

The Washington Metrorail Safety Commission



Safety Audit

of the Washington Metropolitan Area Transit Authority
Audit of Communication Systems



Final Report:
December 4, 2025

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Prepared under the authority of the Washington Metrorail Safety Commission

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Executive Summary

The Washington Metrorail Safety Commission (WMSC) performed this audit of Washington Metropolitan Area Transit Authority (WMATA) Metrorail's Communication Systems through in-depth interviews, site visits, and document and data reviews conducted from March 2025 to June 2025.

The scope of this audit includes Metrorail's communications systems (voice or data transmission systems and related equipment) presently in use or available for use (e.g. back-up systems). This includes radio and public address (PA) systems. This audit's objectives include the assessment of communications systems inspections, maintenance, engineering, operational practices and procedures, and associated training for purposes of compliance with applicable Metrorail plans and procedures, regulations, and best practices.

This audit also focused on Metrorail corrective action plans including Metrorail's Quality Assurance, Internal Compliance & Oversight (Quality) internal audits and corrective action plans, WMSC corrective action plans, and WMATA recommended corrective actions that are overseen by the WMSC along with review of

any related safety event investigations involving Metrorail's communication systems.

The WMSC appreciates the cooperation of Metrorail personnel throughout the interviews and observations conducted for this audit, including promptly addressing hazards and safety concerns identified by the WMSC during onsite activities that required immediate mitigations.

This audit identified critical areas where Metrorail does not follow its procedures and requirements. There are 4 findings that Metrorail is required to address through the corrective action process as well as one existing corrective action plan (C-0219) that required modification. There are additionally two recommendations for Metrorail's consideration. The findings and recommendations identified are:

There are 4 findings that Metrorail is required to address through the corrective action process as well as one existing corrective action plan (C-0219) that required modification.

- **Finding #1: Communication personnel are not consistently completing preventive maintenance on its public address and radio communication systems in accordance with Metrorail's procedures.**

- ▶ **Finding #2:** Metrorail does not have adequate supervisory oversight to ensure adherence to testing and replacement requirements for electrical safety gloves.
- ▶ **Finding #3:** Metrorail rooms that contain communication systems equipment are not maintained in accordance with Metrorail policy to ensure an optimal environment for those vital systems.
- ▶ **Finding #4:** Metrorail is not maintaining its self-assessed staffing levels required to maintain its current communication systems.

Recommendation 1: Metrorail should review how it deploys and safeguards vital communications equipment.

Recommendation 2: Metrorail should review the maintenance tasks related to its communication systems and ensure that all personnel have the necessary equipment to complete them.

Full details on each finding are stated in the Findings and Minimum Corrective Actions section of this report. Metrorail is required to propose corrective action plans to address each finding no later than 30 days after the issuance of this report.





Background and **Scope**

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Metrorail communications systems including public safety radio systems in the Metrorail system that are used by entities such as local fire departments.

This audit's objectives include the assessment of communications systems inspections, maintenance, engineering, operational practices and procedures, and associated training for purposes of compliance with applicable Metrorail plans and procedures, regulations, and best practices. This audit does not evaluate radio protocol compliance. This audit excludes fire alarms, automatic fare collection lines, and emergency trip stations (ETS).

To meet the audit's objectives of assessing Metrorail's implementation of the above requirements and associated best practices to provide for the safety of those in the Metrorail system, this audit also focuses on Metrorail corrective action plans including WMSC Corrective Action Plans created to address findings from the **WMSC's first audit of Metrorail's communication systems, published on September 26, 2022**. This current audit also focuses on WMATA internal corrective and preventative actions (iCAPAs) overseen by the WMSC, and other corrective actions previously closed by entities such as the National Transportation Safety Board.

Metrorail's communications operations are part of the Office of Communications and Signaling. Collectively they are responsible for corrective maintenance (repair) and preventive maintenance of Metrorail communications systems including public safety radio systems in the Metrorail system that are used by entities such as local fire departments. The department provides



24/7 maintenance for various systems, including: Digital Video Recorder (DVR), Metrorail Station and Parking Garage Closed Circuit Television (CCTV), Station Public Address (PA) Systems, Passenger Emergency Response System (PERS), and Passenger Information Display System (PIDS). Communications and Signaling is responsible for maintaining all radio frequency communications (RFC), comprehensive radio communication system (CRCS), public safety radio system (PSRS), below-ground station radio distributed by antenna system, and in-building radio coverage cell enhancers.

Preventive maintenance inspections (PMI) are conducted to determine radio asset performance, potential deficiencies, and to prevent future failures. PMI are to be performed in accordance with Metrorail's Maintenance Control Policy (MCP). Corrective maintenance work orders may be generated as a result of unresolved issues during PMI and any other repair requests by the end users.

Three other WMSC projects relate to this audit with regard to radio:

- **WMSC Special Study of WMATA Metrorail's Radio Band and Infrastructure Replacement Project** (published August 4, 2025, summarized below.)
- **Audit of Emergency Management and Life Safety Programs** (published January 29, 2025, finding 1 of that audit identified that Metrorail does not have a reliable communication system for operations or emergencies.)
- **Audit of Metrorail's Control Center and Rail Operations** (published August 27, 2025, finding 9 of that audit identified that Metrorail personnel are not following Metrorail radio transmission rules such as for train identification and location information.)

WMSC Special Study of WMATA Metrorail's Radio Band and Infrastructure Replacement Project

Metrorail is continuing work on long-term plans to install and activate a new radio system. Metrorail stated the project was about halfway to completion, with approximately 80 percent of below-ground work done and 14 of 27 above ground towers completed at the time of this audit. WMATA purchased 5,400 portable digital radios that are multiband, meaning they will work on both the 490 MHz system WMATA currently operates on as well as the new 700 MHz system being installed. Most of the newly purchased radios have been distributed to personnel. This project, when complete, is intended to improve radio communications throughout the Metrorail system.

On August 4, 2025, the WMSC released a **Special Study of WMATA Metrorail's Radio Band and Infrastructure Replacement Project**.

The special study listed several bases for conducting the study:

- The WMSC and its predecessor safety oversight organizations have been aware of continued issues with inconsistent and unintelligible radio coverage at WMATA Metrorail for at least the last decade that have played a role in safety events and near misses. This notably includes the January 12, 2015 L'Enfant Plaza Metro Station

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This audit focused solely on the existing communication systems and the maintenance thereof.



smoke accident that resulted in the evacuation of more than 200 passengers from a 6-car Metro train, the transport of 84 passengers to hospitals, and the death of one passenger.

- Multiple findings and other official actions regarding radio communications at Metrorail have been issued by the WMSC and its predecessor safety oversight organizations, including one finding from the FTA's June 17, 2015 Safety Management Inspection Report that stated "Many WMATA employees throughout the agency ranked poor radio performance as their top safety issue."
- As recently as the WMSC's **2025 Audit of Emergency Management and Life Safety Programs**, continued radio issues were identified including in a finding that "Metrorail does not have a reliable communication system for operations or emergencies."
- WMATA has had unfinished efforts in place to address its radio communications deficiencies for years. The primary contract work for this effort began in 2017, has cost \$569.4 million to date, and has experienced repeated delays. The WMSC reviewed this project because the delay of improved radio communications directly affects safety at WMATA due to the danger of continuing communication deficiencies throughout the Metrorail system.

Metrorail has been working on its radio replacement project since 2015, with the major contract for this work beginning in 2017 which included updating infrastructure required for cellphone use as well as radio coverage to benefit both internal WMATA operations as well as local jurisdiction first responders. This work is currently projected to continue into 2027.

