two years.

Differences in the legacy cars and 7000 Series cars can also contribute directly to safety events. For example, on the 7000 Series, pressing the door open button once on the wrong side of the train does not immediately open the doors on the wrong side and can instead be used by operators not following procedure as a workaround to open the doors on the correct side more quickly. However, on legacy cars, pressing the door open button once on the wrong side of a platformed train would cause an improper door opening on the wrong side.

**"We have totally forgot about legacies," one person interviewed for this audit said, emphasizing that the legacy fleets and the 7000 series are totally different trains to operate.**

Training has been further negatively affected by growing challenges with train availability for training and certification. Metrorail does not ensure an appropriate number of trains are available to meet training and certification requirements.

To some degree, this tension between trains available for revenue service and trains available for training has existed for many years, however this has become more acute and has had greater impacts on the effectiveness and timeliness of training and certification since March 2020. Under revised operational schedules with reduced service compared to prior to the public health emergency, Metrorail eliminated nearly all train layups in the middle of the day. These trains that would return to rail yards at the end of the morning rush hour had typically been used for training and certification in the midday hours. Without train layups, and because Metrorail does not dedicate any trains to training and certification, trains are now not regularly available for this work. Metrorail removed 2000 and 3000 Series cars from revenue service and placed them in long-term storage in the first months of the public health emergency that began in March 2020. Train availability challenges were compounded in fall 2020 by changes necessitated after WMSC safety event investigations into train pull-aparts (W-0079, W-0080) identified Metrorail's improper coupler overhaul process on the 6000 Series trains.





Even when trains are assigned to training and certification in a yard, they are sometimes pulled for revenue service if another train has an issue. “Revenue comes first,” one manager stated. This contributes to challenges meeting certification requirements (see Finding 6).

“Train availability hampers the entire [training] process,” another manager said.

These pressures have contributed to potentially unsafe actions such as conducting a precertification on a train that is keyed up in a yard while students are walking around the train learning about exterior inspections. Train operator precertification is essentially a practice run on the certification practical exercise. This is supposed to be conducted by ROQT personnel, but individuals interviewed for this audit stated that some divisions are using line platform instructors (LPIs) for this task even though LPIs are not specifically trained to conduct precertifications.

The lack of available trains also has a direct impact on initial train operation classes by reducing the time spent on trains during yard practical training.

“It does have an adverse effect,” a member of the training department stated.

The training course is designed to spend approximately half of the time in the classroom or books and half of the time on trains. Based on interviews for this audit, current training involves less hands-on time due to train availability.

**Minimum Corrective Action:** Metrorail must institute sufficient, specific, specialized certification training and standards to operate each type of revenue vehicle, and must provide that training, refresher training, and certification to each individual who may operate a vehicle in revenue service. Metrorail must ensure that only those individuals trained and certified on that type of vehicle operate the vehicle. Metrorail must develop and implement a program that provides for the appropriate availability of trains for required training and certification.

## 6

### **Metrorail is not meeting its operational refresher training and recertification requirements.**

Metrorail has granted three waivers (with some gaps) to certification requirements for train operators, interlocking operators and rail supervisors since March 2020. These waivers, covering March through October 2020, November 2020 through April 16, 2021, and June 2021 through December 2021, state that their purpose is “to assist WMATA personnel during the COVID-19 virus response and to allow social-distancing strategies/policies to be developed by WMATA that allows safe continuation of front-line employee working conditions, to include, the biennial certification of qualification process. This waiver also considers the mandate that all Class 1 vehicle (railcars designed to carry customers) operators be certified on the 7000 series Kawasaki railcars.”

**Records reviewed for this audit also show a number of individuals whose last refresher training was due prior to March 2020 but who have not completed that refresher.**



At the time of this audit, Metrorail was conducting its regular certification process, but was lagging behind on certifications. Individuals responsible for this process stated the gap in certifications was largest for train operators. Certifications are further disrupted by the lack of availability of trains to conduct precertification training and the certification process that follows. The number of trained and available QA/QC personnel also contributes to the certification and training challenges.

The certification waivers included a number of employees who did not have prior documented certification completions, with some showing as enrolled but not completed and others showing as incomplete. It is not documented that all personnel who are behind on their certifications are behind due to the public health emergency.

Records reviewed for this audit also show a number of individuals whose last refresher training was due prior to March 2020 but who have not completed that refresher.

Other employees listed on the most recent waiver document did not appear to fall under the waiver, as they had already completed certifications in 2021 when the waiver was issued.

At the time of this audit in 2021, Metrorail had not reviewed SOP 406-01, Tracking RTRA Recertifications, since 2016, despite a review date due in 2017 and RTRA OAP 101-12 requiring controlled documentation containing procedural information to be reviewed on at least an annual basis. Out of date documents can contribute to management challenges.


Initial documents provided for this audit showed 14 percent of interlocking operators as past their certification date, 9 percent of supervisors with no record of reasonable suspicion training, 22 percent of supervisors with no record of post-accident training, and 78 train operators who had not completed reverse stretch training.

Metrorail is similarly behind on its planned refresher training for frontline personnel. Metrorail's training plan indicates the training is supposed to be biannual. This is most commonly interpreted as meaning every six months, but interviews for this audit demonstrated the intent was to conduct this training biennially, every two years. Still, records from this audit demonstrated there are individuals who were out of date on this training even prior to March 2020.

Metrorail does not have a documented procedure to ensure that people whose certifications have expired do not work, except for those personnel who have been out of work and are returning to duty. Metrorail provided some documentation of ROQT communicating the lists of employees past due for certain training to RTRA, but ROQT stated that all they can do is remind RTRA of who needs training.

As of October 14, 2021, Metrorail said 147 of 551 train operators, or 26.7 percent, were behind on refresher training, and 127 of 494 station managers, or 25.7 percent, were behind on refresher training and fell under the certification waivers.





**Metrorail's Agency Safety Plan specifies that each train operator is to be given a refresher course on the rules and procedures annually, and all train operators are re-certified every two years with written and practical testing.**

Metrorail's Agency Safety Plan specifies that each train operator is to be given a refresher course on the rules and procedures annually, and all train operators are re-certified every two years with written and practical testing by RTRA. Metrorail has not conducted this type of refresher course, and those interviewed during this audit stated that this is aspirational to have certification in one year and refresher training the following year.

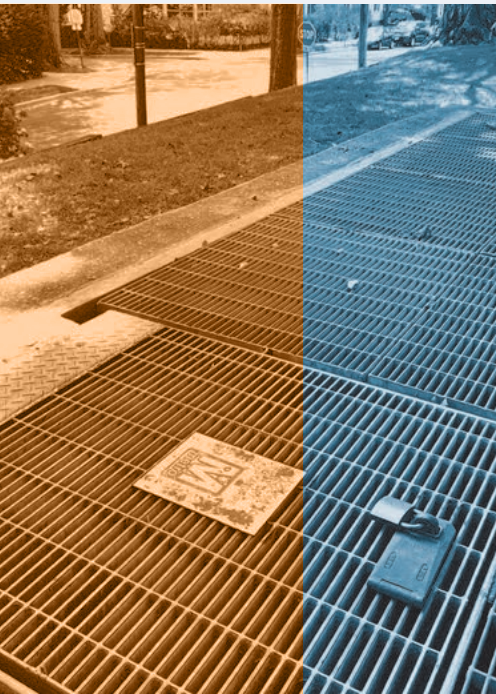
At the time of this audit, individuals were completing refresher requirements quickly followed by certifications in an effort to catch up.

The WMSC understands the challenges brought on by the public health emergency, and that there are significant ongoing efforts to bring certifications up to date; however, Metrorail personnel could not specify any current plans to ensure that all operations personnel will be caught up on certifications. Even prior to the public health emergency, the Federal Transit Administration and Tri-State Oversight Committee identified similar gaps in recertification and refresher training.

In addition to frontline personnel, rail supervisors are not adhering to their mandatory requirements to complete and document proficiency train operations at least once each month. According to SOP 502-01, Rail Supervisor Proficiency Train Operations, proficiency rides must include at least 20 minutes of the supervisor operating a train uninterrupted or a round trip in the supervisor's area of responsibility, and must be properly documented and communicated as proficiency rides. This can include operating in relief of a train operator if done for more than 20 minutes and documented as a proficiency ride. Metrorail instituted this requirement because supervisors are regularly called upon to take over train operations in situations such as an operator needing a personal relief break.