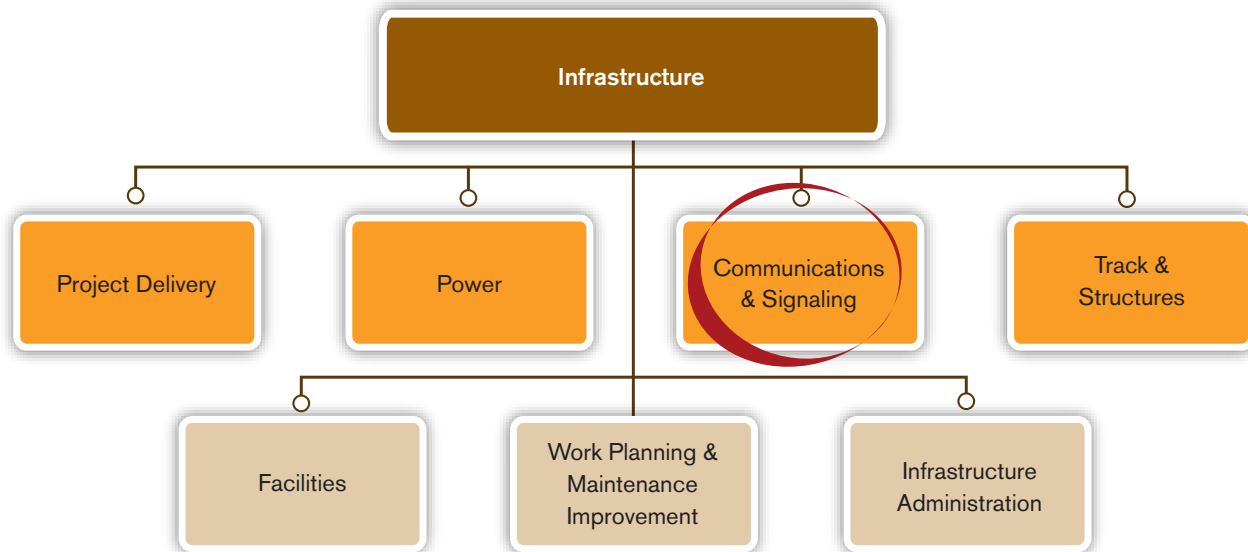
To date, the project has cost \$569.4 million and has experienced repeated delays. These delays directly affect the safety of the system because the long-term radio improvements and fixes will not be realized until the project concludes and there is a full cutover to the new system.

Before embarking on this audit and the special study adjacently related focus areas, the WMSC carefully considered how to reduce and prevent additional burden on WMATA. For example:

- Interviews were kept to the minimum necessary: only 6 interviews were requested for the study compared to 26 interviews conducted for the audit. Only two WMATA employees were interviewed for both the audit and the study and for those two, interviews were conducted a month apart and their lengths were kept to less than 1 hour for each.
- Separating the interviews allowed for focused discussion of each project area.
- Requested documents were limited in number and focused on the specific project, with no overlap.

As the radio replacement project was the sole focus of the special study, it was excluded from this Communication Systems Audit. This audit focused solely on the existing communication systems and the maintenance thereof.

Current Organizational Structure



Metrorail Internal Safety Review, Internal Review, and Associated Corrective and Preventive Actions

Metrorail's Quality Assurance, Internal Compliance & Oversight (Quality) last completed an Internal Safety and Security Review in 2018, which covered the Office of Systems Maintenance (SMNT) Communications Branch (COMM). At the time of that review, the Communications Branch was under the System Maintenance department. Since that time, the department has been renamed Communications & Signaling Office of Infrastructure. There were four findings and subsequent corrective action plans, all of which were closed by May of 2020. Quality later completed an Internal Review of Engineering & Maintenance, Radio Coverage with a report dated March 2, 2023 (findings and associated internal corrective actions are outlined below).

➤ **Internal Metrorail Finding QICO-RADC-22-01:** Enforce implementation of the established quality checks in accordance with the Maintenance Control Policy. (Overall Risk – Elevated)

Internal Metrorail iCAPA FQ-RADC-23-01: Complete and accurate documentation of compliance checks helps assure work completion and helps reduce failures.

“During this Internal Review, Quality observed inconsistencies with Level II compliance check records which in some instances may raise questions regarding whether a legitimate [quality] check was completed, per [the Maintenance Control Policy]. Quality noted the following discrepancies: “61% reports contained inaccuracies in time, date of check, and signature date...70% reports’ fields contained identical check marks repeating identically in the same location and line item...26% reports were performed during the toolbox meeting and not on a job site as required per the MCP...and 53% were not uploaded to Maximo within the acceptable timeframe.”

To address this Metrorail developed new training and quality check reviews to ensure compliance with the Maintenance Control Policy (MCP). Metrorail closed this iCAPA on March 1, 2024.



As noted in finding 1 of this audit report, WMSC personnel observed issues with proper completion of maintenance activities during the audit.

As noted in finding 1 of this audit report, WMSC personnel observed issues with proper completion of maintenance activities during the audit. Quality checks may help but they must consist of more than paperwork or procedural reviews and include onsite quality checks.

- **Internal Metrorail Finding QICO-RADC-22-02:** *Enforce adherence to existing fire extinguisher inspection requirements in accordance with the Maintenance Control Policy. (Overall Risk – Elevated)*

Internal Metrorail iCAPA FQ-RADC-23-02: Inspecting safety critical equipment at their required frequency promotes a safe working environment and helps assure compliance with established rules and requirements.

Quality's Internal Review cited OSHA (Occupational Safety and Health Administration) standard 1910.157(e)(2): "Portable extinguishers or hose used in lieu thereof (d)(3) of this section shall be visually inspected monthly." Quality observed two fire extinguishers that indicated they had not been regularly inspected from 2015-2020, two other fire extinguishers indicated missed inspections from 2019-2021, and one fire extinguisher indicated missed inspections for 2022.

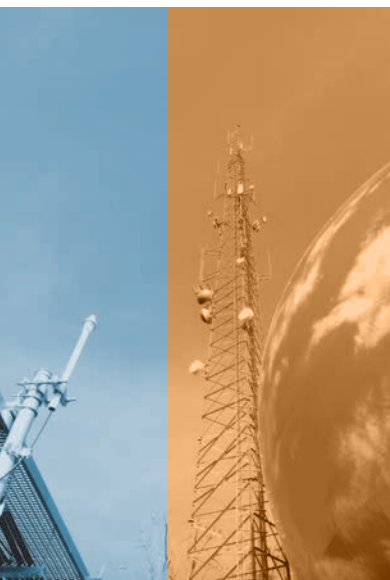
The WMSC noted similar issues in the **2025 Audit of Emergency Management and Life Safety** (finding 3) that identified Metrorail fire and life safety inspections do not identify and resolve deficiencies with fire life safety equipment and assets within stations. Corrective action plan C-0295B was created to address that finding 3, which will re-evaluate Metrorail's system for station inspections and fire life safety assets, including fire extinguishers. C-0295B is anticipated to close by March 16, 2027.

- **Internal Metrorail Finding QICO-RADC-22-03:** *Enforce utilization of a fresh unfilled inspection form for each inspection. (Overall Risk – Elevated)*

Internal Metrorail iCAPA FQ-RADC-23-03: Having comprehensive preventive maintenance work instructions and utilizing a fresh, unfilled inspection form for each inspection would help reduce errors and help assure accuracy.

Quality found during observations that personnel in the field either did not have guidelines or work instructions or were using improper forms. This included:

- "Absence of guidelines or work instructions for [Comprehensive Radio Communication System] and [Public Safety Radio Systems] radio quality testing"
- "Personnel were using an outdated revision of [preventive maintenance inspection] COMR-020 JP 4360 checklist" (for Remote Radio Site Preventive Maintenance Program Facility)
- Personnel not having "a blank /unfilled form, of [preventive maintenance inspection] COMR-020 JP 4360 checklist, at the time of inspection." (Personnel were using a completed checklist from another location)
- "Personnel not having guidelines or work instructions for Console testing"
- "Personnel did not have guidelines or work instructions for verification of reported radio deficiency"
- "Personnel did not have guidelines or work instruction for radio system repair"



Quality also noted the WMSC's **2022 Communications Systems Audit** (finding 2) that identified the same issue about the absence of work instructions: "there are no instruction, checklist or written PMI process used when performing what was described as monthly Comprehensive Radio Communication System (CRCS) and Public Safety Radio Systems (PSRS) systemwide Portable Radio Tests." Quality decided not to issue "an Internal Corrective and Preventive Action (iCAPA) for the absence of work instructions finding, instead Quality will monitor WMSC CAP [C-0215]." The WMSC has since closed C-0215 on July 7, 2025. Quality did institute an iCAPA "associated with the reuse of a prefilled form."

➤ **Internal Metrorail Finding QICO-RADC-22-04:** *Enforce equipment calibration requirements in accordance with the Maintenance Control Policy. (Overall Risk – Elevated)*

Internal Metrorail iCAPA FQ-RADC-23-04: Adhering to the established calibration requirements of test equipment helps promote testing accuracy and enhances the detection of defective tools and equipment.

Quality found that 12% of communications maintenance equipment requiring calibration was out of calibration. Metrorail notified all applicable personnel of its policies regarding calibration and then conducted an inventory review to ensure that all equipment was on the proper calibration schedule. Metrorail closed this iCAPA on February 16, 2024. No equipment calibration issues were identified during this audit.

➤ **Internal Metrorail Finding QICO-RADC-22-05:** *Review and revise departmental documents in alignment with the established [Quality Management System Plan] requirement. (Overall Risk – Moderate)*

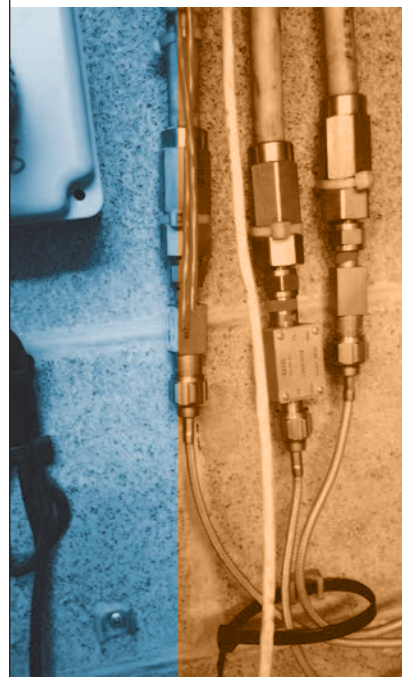
Internal Metrorail iCAPA FQ-RADC-23-05: Adherence to the established document control guidelines optimizes applicability and allows necessary changes to be incorporated in a timely manner.

QICO personnel identified four documents which did not align with its Quality Management System Plan requirements. Two of the documents were out of date (Level 1 and Level 2 System Maintenance (SMNT) Site Visit Reports), one document referenced obsolete documents (SMNT Maintenance Control Policy) and one document had no document control number or revision date (Weekly Testing Audio Quality Coverage Testing).

All of the documents mentioned were subsequently revised as part of the iCAPA process. Metrorail closed this iCAPA on March 9, 2025. The WMSC did not identify any issues with document control as part of this audit.

➤ **Internal Metrorail Finding QICO-RADC-22-06:** *Develop a documented process for updating and maintaining the [Radio Outage Display] Map. (Overall Risk – Moderate)*

Internal Metrorail iCAPA FQ-RADC-23-06: Creating a documented process for updating and maintaining the Radio Outage Display (ROD) Map would help facilitate effective and consistent data collection and dissemination to stakeholders.





“The purpose of the [Radio Outage Display] map is to display radio outages occurring in below-ground areas and stations; however, currently the ROD map is not developed to include above-ground areas and stations.” This information is fed into the map through Maximo records; however, there was no documented process for how information should be labeled to ensure the issue shows on the map. A procedure governing the inputs and outputs was created. Metrorail closed this iCAPA on June 28, 2024.

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- **Internal Metrorail Finding QICO-RADC-22-07:** *Enforce adherence of storing and managing documents in accordance with the established guidance. (Overall Risk – Moderate)*

Internal Metrorail iCAPA FQ-RADC-23-07: Adherence to the established document-specific repository when storing documents promotes accessibility and consistency.

“A designated document repository is critical in assuring consistent storage of documents and information.” Quality found that preventive maintenance documents were not being stored in Documentum as required and contractor inspections were not being uploaded into the correct network location.

In addition, Quality performed a review of the documents attached to Maximo work orders and identified areas of non-compliance with Maximo upload requirements including 100% non-compliance of monthly portable radio test documentation.

To address this Metrorail revised its Maintenance Control Policy and has conducted additional training for personnel. This iCAPA is still in progress and Metrorail anticipates closure by January 9, 2026.

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- **Internal Metrorail Finding QICO-RADC-22-08:** *Enforce compliance with the training requirements and update the training matrix to include WMATA's mandatory trainings. (Overall Risk – Moderate)*

Internal Metrorail iCAPA FQ-RADC-23-08: Compliance with WMATA [Quality Management System Plan] training requirements assists WMATA personnel in maintaining required skill levels and promotes a safe working environment.

To address this finding, Metrorail plans to develop a training matrix for all Communications and Signaling personnel, create a training plan, and then provide the training. This iCAPA is still in progress and Metrorail anticipates closure by May 20, 2026.

The WMSC issued a similar finding in the **2022 Audit of Communications Systems** (finding 6) “Metrorail has insufficient training for communications personnel, including on-the-job training (OJT) that SMNT itself describes as deficient, and a lack of requirements to ensure that personnel only work on equipment they are trained on and capable of maintaining as required by the PTASP.” Corrective action plan C-0219 was created to address that audit finding, which was anticipated to close by August 2025. See the Required Modifications to Existing Corrective Action Plans Identified During this Audit section.

Corrective Action Plan Review

▶ C-0100 (Open)

Metrorail is not maintaining a fully functioning radio communications system in all rail yards and shops. (**WMSC finding issued via directive on April 30, 2021.**)

Metrorail has worked to develop a documented process to identify coverage deficiencies in rail yards along with completion of grid-by-grid coverage testing throughout rail yards and corresponding track areas with shops. Relatedly, in the 2025 WMSC Audit of Emergency Management and Life Safety the WMSC found that “Metrorail does not have a reliable communication system for operations or emergencies.” (finding 1 of that audit.) To address that broader radio deficiency, C-0293 was opened which required Metrorail to “identify all radio communication deficiencies (inability to transmit or inability to clearly understand the transmission) and establish both long-term infrastructure solutions and short-term mitigations for the identified radio communication deficiencies. Personnel, including rail traffic controllers, rail vehicle operators, and roadway personnel must be made aware of the locations of area outages through regular documented notifications. Metrorail must establish an ongoing process that maintains the radio system in a reliable state systemwide.”

C-0100 was focused on rail yards and shops and the anticipated closure date for C-0100 is December 28, 2026.

▶ C-0214 (Closed)


Metrorail does not have adequate supervisory oversight and safety promotion to ensure that approved preventive maintenance inspections (PMI) are properly completed to ensure the safety of the rail system. Communications personnel are not using correct and current forms and processes necessary to ensure that safety-critical communications systems are appropriately and safely maintained. (**2022 Communications Systems Audit**, finding 1.)

To address this finding, Metrorail provided additional training to personnel to ensure understanding of their PMI forms and the importance of proper completion. Metrorail conducted compliance checks of forms to ensure that all personnel were using the current documents. These quality control checks help to ensure consistent and accurate inspections. The WMSC approved C-0214 for closure on August 18, 2025. Finding 1 of this report outlines additional issues with supervisory oversight regarding the completion of maintenance activities (rather than on the related forms which was the subject of C-0214).