A review of Rail Supervisor Daily Activity Report (RSDAR) metrics demonstrated that proficiency rides are not completed and documented by all RTRA supervisors and RTRA is not achieving their goals set for proficiency rides across all divisions. A review of September 2021 RSDAR data demonstrated trips documented as proficiency rides that were shorter than the 20 minutes required by Metrorail policy, and trips documented as proficiency rides that were conducted during peak periods, which is contrary to the requirement that the rides not be conducted during rush hour, special events, and/or unusual occurrences on the mainline. In response to a draft of this report, Metrorail stated that "supervisors are able to combine multiple trips" to meet the 20 minute requirement; however, this is not stated in the Metrorail SOP.

QA/QC personnel records also showed gaps in certification documentation for these individuals who carry out the certification of the frontline personnel who perform operations duties. Metrorail policy requires the QA/QC personnel to be certified in the discipline that they are teaching or certifying. Limited cross certification of QA/QC staff in operational disciplines reduces the available personnel to certify,



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**Despite these important safety responsibilities, Metrorail has no formal documented procedures or training for terminal supervisors.**

and is a barrier to the certification process. QA/QC personnel also certify ROCC personnel, but records provided for this audit did not show that any QA/QC personnel are certified as rail controllers. Remaining QA/QC personnel who did not yet meet ASQ certification requirements were beginning to resume efforts to achieve ASQ CQA (Certified Quality Auditor) certification, which were put on hold in March 2020.

The records provided for this audit also showed that 5 of 9 QA/QC personnel did not have current roadway worker protection (RWP) Level IV qualifications as required, even after accounting for a 90-day qualification extension that was issued by Metrorail to account for the training delays linked to the public health emergency. Records also showed that rail instructors did not have current Level IV qualifications, which ROQT leadership stated in an interview was required. In response to a draft of this report, Metrorail stated instructors are not required to be Level IV qualified. Level IV qualifications would be required to serve as a Roadway Worker In Charge (RWIC) and bring other personnel, such as students, onto the roadway.

**Minimum Corrective Action:** Metrorail must develop and implement a plan to meet all of its training and certification requirements. Metrorail must also develop and implement a procedure to ensure only certified and trained personnel are working, and to ensure that any personnel not meeting training and certification requirements are not acting in roles they are not fully trained and certified on. Metrorail must ensure that all documents, such as SOP 406-01, are reviewed and updated in a timely fashion as required by Metrorail procedures.

**Metrorail has not documented procedures for terminal supervisors, and has not established the effective formal training for terminal supervisors needed to safely perform their duties.**

Terminal supervisors are responsible for serving as the control point for vehicle movement at end-of-line stations, essentially acting as a rail traffic controller does for other areas of mainline track, just over a much smaller territory. This includes remote control of interlockings, radio communication and oversight of personnel and vehicle movement, and related responsibilities. Despite these important safety responsibilities, Metrorail has no formal documented procedures or training for terminal supervisors on their job as a terminal supervisor.

Metrorail does provide some on-the-job training for terminal supervisors, but this process and the information presented is not standardized (see Finding 9). Terminal supervisors are then observed by QA for certification.

A review of one hour of radio communications to and from the Largo terminal supervisor on September 22, 2021 identified a case of improperly granted foul time. The terminal supervisor told an operator they had foul time to access a train on the tail track, but no red signal or other protections were established.



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**The lack of standardized criteria allows students who have not mastered the material to progress.**

The Metrorail Safety Rules and Procedures Handbook (MSRPH) provides steps required for foul time protection provided by a Rail Operations Control Center rail controller, but do not specify processes for the use of or granting of foul time involving terminal supervisors.

Metrorail did not provide any procedures specific to terminal supervisors as part of this audit. In response to a follow up opportunity to provide such procedures, Metrorail provided a Quality Assurance/Quality Control Group manual for terminal operations certification and refresher training dated May 2020. This manual provided information about qualification examinations only.

Investigations such as W-0128 of an improper vehicle movement at Franconia-Springfield Station further demonstrate the role that terminal supervisors can play in preventing or contributing to safety events. In this case, a terminal supervisor did not recognize that a train operator was keyed up at the wrong end of the train or that the operator had stated the wrong signal and directed the operator to proceed. Prior to the train incorrectly moving into the tail track, recordings demonstrated that audio could be heard in the terminal supervisor's workspace, likely from a non-work related video streaming service.

**Minimum Corrective Action:** Metrorail must define the job responsibilities of and procedures for personnel acting as terminal supervisors. Metrorail must develop and implement an effective formal training program for personnel acting as terminal supervisors that accounts for their safety responsibilities. This program must include initial training, certification, and refresher requirements.

**Metrorail does not have documented criteria to determine student proficiency in practical demonstrations of safety-critical operational tasks.**

ROQT requires operational personnel in training to demonstrate practical skills, however Metrorail does not define what standard the students must meet to successfully complete each task and continue in the training course.

For example, student train operators must complete a variety of tasks during the portion of training between classroom sessions and on-the-job training that Metrorail calls yard practical training. Forms used during yard practical training provide for a successful or unsuccessful rating, but instructors stated that there is no matrix in place to determine whether the student is proficient in a specific task, and there is no designation of the number of times a student can attempt each task or must complete each task. Instructors do not have guidance on how to conclude whether a student passed, and frequently plan to rely on LPI evaluations of students.



**Metrorail does not provide effective direction to and oversight of the personnel it utilizes as on-the-job training instructors.**

There is similarly no specific standard for interlocking operator, supervisor or station manager practical training, and forms used for these job titles also require a determination of successful or unsuccessful performance.

The lack of standardized criteria allows students who have not mastered the material to progress to the next phase of training and, eventually, to certification. Once certified, Metrorail allows these individuals to operate anywhere in the rail system.

Personnel who have taught train operator classes said there are definitely people who have been certified who progressed from classroom and yard practical training who they would not get on the train with if that person was the operator.

Division management suggested more proactive steps to provide additional guidance and information to students who need a bit more time to master the material, rather than allowing students to be rushed through training.

**Minimum Corrective Action:** Metrorail must establish and implement documented criteria for ROQT personnel to determine student proficiency in safety-critical operational tasks.

**Metrorail does not ensure personnel serving as on-the-job training instructors, including those personnel described as line platform instructors (LPIs), are effective and have specific training and direction on what to teach and how to assess their assigned students.**

Metrorail uses on-the-job training (OJT) for operational positions such as train operator, station manager, terminal supervisor and interlocking operator, but does not provide effective direction to and oversight of the personnel it utilizes as on-the-job training instructors.

### **Line Platform Instructors (LPIs)**

Train operator and station manager on-the-job training is conducted by individuals designated as line platform instructors (LPIs). Metrorail does not have a job description for LPIs, does not conduct any supervisory oversight of LPIs, and does not have any specific tasks that LPIs are supposed to conduct or oversee in their students.

“We don’t evaluate the LPI’s performance. We just don’t do it. We don’t do it,” one manager interviewed for this audit stated. Only if a student raises a concern to management would managers gather additional information. SOP 401-02 requires evaluations 90 days after beginning work as an LPI or in a utility (fill-in) capacity, and every 180 days thereafter by the RTRA Manager Administrative Services or designee and by their division manager. This SOP does not require field observations



**Terminal supervisors similarly rely on on-the-job training, without specific requirements or instruction for those serving as on-the-job training instructors.**



of performance as an LPI in the field. Personnel interviewed for this audit stated that a review in winter 2021, which had been past due when it was conducted, was compliance-based related to qualification scores, safety violations and attendance.

Metrolink does not have a designated number of LPIs to maintain across the system or in each division. LPIs are selected based on factors such as safety event history and prior certification scores, and then complete an initial general training course that is focused on how to teach. The training does not include direction on specific instruction in the field, but rather is focused on the general approach to serving in such a role.

Division management does not have input on the selection of LPIs based on their knowledge of and interactions with the individuals regarding the suitability of those individuals as a teacher for new personnel. This has led to interpersonal conflicts between certain LPIs and students that negatively impact learning, despite a panel that is responsible for what were described as informal interviews for the position. Even individuals who are not interested in being effective instructors or who may not be the best fit to serve as LPIs are incentivized to become an LPI because taking the LPI class helps individuals later become a utility (fill-in) supervisor.

There is no certification to maintain status as an LPI after initially taking the class, and no training or operations supervisors verify or monitor the actions of an individual LPI in the field.

The need for LPIs was growing at the time of this audit because Metrolink restarted train operator classes after pausing those classes at the onset of the public health emergency in March 2020. Training leaders stated they rely on RTRA to determine who to send to LPI training and when.

ROQT personnel stated that they recently developed a potential refresher training for LPIs that could be implemented as a requirement every two years, but that Metrolink has not acted to implement this training.

### **Terminal Supervisors, Interlocking Operators**

Terminal supervisors similarly rely on on-the-job training, without specific requirements or instruction for those serving as on-the-job training instructors (see Finding 7).

Metrolink also conducts on-the-job training for interlocking operators using whoever happens to be assigned to work in that division when the student is assigned. Some individuals stated that being an LPI is a requirement to be an on-the-job training instructor in a yard tower, but multiple others stated that they were simply assigned based on the shift they were working. Student interlocking operators spending approximately one week on each shift with whoever was working those days. This contributes to “hit or miss” instruction, particularly for utility (fill-in) interlocking operators who may be seen by those training them as reducing the trainer’s

**Like LPIs for train operators, there are no specific instructions on what to teach or how to teach it when serving as an on-the-job training instructor for a new interlocking operator.**

overtime opportunities, from individuals who may or may not be invested in helping the student learn the intricacies of the job and of that specific yard. According to interviews conducted for this audit, some interlocking operators decline to teach students, leading the students to train on that shift in another yard. This allows general operational observations but reduces the already limited opportunity for familiarization with the yard where the interlocking operator trainee is expected to be working most of the time (see Finding 1).

Like LPIs for train operators, there are no specific instructions on what to teach or how to teach it when serving as an on-the-job training instructor for a new interlocking operator. Individuals who have served in the role stated that they get no materials or direction. Training instructors emphasized the importance of OJT in the interlocking operator training process, particularly because there is no simulator or control board that can be used in training.

Interlocking operators expressed concern that they do not receive adequate training on third rail power energization and de-energization, including due to the unstructured nature of on-the-job training. In response to the draft of this report, Metrorail provided documentation that, following the conclusion of the on-site portion of this audit and the identification of this issue, Metrorail had updated the Interlocking Operator Incidents and Emergencies Participant Manual on January 31, 2022 to provide additional information related to power and de-energization.

**Minimum Corrective Action:** Metrorail must ensure all personnel serving as on-the-job training instructors for operations personnel, including those personnel described as line platform instructors (LPIs), interlocking operators, and terminal supervisors, have specific training and direction on what to teach and how to assess their assigned students, and to carry out a structured program to convey necessary information. Metrorail must also ensure that these personnel are effective by conducting supervisory oversight of OJTs and providing appropriate commendation, correction or removal from the program.

**Metrorail does not provide safety oversight of all safety equipment that is or may be past its calibration date that may be in use by operations personnel.**

During site visits for this audit in October 2021, the WMSC observed electrically insulated safety gloves in use that had a calibration expiration date of 2019, two years earlier. The supervisor those gloves were assigned to, and several other supervisors interviewed for this audit, did not know that the gloves had an expiration date.

The electrically insulated safety gloves are used as a safety precaution when hot sticking third rail to prevent electric shock or electrocution. Ensuring that the insulated gloves are within their calibration date is an important safety measure.



**The supervisor those gloves were assigned to, and several other supervisors interviewed for this audit, did not know that the gloves had an expiration date.**

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**WMSC checks of QA/QC audits identified instances in which the documented audit conclusions do not match recorded data.**

The gloves are supposed to be good for one year in their original packaging, then six months of use after opening.

Other safety equipment is also being used out of calibration. RTRA checks of supervisors and interlocking operators identified 7 of 9 radios past their calibration date.

Safety promotion is required to ensure personnel understand and are aware of the importance of safety requirements, including proper calibration of safety equipment.

Gaps in Metrorail's equipment calibration have been identified in previous WMSC oversight work and during the work of prior Metrorail safety oversight bodies.

**Minimum Corrective Action:** Metrorail must provide safety oversight of and adequately train operations personnel on requirements for all safety equipment that is or may be past its calibration date to ensure that only properly calibrated safety equipment is in use.

**Some RTRA QA/QC audits contain conclusions that do not match actual conditions. RTRA's QA/QC procedures do not include complete work instructions for all audits or specific instructions for removing personnel from service.**

RTRA QA/QC audits are a good practice and can identify important safety issues. However, WMSC checks of QA/QC audits identified instances in which the documented audit conclusions do not match recorded data from the same time, and additional instances in which individuals being observed performed differently from other days when they were not being monitored by a QA/QC audit.

Comparisons of QA/QC forms for radio compliance audits to WMSC review of the recorded audio from the same time period identified transmissions that were not in compliance with procedures that QA/QC had recorded as being in compliance. This includes examples of audits of New Carrollton Rail Yard communications on April 30, 2021 and July 12, 2021. Two separate QC officers documented (in apparently separate, uncoordinated audits that were each later signed off on by their manager) 100 percent compliance in the same eight communications that they reviewed in the morning of April 30, 2021, but WMSC review of radio recordings of those transmissions demonstrated a lack of required repeat backs and a lack of use of "over" and "out" as required.

The WMSC also observed an interlocking operator using the proper radio terminology, "tower out" to complete radio exchanges during a QA/QC audit, but when listening to that person's transmissions on a different day identified that the individual was not using that proper terminology.



**When the WMSC requested the standard operating procedure or work instructions that governs such audits, Metrorail provided a document that was revised two days after the WMSC made the request.**

When QC personnel do observe and document safety issues as part of their important rules compliance and internal oversight function, there are no documented procedures or instructions for QC personnel to determine whether they must remove individuals from service or otherwise immediately report events observed during their audits.

WMSC review of QA/QC audit reports identified five instances in the first half of 2021 in which QC officers observed operators move without speed commands but did not remove the train operator from service or inform Metrorail's Safety Department of the safety event. Under the WMSC's Program Standard, Metrorail as an organization is required to report these events to the WMSC. Investigation W-0145 is an example of another such event that was later identified by the WMSC and investigated.

QC personnel interviewed for this audit described the threshold for removing someone from service as being something "egregious," and described the decision as knowing it when they see it, but did not have any written reference for such a threshold. SOP 206-01, RTRA QA/QC Internal Auditing Procedures provides similarly vague direction related to "minor" or "major" areas of noncompliance, and related to the removal of an employee from service.

When the WMSC requested the standard operating procedure or work instructions that governs such audits, Metrorail provided a document that was revised two days after the WMSC made the request. The previous version predated Metrorail's 7000 Series cars and stop and proceed mode, so did not include current practices.

QC officers stated that they only confirm movement without speed commands via data downloads, rather than during their direct observation at station platforms.

Zero speed command inspections are intended to be conducted by creating a situation in which the operator has zero speed commands while servicing a station platform. Metrorail rules require the operator in that situation to keep doors open until speed commands are available or the operator has explicit permission from the ROCC to move. Compliance issues would include closing the doors then sitting in the operating seat waiting for permission to move, or moving the train without permission.

During this audit, RTRA division managers noted that Metrorail could further improve the effectiveness of these audits by communicating the findings more quickly, rather than waiting for additional data and downloads, when the findings are based on what a QC officer has seen on site. Documented procedures for removal from service and immediate reporting would also help achieve this improved communication.



**Corrective actions in multiple instances were limited to counseling the individual rather than making sure that everyone is aware of rule updates by instituting a process change.**

**Minimum Corrective Action:** Metrorail QA/QC management must develop and implement procedures to conduct and document regular spot checks of actual QA/QC work to ensure that the work is accurate and sufficient. Metrorail must develop or update work instructions for each type of QC audit to ensure the instructions reflect all safety requirements, reporting requirements, and current operating rules and practices. Metrorail must develop and implement specific guidelines for QC personnel to report or remove personnel from service during audit observations or certifications.

**Metrorail closes internal corrective actions and identified issues, including those related to RTRA QA/QC audits, without fully identifying or completing required improvements or changes.**

Although RTRA's QA/QC Audits are a good practice and identify safety issues when properly conducted, they do not always lead to effective corrective actions.