▶ C-0215 (Closed)

Metrorail does not have sufficiently detailed instructions and procedures specifying how to inspect and maintain each communications asset. For some assets, there are no instructions or procedures at all. (**2022 Communications Systems Audit**, finding 2.)

To address this finding, Metrorail reviewed the Communications & Signaling department organizational responsibilities, ensuring that responsibilities were clearly defined so that it could assess which areas did not have proper preventive maintenance instructions. Metrorail then created nine new preventive maintenance instructions for which training was provided



Personnel, including rail traffic controllers, rail vehicle operators, and roadway personnel must be made aware of the locations of area outages through regular documented notifications.

Metrorail's Communications & Signaling personnel required re-training on its maintenance control policy and Metrorail committed to doing so on an annual basis for all relevant personnel.



too. The WMSC approved C-0215 for closure on July 7, 2025. Finding 1 of this audit relates to preventive maintenance practices; however, the maintenance personnel observed during this audit had the necessary procedures for the assigned task.

▶ **C-0216 (Open)**

Metrorail is closing preventive maintenance work orders without correcting known deficiencies, which does not comply with its Systems Maintenance (SMNT) Maintenance Control Policy. (**2022 Communications Systems Audit**, finding 3.)

Metrorail's Communications & Signaling personnel required re-training on its maintenance control policy and Metrorail committed to doing so on an annual basis for all relevant personnel. Quality control policies and procedures were also required, and Metrorail personnel are in the process of completing these checks. The anticipated closure date for C-0216 is March 2, 2026.

▶ **C-0217 (Open)**

Metrorail personnel are not effectively communicating, responding to and identifying issues related to trouble calls pertaining to communications systems. Metrorail closes communications related "corrective maintenance" (repair) tickets without effectively identifying, documenting and addressing issues. (**2022 Communications Systems Audit**, finding 4.)

Metrorail's Communications and Signaling department did not have a documented process which included prioritizing response times for life safety critical systems and corrective maintenance work orders. These response times and the requirements for life safety assets were added to its maintenance control plan. Personnel were trained on the requirements and then compliance checks were implemented to ensure timely and accurate corrective maintenance for vital systems. The work for C-0217 is ongoing and is anticipated to close by March 8, 2027.

Also related to identifying and resolving deficiencies with life safety assets within stations, the WMSC issued finding 3 (Metrorail fire and life safety inspections do not identify and resolve deficiencies with fire life safety equipment and assets within stations) of the **2025 WMSC Audit of Emergency Management and Life Safety Programs** (finding 3), which is being addressed via C-0295A and is anticipated to close by April 14, 2026. While C-0217 addresses repair tickets and improper closure of those tickets, C-0295A deals with initial identification and station inspections to uncover deficiencies.

▶ **C-0218 (Closed)**

Metrorail hazard logs are not being kept or maintained. (**2022 Communications Systems Audit**, finding 5.)

Metrorail developed and implemented a new Safety Risk Management procedure which includes new requirements to identify, document, and mitigate hazards. Training was completed for all relevant Communications & Signaling personnel. The WMSC approved C-0218 for closure on January 7, 2025. As part of this audit, Metrorail's hazard tracking logs and related risk assessments were reviewed to ensure that this process is being followed.

► **C-0219 (Open)**

Metrorail has insufficient training for communications personnel, including on-the-job training (OJT) that SMNT itself describes as deficient, and a lack of requirements to ensure that personnel only work on equipment they are trained on and capable of maintaining as required by the PTASP. (**2022 Communications Systems Audit**, finding 6.)

See the Required Modifications to Existing Corrective Action Plans Identified During this Audit section.

► **C-0220 (Closed)**

Metrorail does not have schematics, manuals, and other materials in each Communications Room required by Metrorail's Communications Room Bi-weekly Cleaning and Inspection PMI. (**2022 Communications Systems Audit**, finding 7.)

Metrorail initially planned to address this CAP by reviewing each room and then physically update each room with the proper schematics, manuals, and drawings, however, once Metrorail started work on the CAP, Metrorail requested to modify the CAP to ensure that all of the current schematics, manuals and other materials were available in a central location and that personnel could electronically access all of those documents in these rooms. Metrorail's IT team has ensured that personnel have dedicated access in all Communication Room locations. WMSC staff went with Metrorail's technicians to confirm technicians were able to show access to the repository where they can locate the latest documents needed to maintain that vital equipment from within Communications Rooms. The WMSC required WMATA to still furnish physical drawings of fire alarm related equipment in each room due to the potential need to access this specific information in an emergency in which electronic connectivity may be jeopardized.

The WMSC verified the presence of these physical fire alarm-related drawings in Communications rooms in onsite observations. WMSC approved C-0220 for closure on August 18, 2025.

► **C-0221 (Closed)**

Metrorail lacks the safety assurance and safety promotion activities required to ensure that only current and calibrated radios are in use as required by Metrorail instruction and procedure, creating a risk that this safety equipment will not properly function when needed. (**2022 Communications Systems Audit**, finding 8.)

To address this finding, Metrorail developed a safety promotion campaign focused on handheld radio policy and procedures awareness and enforcement that communicated the requirement to surrender noncompliant radios. Training was also developed to further promote awareness. During the life of C-0221, it was discovered that newer digital radios currently being used by Metrorail did not have calibration requirements. Metrorail then revised its plans and moved exclusively to the digital radios. Metrorail worked to remove the analog radios and conducted compliance checks to ensure that the analog radios were removed from service.

The WMSC approved C-0221 for closure on June 9, 2025. The audit team did not encounter any of the analog radios during the course of this audit.

As part of this audit, Metrorail's hazard tracking logs and related risk assessments were reviewed to ensure that this process is being followed.

See Finding 3 of this report for additional water intrusion and maintenance issues for rooms containing vital communication equipment.

► **C-0222 (Open)**

Metrorail communications rooms have signs of recurring water, dirt and dust intrusion. Metrorail is also improperly storing equipment in these rooms. Components in these rooms therefore may not function as required for the safety of riders, workers and first responders. (2022 Communications Systems Audit, finding 9.)



Metrorail continues to evaluate water intrusion in stations, elevators, and escalators, that includes the water source, ongoing water management considerations, and thresholds for wet conditions to determine the correct maintenance or capital options for remediation. Metrorail submitted the current-state assessment report and a list of planned actions to be taken based on the results of this assessment. Metrorail then submitted reports, which included the identified hazards, safety deficiencies, mitigations and maintenance plans to address the water intrusion issues. Although work on C-0222 continues, some rooms may have been misidentified or not included in the original CAP as necessary. See Finding 3 of this report for additional water intrusion and maintenance issues for rooms containing vital communication equipment. The anticipated closure date for C-0222 is June 23, 2026.

► **C-0223 (Closed)**

There is no comprehensive plan to maintain staffing of existing positions at all grades through timely hiring practices. (2022 Communications Systems Audit, recommendation 1.)

Metrorail assessed recruiting and retention practices and then worked with an external company to implement several revised recruiting and retention practices. Eight new hires were onboarded during the corrective action process and of the nine remaining vacancies at the time of C-0223's closure, Metrorail was in the process of interviewing candidates for six of them.

The WMSC approved C-0223 for closure on January 22, 2024. See Finding 4 of this report for a new, but related, finding that Metrorail is not maintaining staffing levels to match increases to the number of assets.

► **C-0224 (Closed)**

Some job descriptions have not been updated since the 1970s and 1980s and do not reflect current job responsibilities and necessary qualifications. (2022 Communications Systems Audit, recommendation 2.)

Metrorail reviewed and updated 16 job descriptions to better reflect current requirements, experience, and expertise in specific subject areas such as radio systems, train communication systems, and supervision. No issues were noted during this audit surrounding job responsibilities, qualifications, or job descriptions. The WMSC approved C-0224 for closure on March 18, 2025.