Some root cause analyses, for example, point toward a possible systemic issue such as an operator reporting not knowing that a rule had been changed, but corrective actions in multiple instances were limited to counseling the individual rather than making sure that everyone is aware of rule updates by instituting a process change.

More than one quarter of the approximately 200 QA/QC entries reviewed for this audit do not have a root cause determined, while many others cite a root cause such as "complacency" that does not assist in the development of an effective, lasting corrective action.

The QA/QC process to require managers to submit corrective actions back to the QC officer is positive, but even issues that do have root causes listed are being marked as closed before listed corrective actions have been completed.

For example, on May 3, 2021, a QC audit identified safety issues related to the Alexandria Rail Yard train control board that were later identified by the WMSC. Days later, Metrorail held a meeting about the issue, but the safety issue remained unresolved at the time of this audit (See Finding 1). However, the issue was listed as closed by QA even though the safety issue related to a lack of prohibit entrance and prohibit exit functions persisted, and no root cause or permanent corrective action were listed.

In another example, radio system coverage deficiencies that have been identified are routinely marked as closed corrective actions without any resolution of the radio coverage issues.

Similarly, QICO's 2020 internal safety review of rail station and train operations demonstrated that only 12 percent of RSTO safety measurement system reports

**The issue was listed as closed by QA even though the safety issue related to a lack of prohibit entrance and prohibit exit functions persisted.**

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included corrective actions, and only 32 percent included root causes. None included required fatigue data. Average completeness was just 47 percent.

Individuals interviewed for this audit acknowledged that there is a significant focus on closing out items – be they safety measurement system events or items identified for corrective action – rather than on making improvements to mitigate future risk.

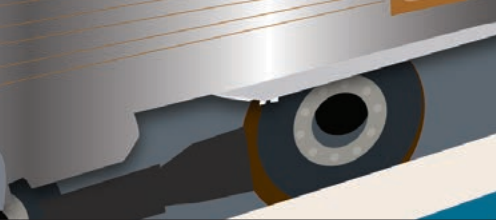
**Minimum Corrective Action:** Metrorail must develop and implement a process to ensure that when a potential systemic improvement is identified it is integrated into its safety risk management and corrective action process to ensure effective, Metrorail-wide implementation. Metrorail must provide training on root cause analysis and systemic corrective actions to each individual in the organization who is responsible for that process. Metrorail must ensure that corrective actions are only closed when the systemic safety improvement is completed and fully documented.

**With frequent modifications due to temporary and permanent orders, and outdated versions of Metrorail’s rulebook being distributed to personnel when hard copies are available, the latest Metrorail rules are not easily accessible to train operators. This creates document control issues and makes a rule requiring personnel to carry the latest version of the Metrorail Safety Rules and Procedures Handbook (MSRPH) unrealistic.**

Metrorail’s current Metrorail Safety Rules and Procedures Handbook is only available electronically, however it includes rule 1.12 that requires that operational employees, who are not permitted to use electronic devices, have a current copy of the rulebook with them including all current special orders during work assignments. The latest version of the MSRPH has not been printed for personnel. This creates conflicts between the rule and actual practice and contributes to outdated printed versions of the rulebook being available in the field.

In any case, the rulebook is more than 700 pages long, and includes rules applicable to all Metrorail employees throughout the document, making it difficult to reference the rulebook while actively working even if a current version is available. Special orders are produced and distributed separately. In 2021, Metrorail issued approximately 60 temporary or permanent orders related to the Metrorail rulebook (MSRPH) and 3 special permanent orders related to the station manager procedures book.

Train operators generally do not log in to WMATA computers, so they could also have difficulty accessing the latest electronic version even when they are not operating a train.



**This creates conflicts between the rule and actual practice and contributes to outdated printed versions of the rulebook being available in the field.**

In addition, the current electronic version of the rulebook is not immediately updated each time a temporary or permanent order is issued, so even personnel accessing the electronic version would need to separately research in Metrorail's intranet whether there are any relevant temporary and permanent orders that might be in effect. Metrorail provides hard copies of temporary and permanent orders to train operators as the documents are issued. Even if an operator or other employee keeps the document with an outdated hard copy of the rulebook, it may not be easily identified when accessing the outdated rule what the current rule is.

Metrorail did not document its change away from printed rulebooks, and still maintains a stated requirement for train operators to carry a current copy of the rulebook as part of their certification process, based on rule 1.12.

In addition, personnel who had just taken classes said that they received hard copies of the rulebook, despite Metrorail's shift to an electronic version that is frequently updated through a variety of temporary and permanent orders. The hard copies distributed in class were not current. RTRA management acknowledged that if operators are carrying a copy of the rulebook, it is likely outdated due to constant changes.

WMSC inspections have observed hard copies of the MSRPH in workspaces that are one to five years old, and ROQT training was also not using the most recent version for their work.

Metrorail's internal safety review completed in December 2020 identified similar concerns, despite RTRA OAP 101-12 requiring "all obsolete controlled documentation shall be archived and removed from hard copy locations to prevent unintended use by RTRA personnel!"

QICO identified a 2016 version of the MSRPH that was active on the Station Manager DIRECT computer system in 2020, and found that there was no clear communication to operations personnel that the MSRPH had been updated. 10 of 45 station managers asked as part of that QICO internal safety review were not clear on how to access the updated electronic version of the rule book or the separate but related station standard operating procedures handbook.

Metrorail recently began the process of rewriting its rules. This includes designating the Safety Department as responsible for the rulebook.

**Minimum Corrective Action:** Metrorail must ensure that only current copies of the rulebook are available and in use. Metrorail must provide operational employees with immediate access to the current rules relevant to their work during their work assignments, including any modifications due to temporary or permanent orders.



**Training is critical to safe operations, and supervisory oversight to provide coaching, guidance and a check on instructors ensures the instruction is meeting WMATA's requirements.**

### **Metrorail does not conduct effective oversight of training instructors.**

ROQT supervisors are not required to observe rail instructors conducting their duties in the field, outside of a classroom or lab environment. This leads to sole reliance on student evaluations and feedback to assess instructor performance in the field.

Supervisors visit classroom sessions, but do not regularly oversee field training such as yard practical training. There is no documented standard for the evaluation of instructors or required frequency of supervisory assessments and monitoring of field training.

Training is critical to safe operations, and supervisory oversight to provide coaching, guidance and a check on instructors ensures the instruction is meeting WMATA's requirements.

**Minimum Corrective Action:** Metrorail must require and implement consistent, effective supervisory oversight of training instructors, including of their work in the field.





**Even managers up to the superintendent level expressed concerns that their input and expertise is not requested or considered in the development of new rules and procedures.**

## RECOMMENDATIONS

- 1 **Metrorail operations departments do not have effective processes to consider and act upon safety input from employees at all levels of the organization.**

Several people interviewed for this audit stated that many Metrorail operations employees feel ignored by the organization, citing examples of work orders being closed before repairs are actually completed, redundant requirements, or RTRA's responses to safety events that focus primarily on discipline rather than improving safety through implementation of just culture principles as specified in Metrorail's Public Transportation Agency Safety Plan (PTASP).

Even managers up to the superintendent level expressed concerns that their input and expertise is not requested or considered in the development of new rules and procedures, that people may be scared to report mistakes due to potential discipline, or that "sometimes you feel like a robot" filling out multiple reports each week that convey the same information.

Other personnel noted that they frequently see people doing things contrary to rules and procedures with no action such as coaching or supervisory oversight taken to ensure the work is done safely and properly because those people are getting a job done.

While this audit was underway, Metrorail was completing several weeks of management focus on integrity.

"We need to learn how to correct our behavior ourselves without initiatives coming down to RTRA," one manager said.

Another manager expressed concerns that the talent identification, promotion and selection process has exacerbated these challenges due to a belief that frontline personnel and line managers do not have fair opportunities to be considered for advancement. Based on those experiences, the manager expressed concerns about retaliation if they raise concerns about issues within the organization, including about how they are treated by superiors. "I'm at point where I just don't care, I'll do my job, I'm good," the manager said.

**Possible Corrective Action:** Metrorail may develop and implement plans to remove barriers to employee reporting of safety hazards and issues, that safety input is sought and considered from employees at all levels of the organization, and that reports and input are promptly addressed through the safety risk management process, and evaluate managers on their performance in these areas.

**Metrorail has an opportunity to improve operations training by returning to positioning training instructors in each division on a regular basis to answer questions and provide regular instruction.**

**Cranking a switch is manually throwing the switch from one position to the other.**

**② Metrorail has an opportunity to improve training by assigning dedicated instructors to each division.**

Metrorail does not offer regular, frequent, hands-on instruction to operations personnel. Metrorail has an opportunity to improve operations training by returning to positioning training instructors in each division on a regular basis to answer questions and provide regular instruction.

RTRA leadership expressed the belief in interviews that having a training instructor at each division would help better build skills, reduce the barrier to employees getting information about an event that they heard about or an issue that they realized that they do not understand, and could reduce the number of or severity of incidents that occur.

RTRA leadership stated that WMATA has Metrobus training instructors assigned in this manner at each bus garage, and could benefit from mirroring that arrangement on the rail side of the organization.

**Possible Corrective Action:** Metrorail may assign training instructors to each rail division and assign them to provide regular hands-on training and information to other personnel.

**③ Interlocking operators are authorized to hand crank switches, are not being certified to take this action.**

Metrorail rules state that rail operations supervisors, interlocking operators, qualified Track and Structures supervisors and ATC Maintenance personnel are qualified to hand crank a switch or derail. Although the other personnel are certified on this work, interlocking operators interviewed for this audit stated that they have not gone through the certification process for hand cranking a switch specified in the Performance Standardization Program Manual: Interlocking Operations (May 2020).

Cranking a switch is manually throwing the switch from one position to the other.

Utility and full-time rail supervisors must crank a switch during their certification process, but interlocking operators interviewed for this audit stated they were not required to complete this task. Interlocking operators receive some hand cranking training in initial classes, but are not required to have further training on cranking a switch no matter how long they remain an interlocking operator.



Interlocking operators do not crank switches frequently and tend to do it only when ATC personnel are not available in the yard and a switch needs to be manually realigned to allow a train to exit the mainline. Documents Metrorail provided in response to a draft of this report indicated that Metrorail had documentation regarding certifying interlocking operators on cranking switches that can be implemented.

**Possible Corrective Action:** Metrorail may assess whether additional training or safety promotion activities are needed for personnel conducting interlocking operator certifications, and whether supervisory oversight or improved documentation is needed to ensure that all elements of the certification procedure are followed for each certification. Metrorail may then act on such an assessment or assessments.

**4 Metrorail has an opportunity to improve the integrity of its certification process by establishing a procedure providing for QA/QC personnel to be certified by an entity other than their own colleagues.**

QA/QC personnel perform certifications for other operations personnel, and also certify their own QA/QC colleagues to continue conducting their certification and internal oversight work.

This creates an appearance of a conflict of interest and lack of oversight of the certification process for QA/QC personnel.

For example, there are QA/QC personnel performing certification activities who are not certified in that subject area as required. Without an external business unit performing certification of QA/QC personnel, Metrorail risks these personnel being recorded as certified by their QA/QC colleagues without completing all certification requirements.

This recommendation is similar to Finding 18 in the WMSC's 2020 ROCC Audit that ROCC instructors and managers were certifying their own colleagues. In that case, the certification had a direct effect on the schedule and availability of those colleagues to work required shifts. In this case, the issue relates to perception and oversight of the certification process.

**Possible Corrective Action:** Metrorail may assign another department, such as ROQT, to certify QA/QC personnel.



## Other Observations

This audit was conducted during the ongoing, long-term COVID-19 public health emergency.

From April 2020 until October 2021, Metrorail suspended some in-person management observations of terminal supervisors, interlocking operators and rail supervisors to facilitate social distancing public health measures.

During this audit, Metrorail was preparing for the opening of the Silver Line Phase 2 extension from Wiehle-Reston East Station to Ashburn Station. Training personnel said they were in the process of building a curriculum and were beginning to prepare for additional train operator classes. RTRA was preparing to hire candidates from outside of WMATA to enroll in some of the train operator and station manager classes, as provided for under an agreement between WMATA and Amalgamated Transit Union Local 689. In the past, station managers and train operators have begun their WMATA careers working for Metrobus. RTRA personnel expressed some concerns related to the adequacy of staffing due to recent promotions and retirements and the lack of new train operator classes until those classes resumed in fall 2021, but added that there remained many months before the line would open.

During site visits for this audit, the WMSC observed two violations of Metrorail's electronic device policy. A supervisor correctly identified that a station manager was improperly using a cell phone in the station kiosk. An elevator/escalator contractor at Minnesota Ave Station was also observed with earbuds in while working at the bottom of an escalator.

## Next Steps

WMATA is required to propose CAPs for each finding and to respond to each recommendation no later than 30 days after the issuance of this report. Each proposed CAP must include specific and achievable planned actions to remediate the deficiency, the person responsible for implementation, and the estimated date of completion. Each proposed CAP must be approved by the WMSC prior to WMATA implementation. For each recommendation, WMATA must either propose a CAP or submit a hazard analysis and associated documentation as required by the WMSC Program Standard.





## Appendices

# Appendices A, B, C and D

## Appendix A: Personnel Interviewed

### ➤ RTRA

- ◆ VP Rail Transportation
- ◆ 2 Directors, Rail Line Operations
- ◆ Manager, Operations Support
- ◆ 2 Quality Control Officers
- ◆ 3 Rail Operations Supervisors
- ◆ 3 Interlocking Operators
- ◆ 2 Station Managers
- ◆ 2 Superintendents
- ◆ 2 Train Operators

### ➤ ROQT

- ◆ Director, Rail Transportation Training
- ◆ Rail Transportation Training Supervisor
- ◆ 3 Rail Transportation Training Instructors

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## Appendix B: Site Visits, Radio Blocks reviewed

- Shadowed two Rail Operations Supervisors in the course of their duties, including observations of stations and rail operations
- Observed train movement on the Red Line
- Reviewed the following radio recordings:
  - **Ops 1** (Red Line) communications 8/19/2021, 7:00-8:00 p.m.
  - West Falls Church Rail Yard communications on channel used by interlocking operator 8/24/2021, 4:30-5:30 a.m.
  - New Carrollton Rail Yard communications on channel used by interlocking operator 9/9-10/2021, 11:30 p.m.-12:30 a.m.
  - **Ops 2** (Part of Blue, Orange and Silver Line) communications 9/15/2021, 1:00-2:00 a.m.
  - **Ops 3** (Part of Blue, Yellow and Green Lines) communications 9/21/2021, 10:00-11:00 a.m.
  - Largo Terminal communications 9/22/2021, 4:30-5:30 a.m.

## Appendix C: Documents Reviewed

- System Safety Program Plan (SSPP) (1/2019)
- WMATA Transit Agency Safety Plan (V1.0, 10/8/2020)
- WMATA Safety and Security Certification Program Plan (1/2020, Rev. 4)

### ORGANIZATIONAL CHARTS:

- RTRA Operations Support Branch org chart (no date)
- ROQT–Rail Operations Quality Training Org chart (8/26/2021)
- Office of Rail Transportation org chart (6/18/2021)

### POSITION DESCRIPTIONS:

- Station Supply Runner (3/27/1997)
- Director of Rail Line Operations (9/20/2019)
- RTRA Quality Control Officer (8/10/2018)
- Superintendent Field Operations/OCC (2/26/2019)
- Rail Operations Supervisor (9/22/2017)
- Assistant Superintendent, Field/Train Operations (5/10/2013)
- Train Operator (8/20/2014)
- Interlocking Operator (11/30/1995)
- Station Manager (3/19/2015)
- Vice President, Rail Transportation (4/10/2019)
- Director Rail Transportation Training (9/8/2016)
- ROQT response on description of roles and responsibilities
- RSTO–Rail Station & Train Operators
- RTRA Department Roles and Responsibilities (spreadsheet)
- RTRA Employee and Budgeted Positions (August 3, 2021)
- RTRA Employee and Budgeted Positions (also provided for 1.c)
- ROQT Training Matrix and Plan
- RTRA Training Matrix and Plan (also titled ROQT Training Matrix in the document-more in depth/ specific of ROQT training matrix) (updated 8/23/2021)

- RTRA & ROQT Training spreadsheet (1/1/2018 through 9/16/2021)
- ROQT Training Calendar (September–October 2021)
- Rail Operations Supervisor Certification of Qualification Combination Examination (Updated 6/2021, Rev. 1)