What the **WMSC** Found

What the **WMSC** Found

Communications and Signaling has consolidated many of its existing procedures for preventive and corrective maintenance into one document titled COMM 1000.

Positive Practices

This audit also identified several positive practices, or success stories, some of which were the direct result of the WMSC's oversight. However, all of the positives detailed below are the result of Metrorail's own work. The WMSC encourages Metrorail to continue these positive practices.

- 1.** Personal Protective Equipment: All personnel interviewed indicated sufficient provision of personal protective equipment.
- 2.** Equipment Verification: During on-site audit observations, all equipment was pre-checked before use and no equipment was out of calibration.
- 3.** Training Request Inbox: Communications and Signaling training personnel initiated a training request email inbox in which anyone from the department could suggest training topics or options for training.
- 4.** Procedural Updates: Communications and Signaling has consolidated many of its existing procedures for preventive and corrective maintenance into one document titled COMM 1000.

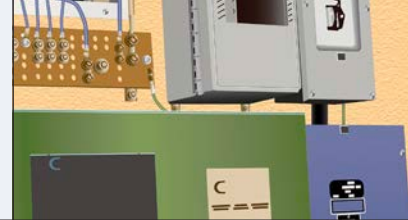
Required Modifications to Existing Corrective Action Plans Identified During this Audit

The WMSC appreciates the progress Metrorail has made towards correcting findings and recommendations of the **2022 Communications Systems Audit**. The present audit identified deficiencies closely related to one of the open corrective action plans: C-0219 that was created to address issues from the 2022 audit. The WMSC provided details at the present audit's exit conference, and gave Metrorail an opportunity to submit additional relevant information and documentation, prior to communicating proposed modifications to Metrorail. The present audit identified the same issues that C-0219 was originally created to address; therefore, the corrective action plan modification process in **WMSC Program Standard** (Section 9.C.4, CAP Modifications) was necessary to ensure that C-0219 can sufficiently address those issues. Metrorail subsequently developed a revised corrective action plan, and the WMSC approved the implementation of those corrective action plans.

► C-0219 (Open)

Metrorail has insufficient training for communications personnel, including on-the-job training (OJT) that SMNT itself describes as deficient, and a lack of requirements to ensure that personnel only work on equipment they are trained on and capable of maintaining as required by the PTASP. (**2022 Communications Systems Audit**, finding 6.)

Metrorail attempted to address C-0219 by creating updated training matrices defining the minimum training requirements for all Communications & Signaling personnel. Then, on-the-job training mentors were trained, an on-the-job training schedule for all personnel was developed and that training was then provided. Ultimately, these steps did not result in personnel being trained on each type of equipment for which they are assigned to work on—the core issue of the finding and for which C-0219 was designed to correct. This was shown in the submitted actionable items for this corrective action plan which did not include equipment-specific training. Metrorail submitted C-0219 for closure despite this aspect of the finding not being addressed. As a result, C-0219 was modified to effectively address the 2022 audit's finding and minimum corrective action; a finding that remains an issue today as identified by the present audit noted below.



Nonconformance Identified During Current Audit

During interviews for this audit, training was cited as a deficiency by 21 individuals which included personnel stating that they were unaware of efforts to improve and align training with the equipment they are required to maintain, not receiving any communication system-specific training in years, and no additional training as new equipment was placed onto the system.

In the WMSC's initial request for documents for this audit dated February 21, 2025, the WMSC requested that Metrorail provide a list of all certification and training requirements for each position; and provide a list of all completed training for all personnel. The listed training requirements identified four department-specific training courses, none of which included training on specific communication systems equipment or the maintenance thereof.

A related issue is the training records maintained in Metrorail's Enterprise Learning Management (ELM) show inconsistent provision of the training that does exist. For example, there were seven different courses for equipment installed for Silver Line Phase II; however, the applicability and attendance for these courses varied. Some technicians had all seven courses although other technicians only completed one to three of the courses. Technicians may be assigned to work on any of the various types of equipment, which includes CCTV systems, access control systems, intercoms, fire alarms, bi-directional amplifiers, console towers, ambient microphone systems, and information displays. Other examples of inconsistent training records include classes listed as pending from 2016 and incomplete trainings.

Corrective action plan C-0219 required that "WMATA must review and update training curricula for communications personnel to include refresher training and training more specific to specialized job functions, including PMIs. WMATA must create a formal, structured on-the-job training program that includes standards, curricula, and documentation as well as selection criteria and training for OJT Instructors. Metrorail must ensure that all personnel who may work on communications equipment have the necessary training on each piece of equipment that they may be assigned to service. This must include providing training on current models and each new model installed, tracking that training, and establishing processes to ensure that personnel have the necessary training to carry out each assigned task."

Metrorail must ensure that all personnel who may work on communications equipment have the necessary training on each piece of equipment that they may be assigned to service.





Findings and **Minimum** Corrective Actions

Findings and Minimum Corrective Actions

► **Finding #1: Communication personnel are not consistently completing preventive maintenance on its public address and radio communication systems in accordance with Metrorail's procedures.**

Communication systems are vital to the safe operation of the Metrorail system. Metrorail has several preventive maintenance procedures for station equipment. Those maintenance procedures are an important aspect of ensuring communications systems operate as designed, and allow for clear communication during normal operations, safety events and emergencies.



Metrorail reported eight evacuations for life safety reasons (safety event code A-4) to the WMSC in 2024. In **WMSC Investigation Report W-0344** (evacuation for life safety reasons that occurred on February 15, 2024), the public address system delivered an automated station evacuation message after the station manager failed to manually activate the station's fire alarm. This message notified riders and personnel within the station of the event and provided instructions for evacuation. This event illustrates why this vital equipment must be properly maintained.

Requirement:

Metrorail's preventive maintenance instruction (PMI), PMI E-15000PMI – Public Address System (PA) Inspection Alignment (Release 1, dated January 11, 2022) states that "This task will involve checking the kiosk microphone, checking kiosk wireless equipment/microphone, checking kiosk control panel, checking the communication room public address system equipment (PAS), checking speakers, visually inspecting all public-address system equipment (PAS), aligning all Public-Address equipment, and other tasks as outlined." The PMI requires a crew of 2 to complete and the required equipment includes "PPE/Pen/Standard Tool Kit/Voltmeter/Transmission Line Tester/SPL Meter/computer PA software (SHURE and Symetrix Software)."

PMI, COMR-016, Alignment Procedures for the Comprehensive Radio Communication Systems (CRCS) Belowground HEAD-END and LINE Bi-Directional Amplifiers (BDAs) (Revision 7.0, dated December 2023) states that "11.4 Print out sufficient copies of all Datasheets – Head-End and Line BDA Alignment, Defect Checklist Sheets, HE Alarm and Configuration (see Appendices)."

Metrorail Operating Rulebook (MOR) section 12.1.2 states that "Employees shall be governed by public address announcements made by Rail Operations Control Center, Rail Vehicle Operators and Station Managers."

Nonconformance:

As part of this audit, WMSC personnel conducted observations of three preventive maintenance activities.

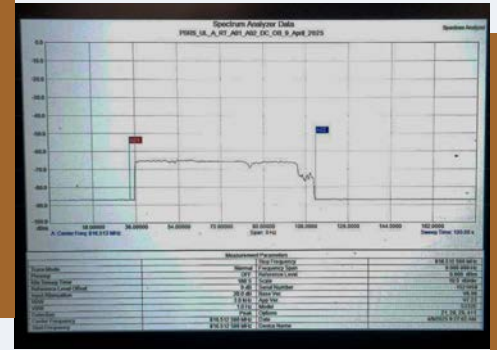
The first observation was conducted on April 17, 2025, at Downtown Largo Station. The WMSC accompanied a two person crew who were conducting the preventive maintenance instruction, PMI E-15000PMI – Public Address Systems (PA) Inspection Alignment

Communication systems are vital to the safe operation of the Metrorail system.



Personnel adhered to most of the procedure for this PMI; however, section 11.4 of the PMI required that technicians print datasheets to use in the field to ensure that all required measurements are properly captured.

(Release 1, dated January 11, 2022). During this observation, the technicians are to take sound level measurements using an Sound Pressure Level (SPL) meter to ensure proper functionality throughout the station. However, no such measuring equipment was brought or used to complete the requisite steps that ensure sufficient hearing and therefore could not interpret if the system was functioning properly. The technicians did not take any measurements or otherwise make any notations to later input into Maximo, Metrorail's system of data management. The technicians did not conduct remote public address announcements as required in section 4 of the PMI and did not complete ambient noise compensation measurements as required in section 8.



The WMSC later reviewed the Maximo records for this preventive maintenance activity, which required the technicians to verify that “The equipment listed below output the appropriate values during the alignment procedure”—the technicians marked “Yes” for eight of the pieces of equipment and “N/A” for 1; however as previously stated, no measuring equipment was used to determine these responses.

The second audit observation was conducted on May 15, 2025, at Addison Road Station. This was another preventive maintenance instruction based on PMI E-15000PMI – Public Address Systems (PA) Inspection Alignment (Release 1, dated January 11, 2022). The PMI states on the cover page that it requires a crew of two technicians and should take approximately three hours to complete. During this inspection, only one technician was sent to conduct the PMI but later obtained help from other Metrorail personnel onsite to conduct the PMI. The PMI was conducted in a similar manner as the April 17, 2025 observation: No measuring equipment was used and several required steps including checking whether speakers were actually functioning, were not completed. The technician did a visual inspection of each speaker within the station but did not take any measurements or otherwise make any notations to later input into Maximo. Maximo records were later reviewed on May 1, 2025 showing that all the required steps were completed.

The third audit observation was conducted on May 21, 2025, from Metro Center Station to Farragut North Station. This was a preventive maintenance conducted from Metro Center Station to Dupont Circle Station based on PMI COMR-016, Alignment Procedures for the Comprehensive Radio Communication Systems (CRCS) Belowground HEAD-END and LINE Bi-Directional Amplifiers (BDAs) (Revision 7.0, dated December 2023). Personnel adhered to most of the procedure for this PMI; however, section 11.4 of the PMI required that technicians print datasheets to use in the field to ensure that all required measurements are properly captured. The datasheets were not printed. This meant the technicians recorded measurements using a blank notepad, which requires later translation when putting into electronic format and risks errors entering the system.





When personnel enter the roadway, they may be required to test the third rail to ensure no voltage is present.



◆ **Minimum Corrective Action:**

Metrorail must ensure that communications personnel complete all aspects of each preventive maintenance procedure. This must include onsite quality checks by supervisory personnel. And personnel must be equipped with the proper tools and equipment to complete the maintenance activities to which they are assigned.

▶ **Finding #2: Metrorail does not have adequate supervisory oversight to ensure adherence to testing and replacement requirements for electrical safety gloves.**

Metrorail personnel encounter multiple hazards while working in and around the roadway. One primary hazard is the electrified 750 volt third rail. When personnel enter the roadway, they may be required to test the third rail to ensure no voltage is present. This is commonly referred to as “hot-sticking” and personnel are required to use specific personal protective equipment when hot-sticking: High-voltage electrical safety gloves that are insulated and have sleeves to protect workers from electricity.

Requirement:

Title 29 Code of Federal Regulations section 1910.137(c)(2)(viii) states that electrical gloves should be tested “Before first issue and every 6 months thereafter; upon indication that insulating value is suspect; after repair; and after use without protectors.” The federal Occupational Safety and Health Administration’s [website](#) (OSHA) further states as of August 19, 2025 that “Gloves and sleeves must be electrically tested before being issued for use. They must also be visually inspected and gloves need to be air tested for any possible defects (for example, cuts, holes, tears, embedded objects, changes in texture) before each day’s use and whenever there is a reason to believe they may have been damaged.”

Metrorail’s Standard Number 4480-2-02/01, Personal Protective Equipment (PPE) Program (dated September 9, 2024) section 6.9.9 states “Rubber insulating gloves are stamped with a testing date when they are manufactured, and they are stamped with a retest date each time they are retested.” Section 6.9.9.1. states “Rubber insulating gloves are valid for use at WMATA for six months past the most recent test date stamped on the gloves.” Metrorail Operating Rulebook section 17.5.4 requires personnel to check the certification dates of gloves when completing the Roadway Job Safety Briefing.

Nonconformance:

The WMSC scheduled an observation for this audit for May 21, 2025 to observe preventive maintenance between Metro Center Station and Dupont Circle Station. Prior to heading into the field, WMSC personnel met with communications personnel at Carmen Turner Facility (CTF). While personnel were gathering tools and personal protective equipment to head to Metro Center Station, WMSC personnel checked the class 0 electrical safety gloves of all personnel involved with the day’s planned preventive maintenance. The gloves provided by two Metrorail personnel were expired: One set of gloves was dated as tested on September 26, 2022 (and therefore expired on March 26, 2022), the other set of gloves was dated as expiring on March 10, 2025 (expired on the date of this observation).



The Physical Security and Radio Network department listed 23 personnel as requiring gloves and the dates of testing for their gloves was left blank.

Metrorail personnel were able to find other electrical safety gloves that were not expired; however, other gloves identified for use at the CTF Radio Shop were also expired: In total, the WMSC found six pairs of gloves which were removed and quarantined to the supervisor's office.

On May 5, 2025, the WMSC requested "all current records for all PSRN (Physical Security and Radio Network) personnel Electrical Gloves, including the last testing date and date due back. Provide the procedures that govern the testing, maintenance, storage, distribution and collection of Electrical Gloves." Metrorail submitted WMATA Standard Number 4480-2-02/01, Personal Protective Equipment (PPE) Program (dated September 9, 2024). Section 6.9.9.2 states: "Departments will maintain documentation to identify those that have been issued rubber insulating gloves and when those gloves are due for retesting." The Physical Security and Radio Network department listed 23 personnel as requiring gloves and the dates of testing for their gloves was left blank.



Communications & Signaling provided a separate procedure, High Voltage Safety Gloves Procedures (dated May 7, 2025—two days after the WMSC request for documents that triggered this document being submitted).

On June 4, 2025, the WMSC conducted an inspection at the New Carrollton Service and Inspection Shop that also identified issues with electrical safety glove compliance. ([WMSC Inspection Report 20250604](#))

- Defect 1 identified six pairs of electrical safety gloves on Metrorail's high voltage (HV) gloves daily checklist but none could be found at the six stated locations.
- Defect 2 identified that Metrorail personnel are signing their initials to verify that electrical safety gloves are present at and in compliance at the six stated locations for June 2025 when in fact no such gloves were at any of the six locations.
- Defect 3 identified another pair of electrical safety gloves "not listed on the high voltage (HV) gloves daily checklist and their expiration date could not be determined. This is the challenge presented by Metrorail's system as the proper expiration date requires knowledge of when the glove package has been opened (Metrorail's rule states expiration occurs six months after the sealed package is opened, but if the package has not been opened, the gloves expire one year from the stamped date.)"

On August 9, 2025, the WMSC conducted an inspection from Branch Ave to Congress Heights and cited issues with electrical safety glove compliance. ([WMSC Inspection Report 20250809](#))

- Defect 1 of the report cites that the WMSC inspectors observed that a crew leader from the Metrorail Communications and Signaling radio team at the Branch Avenue location remove a brand new insulated third rail glove from its packaging, which had a stamped date of June 2024. Metrorail policy states if the package remains



The maintenance of the equipment and protection from environmental conditions that could damage the equipment are imperative to ensure safe and proper functionality.

unopened, the gloves expire one year from the stamped date, which meant an expiration date of June 30, 2025. Personnel did have other current insulated gloves on hand that were in compliance.