### Training manuals

#### INTERLOCKING OPERATOR

- Interlocking Operator: Introduction to Yard Operations Participant Manual (February 16, 2021, Rev. 3)
- Alexandria Yard Field Trip Participant Manual (February 16, 2021, Rev. 3)
- Interlocking Operator Incidents and Emergencies Participant Manual (February 16, 2021, Rev. 3)
- Interlocking Operators Radio Communication Participant Manual (February 16, 2021, Rev. 3)
- Interlocking Operator Role and Responsibilities Participant Manual (February 16, 2021, Rev. 3)
- RPM Computer Training Participant Manual (February 16, 2021, Rev. 3)
- Interlocking Operator: Specific Rules for Interlocking Operators Participant Manual (February 16, 2021, Rev. 3)



## INTERLOCKING OPERATOR (Continued)



- Yard Field Trips Participant Manual (February 16, 2021, Rev. 3)
- Yard Movement Coordination Participant Manual (February 16, 2021, Rev. 3)

## RAIL OPERATIONS SUPERVISOR

- ROS Incidents and Emergencies Participant Manual, Rail Supervisors (April 2, 2021, Rev. 14)
- The Rail Supervisor Profession Participant Manual, Rail Supervisors (April 2, 2021, Rev. 14)

## STATION MANAGER

- Customer Service Participant Manual (February 8, 2021, Rev. 10)
- Incidents and Emergencies Participant Manual (February 8, 2021, Rev. 10)
- Kiosk and Station Familiarization Participant Manual (February 8, 2021, Rev. 10)
- Procedures and Reports Participant Manual (February 8, 2021, Rev. 10)
- Radio Communications Participant Manual (February 8, 2021, Rev. 10)

## TRAIN OPERATOR

- Train Operator Reference Guide (June 10, 2021, Rev. 7b)
- Train Operator Incidents and Emergencies Participant Manual (June 1, 2021, Rev. 14)

- Train Operators Radio Communications Participant Manual (June 1, 2021, Rev. 14)
- Train Operator Reports and Forms Participant Manual (June 1, 2021, Rev. 14)
- WMATA Railcars Participant Manual (June 1, 2021, Rev. 14)
- WMATA Rail System Instructor Guide (June 1, 2021, Rev. 14)

## ► Training quizzes, exams, tests

### INTERLOCKING OPERATOR

- Interlocking Operator Quiz 1 (printed 8/26/2021)
- Interlocking Operator Quiz 1 (10/18/2021)
- Interlocking Operator Test (10/20/2021)

### RAIL OPERATION SUPERVISOR

- Rail Supervisor Incidents and Emergencies Test (printed 8/26/2021)
- Rail Supervisor Profession Test (printed August 26, 2021)
- Rail Operations Supervisor Certification of Qualification Combination Examination (Updated 6/2021, Rev. 1)

### STATION MANAGER

- Station Manager Customer Service (printed August 26, 2021)
- Station Manager Final Exam (printed August 26, 2021)
- Station Manager Incidents and Emergencies (printed August 26, 2021)
- Station Manager Kiosk and Station Familiarization (printed August 26, 2021)
- Station Manager Procedures and Reports (printed August 26, 2021)
- Station Manager Radio Communications (printed August 26, 2021)

### TRAIN OPERATOR

- Train Operator Lifeline Test 1 (printed 8/26/2021)
- Train Operator Lifeline Test 2 (printed 8/26/2021)

**TRAIN OPERATOR (Continued)**

- Train Operator Midterm Test 2019 (printed 8/26/2021)

**TERMINAL**

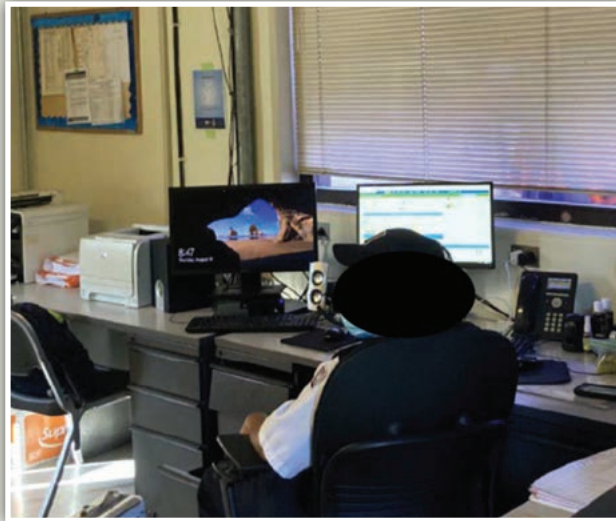
- Terminal Procedures Exam (10/20/2021)

➤ **Other training related docs:**

- July 2021 Report for Mandatory Courses (8/4/2021) COO-RAIL-RTRA (spreadsheet)
- Performance Standardization Program Manual: Interlocking Operators (May 2020, Rev. 1)
- Performance Standardization Program Manual: Terminal Operations (May 2020, Rev. 1)
- Performance Standardization Program Manual: Train Operations (June 2020, Rev. 6)
- Refresher and recertification course completion status for train operators, station managers, rail traffic controllers, rail operations supervisors, and interlocking operators (as of 10/14/2021)
- ROQT Training Activity 2021 (revised 10/12/2021)
- ROQT Yard Practical Rotation Evaluation Forms (10/1/2021 through 10/12/2021)
- ROQT Training Calendar September-October 2021
- QICO Internal Safety Review: Rail Operations Oversight, Supervision & Fitness for Duty (December 23, 2020)
- Metrorail Stations Standard Operating Procedures Handbook (September 2015)
- RTRA QA/QC Group Internal Audit Reports (January 1 through August 3, 2021)
- RTRA QA/QC Group Internal Audit Plan (chart) (Revised 8/19/2021)
- RTRA QA/QC Group internal audit log (1/1/2021 through 8/3/2021)
- **RTRA Lessons Learned**
  - Brentwood Yard (B99) Red Signal Overrun, 2019-001 (10/9/2019)
  - Collision Due to Carelessness and Bad Habits, 2019-002 (11/5/2019)
  - Improper Door Operations Leads to Customer Injury, 2019-003 (11/8/2019)

- Doors Opened Opposite Platform Side, 2019-004 (12/10/2019)
- Alexandria Yard (C99) Trailed Switch, 2020-001 (2/12/2020)
- Alexandria Yard (C99) Trailed Switch via Poor Communications, 2020-002 (6/9/2020)
- Greenbelt Division (E99) Red Signal Overrun/ Trailed Switch via Poor Radio Communications, 2020-003 (9/24/2020)
- Excessive Deadhead Speed Contributes to AMF Communication Issues, 2020-004 (9/21/2020)
- West Falls Church Yard (K99) Pin Damage/ Coupling on a Curve, 2020-005 (10/9/2020)
- Brentwood Division (B99) Red Signal Overrun, 2020-006 (10/11/2020)
- Moving Train with ATP Cut-Out and Zero Speed Commands, 2020-007 (10/16/2020)
- Train Doors Opened on the Off-Platform Side of a Train, 2021-001 (1/25/2021)
- West Falls Church Division-Red Signal Overrun, 2021-002 (2/19/2021)
- Failure to Comply with Electronic Access Usage Policy, 2021-003 (3/9/2021)
- Failure to Follow Procedures Leads to Improper Door Operations, 2021-004 (3/29/2021)
- Failure to Follow Procedures Leads to Improper Door Operations, 2021-005 (6/15/2021)
- Customer Locked in Station Following Failure to Follow Procedures, 2021-006 (7/23/2021)





### ► Forms

- Absenteeism First Warning-Supervisory Counseling
- Absenteeism Second Warning-Written Warning and 1 Day Suspension
- Absenteeism Third Warning-Final Written Warning and 3 Day Suspension
- Administrative Requirements for Employee Separation
- Branch Ave PM-PUT-INS Weekday
- Certificate for Medical Absence (54600-F-50, 11/21/2016)
- Communique Template
- Division PUT-INS Saturday Regular Schedule
- Division PUT-INS Sunday Regular Schedule
- Division Rail Efficiency Testing Results
- Division Track Unit Movement Log
- Employee on the job injury and occupational illness report form
- Interlocking and Terminal Supervisor Job Task Proficiency Evaluation form (last revised 5/1/2020)
- Interlocking and Terminal Supervisor Job Task Proficiency Evaluation form (10/1/2021)
- Interlocking and Terminal Supervisor Job Task Proficiency Evaluation form (last revised 5/1/2020)
- Interlocking Operator's Train Consist Verification Form