On September 6, 2025, the WMSC conducted an inspection from Union Station and Van Ness-UDC Heights Station and again cited issues with electrical safety glove compliance. (**WMSC Inspection Report 20250906**)

- Defect 5 of the report cited that at Union Station, the WMSC Inspectors identified that the Automatic Train Control crew possessed an expired pair of electrical safety gloves.

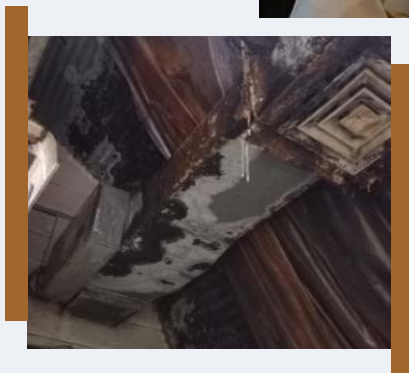
Metrorail currently has an open corrective action plan (C-0042) from the **2020 WMSC Audit of Roadway Worker Protection and Training which is scheduled to complete in May of 2026 and has 1 remaining actionable item open in addition to the closure review/request.** As part of C-0042, Metrorail created and issued its new standard 4480-2-02/01, Personal Protective Equipment (PPE) Program (dated September 9, 2024). Metrorail also committed to interim mitigations including department level tracking and checks for electrical safety gloves; however, as this finding demonstrates, compliance remains an issue and the interim mitigations are not working as intended.

◆ Minimum Corrective Action:

Metrorail must institute a process that ensures that electrical safety glove testing and expiration dates follow regulatory minimum requirements. Metrorail must review its electrical safety glove distribution and supervisory oversight processes for all departments that use electrical safety gloves to ensure that expired gloves are proactively taken out of circulation (not relying on a one-level system check). Metrorail must ensure that compliance checks are being performed to identify and mitigate compliance failures.

► Finding #3: Metrorail rooms that contain communication systems equipment are not maintained in accordance with Metrorail policy to ensure an optimal environment for those vital systems.

Metrorail's communication systems play a vital role in its day-to-day operations as well as in emergencies. The maintenance of the equipment and protection from environmental conditions that could damage the equipment are imperative to ensure safe and proper functionality.



C-0222 expressly addressed only “Communications Rooms” not those rooms containing communications equipment.

Requirement:

The **2022 WMSC Communications Systems Audit** identified (finding 9) ongoing water intrusion in the communications rooms at Fort Totten and Wheaton stations and that the communications equipment in those rooms were not properly protected from accumulated dirt and debris and water damage. Corrective action plan C-0222 was created to address that finding, specifically requiring that “WMATA must conduct a special inspection of all communications rooms to check for water intrusion or signs of water intrusion. Metrorail must prioritize and address all identified hazards and safety deficiencies in a timely fashion.”



Nonconformance:

On April 2, 2025, the WMSC requested a list of all rooms containing radio communication equipment, which Metrorail provided on April 14, 2025. WMSC personnel then conducted observations of several of these rooms on April 18, 2025, including Maintenance Room 108 (not Communications Room) at Grosvenor-Strathmore Station that contained vital communication system equipment in a room that contained active water leaks with corroded HVAC equipment.



Submissions for corrective action plan C-0222 included addressing Room 112 at Grosvenor-Strathmore Station as the Communications Room but did not include Maintenance Room 108. This room should have been identified; however, C-0222 expressly addressed only “Communications Rooms” not those rooms containing communications equipment.



♦ **Minimum Corrective Action:**

Metrorail must survey and compile a comprehensive list of all rooms that could potentially contain communications equipment and conduct a special inspection of all such rooms to check for water intrusion or signs of water intrusion. Metrorail must prioritize and address all identified hazards and safety deficiencies in a timely fashion. Metrorail must provide the records of these inspections and this prioritization and schedule for addressing each issue on at least a quarterly basis along with documentation of all implemented mitigations. Metrorail must then institute a process that ensures water intrusion is identified and addressed on an ongoing basis going forward. WMATA must develop processes to ensure all equipment and documents in rooms that contain communication equipment are kept clean, organized and protected, including routine verification inspections conducted and documented by supervisors. Metrorail must evaluate if the rooms have proper environmental controls to meet original equipment manufacturer (OEM) requirements for the equipment contained within the rooms.





Assets have increased by 36%; however, personnel levels have not risen proportionally.



► **Finding #4: Metrorail is not maintaining its self-assessed staffing levels required to maintain its current communication systems.**

Metrorail's communications systems contains thousands of assets located throughout the Metrorail system. Necessary staffing is required to maintain these assets. Metrorail's documents outline the changes to the system, which have increased the number of assets without necessary changes to the personnel resources assigned to maintain those assets.

Requirement:

Metrorail's Communications and Signaling Maintenance Control Plan (MCP, INFR-COSI-PLN-01-00 dated March 6, 2025) states in section 3.4.1 "On a regular basis, Communications and Signaling partners with supporting offices to perform an assessment of current staffing levels, evaluating the recruiting and retention practices for maintenance and engineering scaled to the size, scope, and complexity of assets maintained and RWP rules to determine staffing level needs." Section 3.4.2 states "Communications and Signaling partners with supporting offices to develop a process that ensures that all Shift Supervisors validate the qualifications of their personnel on a regular basis."

Nonconformance:

Metrorail's staffing assessment for its Communications portion of the Communications & Signaling Department dated November 1, 2023 lists multiple bases for its conclusions including findings and recommendations by the WMSC, a 20% increase in assets, increases in quality control and compliance checks, and National Transportation Safety Board (NTSB) recommendations which require additional preventive maintenance, work to ensure radio coverage throughout the system, all of which would require additional personnel. Assets have increased by 36%; however, personnel levels have not risen proportionally. In 2027 the number of radio tower sites that Metrorail will need to maintain increases from 10 to 36 and additional personnel will be required. Metrorail also indicates that additional personnel are needed to: maintain the Tunnel Smoke Detection System, resolve rail yard radio coverage issues, and maintain the Radio Outage Display (ROD) map, which requires a full-time system administrator.

Metrorail's own assessment stated that the "current staff assignment does not meet the need of support requirements at all WMATA locations along with prioritized emergency response time."

The staffing assessment also does not consider review of recruiting and retention practices as required by the Maintenance Control Plan.

The staffing assessment is nearly two years old and requested a total of 123 mechanic positions to maintain Metrorail's communication systems; however, as of this audit, Communications & Signaling has 103 budgeted positions with seven of those positions unfilled. A senior level manager at Metrorail stated that the radio side of the department is "severely deficient" considering the number of personnel currently needed and the number that will be needed to maintain the system as additional assets come online.



◆ **Minimum Corrective Action:**

Metrorail must review its staffing assessment for communications and signaling and determine whether any changes are necessary based on the communication systems assets that exist today and that are planned for the near future. Metrorail must consider a process which analyzes the number of assets in relation to the number of personnel assigned to maintain those assets on an ongoing basis or as communication system assets increase (such as, but not limited to, when affected by capital projects). Metrorail submitted a staffing assessment for Automatic Train Control (ATC) maintenance and engineering on October 10, 2025 as part of corrective action plan WMSC-24-C0258, however, this did not cover all of Communications & Signaling.

Recommendation 1: Metrorail should review how it deploys and safeguards vital communications equipment.

Metrorail's communication systems are comprised of thousands of individual assets. It is critical that all such equipment be free from degradation and possible tampering which could lead to equipment not functioning and therefore failing to provide the necessary safety benefits.