- Interlocking Operators' Overtime Rotating Board (28 Day Board)
- Investigation Report form, 4.21 (6/79)
- Performance Improvement Plan template
- Post Accident/Post Incident and ARP's Decision Maker Referral Form (Revised Aug. 2013)
- Rail Traffic Controller Job Task Proficiency Evaluation forms (10/4/2021, 10/12/2021)
- Random and Follow Up Referral Form (Revised Aug. 2013)
- Reasonable Suspicion Referral Form (Rev. Aug. 2013)
- Re-certification and medical exam notification memorandum template
- Report of Absence form
- RTRA Customer Complaint form
- Train Interval Sheet
- Train Operator and Road Supervisor Job Task Proficiency Evaluation form (last revised 6/5/2020)
- Train Operator and Road Supervisor Refresher/ Re-Instruction Evaluation form

### ► Permanent Orders

- S-15-02, Issuance of the Updated WMATA Metrorail Station Standard Operations Procedures Handbook (MSSOPH) (10/20/2015)
- S-16-01, MSSOPH #31 (Use of Restrooms in Metrorail Passenger Stations) Re-issuance and Revisions (3/23/2016)
- S-18-01, Creation of MSSOPH SSOP #64 (Metrorail Station Checklist Procedures) (12/3/2018)
- S-20-01, Removal of MSSOPM Hardcopy Requirement in Station Kiosks (8/4/2020)
- S-20-02, Rescinding/Replacing Specific Checklists in Stations, SSOP #46, 58, 64 (effective 10/19/2020)
- S-21-01, Revision of SSOP #40 Lost and Found Process (effective 3/1/2021)

**Permanent Orders (Continued)**

- T-12-07, SOP #28 Appendix A revision (add no power outage required for fire departments, protection ensured by the RWIC from OEM) (5/9/2012)
- T-12-08, SOP 35 Revision and addition (5/9/2012)
- T-12-09, MSRPH Revisions (modifications to operating rules 3.67 and 3.97) (7/2/2012)
- T-13-01, MSRPH Revisions (modifications to operating rules 3.67, 4.221, 4.223; and SOP 40) (4/5/2013)
- T-13-04, MSRPH Revisions (modifications to operating rules 3.91, 3.79; and SOP 16) (5/15/2013)
- T-18-02, Modification of MSRPH Operating Rule 3.13 (Train operators shall be in operating cab and keyed up at least two minutes before their scheduled departure times) (2/14/2018)
- T-18-07, Addition of RWP Section to the MSRPH, Radio Protocol, Maximum Allowable Speed and Portal Horn Usage Modifications (9/19/2018)
- T-18-08, Modification to MSRPH Operating Rule 3.33 (RTRA QC officers authority in revenue service to unseal/reseal the Door Mode Selector Switch) (12/3/2018)
- T-20-35, Update to Track Access Guide in Section 5 – RWP (10/9/2020)
- T-20-36, Deletion of Operation Rule 3.47 (referencing Rohr 1000 series railcar truck cut-out procedures) (10/9/2020)
- T-20-39, Update to Track Access Guide in Section – RWP (effective 11/15/2020)
- T-20-40, RWP Level 4 Exemption for selected ROCC Personnel (12/3/2020)
- T-20-41, Update to definitions, MSRPH SOP #40 (door operations/station servicing procedures) (12/7/2020)
- T-20-43, MSRPH Update Section 5 – RWP 5.13.5 foul time (effective 12/29/2020)
- T-20-44, update to section 3.27, 3.97, and 3.87 with regards to operating in Mode 3 (effective 12/29/2020)

- T-21-02, MSRPH Section 3, Operating Rules governing train operating speeds (3/2/2021)
- T-21-06, Section 5, Appendix A: Roadway Job Safety Briefing Form (effective 4/30/2021)
- T-21-08, MSRPH SOP #28 and Appendix A of SOP #28 (updates activities exempt from red tag power outage) (5/7/2021)
- T-21-19, RWP Quick Access Guide, MSRPH Section 1 (5/24/2021)
- T-21-21, MSRPH General Rule 3.16, Section 3 – operating rules 3.1, 3.16, and 3.84 (7/13/2021)
- T-21-22, Modification to Operating Rule 3.126 storage of rail vehicles (effective 8/16/2021)
- T-21-24, removes SOP 6, 7, 8 and replaces with new SOP: Procedures for Managing Smoke and Fire on the Metrorail System (effective 9/1/2021)
- T-21-25, adds SOP #34A Malfunctioning Class 2 Rail vehicles to the MSRPH (effective 8/16/2021)
- T-21-30, Revises SOP #2 and 28 within the MSRPH (effective 12/31/2021)
- T-21-31, Modification to AMF procedures step 15, section 5.13.6 (effective 8/30/2021)
- T-21-34, Safety Reporting Standards, SOP 4.1, 4.167, 5.3, and 5.6 (replaces with safety reporting standard) (approved on 7/13/2021, effective 7/1/2023)



## Permanent Orders (Continued)

- T-21-37, MSRP Section 1 – General Rules and RWP Quick Access Guide (modifies definition of appropriate radio operations channels to incorporate new OPS 4) (effective 8/22/2021)
- T-21-44, SOP 2 & Glossary to reflect GOTRS terminology (effective 11/14/2021)
- T-21-45, modifies SOP 6, 7, and 8 to reflect ROCC reorganization (effective 11/14/2021)

## ➤ Temporary Orders

- S-21-02, Rev. 1, procedures for emergency shaft access door at Medical Center Station (effective 6/28/2021)
- T-18-10, SOP 40 – Door Operations/Station Servicing Procedures (12/3/2018)
- T-19-09, exception to SOP #28 allowing C3M Power Systems qualified RWP trained contractors access to the roadway while third rail power is energized (effective 12/16/2019)
- T-19-09, Rev. 1, exception to SOP #28 allowing C3M Power Systems qualified RWP trained contractors access to the roadway while third rail power is energized (approved 3/10/2020; effective 2/25/2020)
- T-20-01, SOP #28 allowing C3M Power Systems qualified RWP trained contractors access to the roadway while third rail power is energized (approved 1/9/2020; effective 2/24/2020)

- T-20-01, Rev. 2, SOP #28 allowing C3M Power Systems qualified RWP trained contractors access to the roadway while third rail power is energized (approved 9/14/2020; effective 2/24/2020)
- T-20-31, Rev. 3, Power Energization Verification (effective 6/16/2021)
- T-21-06, modifies SOP 23 Class 2 vehicle operations (effective 2/13/2021)
- T-21-07, exception to MSRP section 5.4.1 what is the roadway, re Grosvenor staging area, contractor will be allowed escorted access while third rail is energized (effective 4/15/2021)
- T-21-09, exception to MSRP section 5.4.1 to allow contractor qualified RWP trained personnel to access the roadway while third rail power is energized (effective 4/16/2021)
- T-21-10, exception to SOP 28 and Appendix A allowing Kiewit's qualified RWP trained contractors access to the roadway while third rail power is energized (effective 3/15/2021)
- T-21-11, extends RWP refresher or requalification training for 90 days due to COVID (effective 7/13/2021)
- T-21-11, Extension of RWP Qualification period due to COVID-19 virus (approved 4/5/2021; effective 4/1/2021)
- T-21-12, exception to MSRP Section 5.4.1 What is the Roadway (effective 5/29/2021)
- T-21-14, ACS Limits for Green Line Summer 2021 Shutdown – TPSS/TBS Upgrades (effective 5/29/2021)
- T-21-16, reverse stretch (coupling/uncoupling class 1 rail vehicles and recovery train operations of defective/disable class 1 rail vehicles (effective 5/3/2021)
- T-21-18, exception to SOP 28 Appendix A allowing structural engineers access to the roadway without a third rail power outage (effective 4/30/2021)
- T-21-29, ACS limits for Rockville Metro Station shutdown – Platform Canopy Replacement (effective 9/10/2021)



**Temporary Orders (Continued)**

- T-21-39, Notice of potential to foul the roadway re Virginia Metro HQ construction site (effective 8/10/2021)

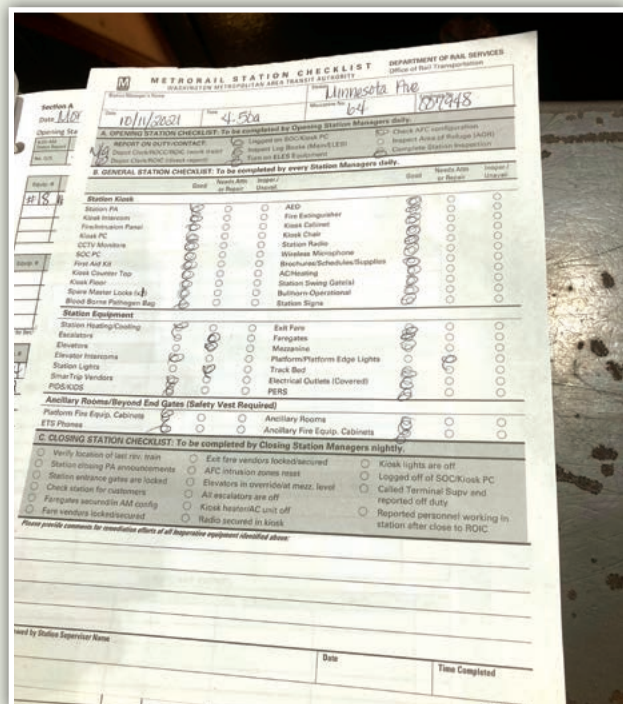
➤ **SOPs**

- 102-01, Removing an Employee from Service (last reviewed 1/10/2020, Rev. 1.1)
- 106-01, RTRA Rules Efficiency Testing - Train Operations (last reviewed 2/3/2020, Rev. 3.0)
- 200-02.19, SCADA Alarm Management (origination date 10/13/2018, Rev. 0)
- 200-02.21, Replacement of a Defective Station Entrance Master Padlock (origination date 10/18/2018)
- 202-01, Rail Supervisor Daily Activity Report and Compliance Checks (last reviewed 7/7/2020, Rev. 4)
- 401-01, Rail Supervisor Daily Activity Report (RSDAR) Management Review Procedures (origination date 12/6/2018, Rev. 1.0)
- 401-02, RTRA Utility & LPI Programs: Applying, Qualifying, Retention, & Dismissal (last reviewed 6/1/2020, Rev. 2.0)
- 406-01, Tracking RTRA Recertifications (last revised 10/17/2016, Rev. 1.0)
- 502-01, Rail Supervisor Proficiency Train Operations (last reviewed 9/14/2021, Rev. 1.0)
- 502-01, Rail Supervisor Proficiency Train Operations (last reviewed 5/9/2018, Rev. 0)

➤ **Work Instructions**

- 801-01, RTRA Division Weekly Status Report (origination date 5/13/2020, Rev. 1.0)
- 801-02, Station Overrun Management Response Procedures (origination date 12/8/2020, Rev. 1.0)
- 806-01, Red Signal/Zero Speed Command Compliance Audit (last reviewed 2/3/2020, Rev. 2.0)
- 806-02, Roadway Worker Protection/Speed Restriction Compliance Audit (last reviewed 2/3/2020, Rev. 2.0)
- 806-03, Train Speed Compliance Audit (last reviewed 2/3/2020, Rev. 2.0)

- 806-04, Station Stopping/Door Operation Audit (last reviewed 2/3/2020, Rev. 2.0)
- 806-05, EV Shutoff Audit (last reviewed 2/3/2020, Rev. 2.0)
- 806-06, Personal Electronic Device (PED) Policy Audit (origination date 10/20/2020, Rev. 1.0)
- OAP 501-16, RTRA Utility Program: Applying, Qualifying, Retention and Dismissal (last revised 2/5/2012, Rev. 1)
- SharePoint Medical Absence Report Site instructions
- Policy/Instruction 7.4.4/1: Absenteeism, Appendix A Return to Duty Guidelines (approved 1/3/2017)
- Key Highlights of Absenteeism Policy (P/I 7.4.4/1) (Effective March 1, 2017)
- Safety Bulletin 18-10a, RWP frequently asked questions (10/31/2018)
- Memorandum re RTRA QA/QC Inspections scheduled between September 15 and October 22 of 2021
- Train Operations Guide & Procedural Checklists for WMATA Class I series Breda, Alstom, and Kawasaki Rail Vehicles (November 2019)



► **Other**

- CBA between WMATA and The Office and Professional Employees International Union Local No. 2, AFL-CIO (effective through June 30, 2021)
- CBA between WMATA and Local Union 689 of Amalgamated Transit Union AFL-CIO (effective July 1, 2020 through June 30, 2024)
- March 12, 2014 memorandum from Brian J. Donohoe to Raj Srinath re outsourcing revenue collection operation and elimination of corresponding Local 689 positions
- Certificate of Waiver for certification requirements due to COVID-19 for attached RTRA and CMNT employees scheduled for certification during the months of March 2020 through October 2020 (dated 3/16/2020, expires 10/30/2020)
- Reissued Certificate of Waiver for certification requirements due to COVID-19 for attached RTRA, ROCC, ROQT, and CMNT employees scheduled for certification during the months of March 2020 through April 2021 (dated 11/2/2020, expires 4/16/2021)
- Certificate of Waiver for certification requirements due to COVID-19 for attached RTRA Train Operations Employees scheduled for certification during the months of June 2021 through December 2021 (dated 6/1/2021, expires 12/31/2021)
- RTRA Hazard Log (lists hazards through June 11, 2021)
- RTRA contractor list (8/3/2021)
- RTRA Ops Changes Tracker (1/6/2017-10/15/2021)
- RTRA Division Weekly Status Report, all divisions (10/9/2021)
- RTRA Alexandria Division Report (week ending 10/2/2021)
- RTRA West Falls Church Division Report (week ending 10/2/2021)
- RTRA unnamed Division Report (week ending 10/2/2021)
- RTRA Glenmont Division Report (week ending 10/2/2021)



## Appendix D: Public Transportation Agency Safety Plan (PTASP) and System Safety Program Plan (SSPP) Elements Reviewed

### ➤ SSPP elements covered include:

- Overview of Management Structure (element 3)
- Implementation Activities and Responsibilities (element 5)
- Hazard Management Process (element 6)
- System Modification (element 7)
- Safety Certification (element 8)
- Safety Data Collection and analysis (element 9)
- Emergency Management Program (element 11)
- Rules Compliance (element 13)
- Facilities and Equipment Inspections (element 14)
- Training and Certification for Employees and Contractors (element 16)
- Compliance with local, state, and federal requirements (element 18)

### ➤ PTASP elements covered include:

#### 1. Safety Management Policy

- c. Organizational SMS Accountabilities and Responsibilities
- d. Functional area common SMS responsibilities
- e. Functional area specific SMS responsibilities
  - i. Executive level (EVPs, SVPs, VPs) responsibilities
  - ii. Technical Management (supervisors, managers, superintendents, directors, program managers) level
  - iii. Front Line and Represented Employees
  - iv. Safety risk coordinators (key personnel)
- f. Accountable Executive Responsibilities
- g. SMS documentation

#### 2. Safety Risk Management

- a. Develop and implement a Safety Risk Management (SRM) process for all system elements
- b. Risk Assessment Process
- c. Risk assessment methodology
- d. Hazard identification
- e. Hazard investigation
- f. Hazard analysis and evaluation of safety risk
- g. Hazard resolution (mitigation, elimination)
- h. Hazard tracking

### 3. Safety Assurance

- a. Systematic, integrated data monitoring and recording of safety performance
- b. Real-time assessment with timely information as to safety management and performance
- d. Departmental controls
- e. Compliance and sufficiency monitoring
- f. Document assurance activities
- h. Event reporting/investigations
- i. Change management
- j. Safety and Security Certification
- k. Corrective action plans

### 4. Safety Promotion

- a. Training
  - i. Competencies and Training
  - ii. Employee Safety Training
  - iii. Safety Rules and Procedures Training
  - iv. SMS-specific training requirements
  - v. Training Recordkeeping and Compliance with Training Requirements
- c. Safety Communications
- d. Hazard and safety risk information
- e. Safety committees





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