Requirement:

National Fire Protection Association (NFPA) 72 (2019) states that in section 24.5.10 that "Access to, and physical protection of, the fire alarm/mass notification system interface shall be determined by the risk analysis and as defined in the emergency response plan." Section A.7.7.3.2 states "Since a common expectation of a mass notification system is to function during security and/or terrorist events, it could be crucial that systems design to be protected."

Nonconformance:

In locations throughout the Metrorail system, there are stations in which communication systems equipment is accessible without tools or other protective measures. Stations such as, but not limited to, Fort Totten, Metro Center, and L'Enfant Plaza have equipment including bi-directional amplifiers and associated cabling, that is only secured by an end-gate which is not locked. Although marked as closed off to the public, the areas are still accessible.



In locations throughout the Metrorail system, there are stations in which communication systems equipment is accessible without tools or other protective measures.

◆ **Recommended Minimum Corrective Action:**

Metrorail should consider its current placement of communication systems equipment and whether that equipment is properly deployed and safeguarded to avoid tampering or degradation of the system. Capital Improvement Projects should involve the review of communication systems placement and protection of the systems to ensure they meet operational needs. Systems should comply with the proper requirements including NFPA 72.



Metrorail personnel do not carry or take ladders with them; however, the PMI requires the technicians to do visual checks on ceiling, canopy, and pylon speakers.

Recommendation 2: Metrorail should review the maintenance tasks related to its communication systems and ensure that all personnel have the necessary equipment to complete them.

Metrorail personnel must have the proper tools and equipment to maintain communication systems assets. Such items are also necessary to ensure worker safety while completing those maintenance activities.

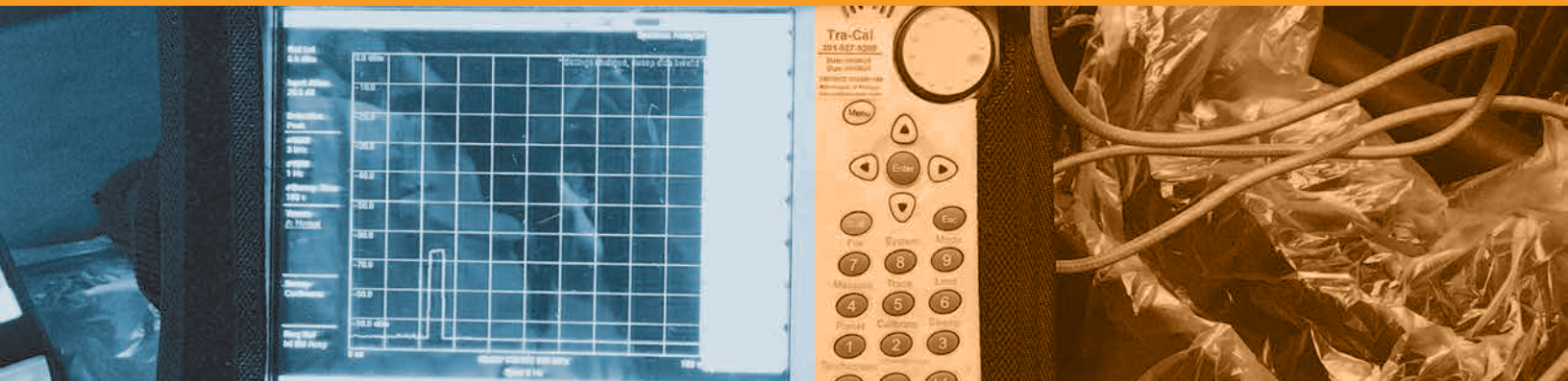
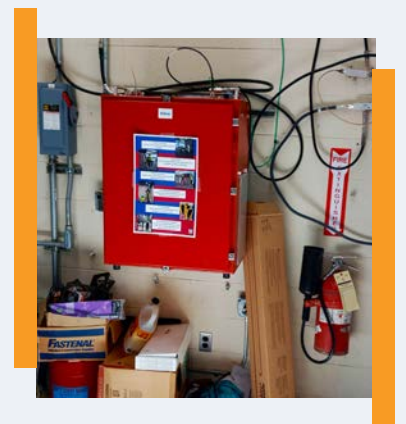
Requirement:

Metrorail's Preventive Maintenance Instruction (PMI), PMI E-15000PMI Public Address System (PA) Inspection Alignment (Release 1, dated January 11, 2022) states "This task will involve checking the kiosk microphone, checking kiosk wireless equipment/microphone, checking kiosk control panel, checking the communication room public address system equipment (PAS), checking speakers, visually inspecting all public-address system equipment (PAS), aligning all Public-Address equipment, and other tasks as outlined." The PMI lists the required equipment as "PPE / Pen / Standard Tool Kit/ Voltmeter/Transmission Line Tester/SPL Meter/ computer PA software (SHURE and Symetrix Software)."

Nonconformance:

During the observations of PMI E-15000PMI on April 17, 2025, at Downtown Largo Station, Metrorail personnel were in the process of conducting the PMI when they experienced difficulties with some of the equipment. This communication equipment and the related cabling were on or near the ceiling of the communications room. Metrorail personnel did not have a ladder with them to conduct the PMI and began to use a fire bucket located in the room as a step to reach the equipment. WMSC personnel intervened and stopped the PMI until a suitable ladder could be found.

Metrorail personnel do not carry or take ladders with them; however, the PMI requires the technicians to do visual checks on ceiling, canopy, and pylon speakers. Personnel at the May 15, 2025 observation did not have all of the tools (ladder) required to perform the entirety of the tasks they were assigned to complete.



◆ **Recommended Minimum Corrective Action:**

Metrorail has the opportunity to review the equipment and tools supplied to its communications maintenance personnel to ensure that they have all the necessary tools and personal protective equipment to complete each maintenance activity. Personnel should be trained on activities which may require additional equipment and how to obtain that equipment.

Next Steps

Metrorail is required to propose corrective action plans to address each finding, recommendation and corrective action plan modification no later than 30 days after the issuance of this report. (Program Standard Section 9.C.3.a.) Each proposed corrective action plan must include several elements, including but not limited to, specific and achievable planned actions to remediate the deficiency, the person responsible for implementation, and the estimated date of completion. (Section 9.C.2.) Each proposed corrective action plan must be approved by the WMSC prior to Metrorail's implementation.



Appendices

Appendices A and B

Appendix A: Personnel Interviewed

OFFICE OF COMMUNICATIONS & SIGNALING

- Acting Superintendent, Radio
 - Assistant Superintendent (3)
 - CCTV Administrator
 - CCTV Engineer
 - Day Shift Supervisor
 - Director, Physical Security and Radio Network
 - Manager, Engineering
 - Mechanic AA, ELRC TCH COM (2)
 - Mechanic, COMMS EQUIP FIELD TECH AA
 - Mechanic, COMMS EQUIP FIELD TECH C (3)
- Mechanic, Communication Radio (7)
 - Mid Shift Supervisor
 - Project Manager
 - Senior Communications Engineer
 - Senior Director, Comms & Signaling Maintenance
 - Senior Vice President, Comms & Signaling
 - Shift Supervisor, Comm Maintenance (2)
 - Vice President, Comms & Signaling (COSI) Engineering

Appendix B: Site Visits

- ◆ April 16, 2025:
 - Preventive Maintenance Observation – Radio Scans – G Route
- ◆ April 17, 2025:
 - Preventive Maintenance Observation – Public Address System – Downtown Largo
- ◆ April 18, 2025:
 - Observation of Comms Rooms/Tower Sites (Grosvenor Station, Forest Glen Station, Bethesda Station, and Germantown RF Site)
- ◆ May 2, 2025:
 - Radio Tower Site Observation (Savage, MD and Alexandria, VA)
- ◆ May 15, 2025:
 - Preventive Maintenance Observation – Public Address System – Addison Road
- ◆ May 21, 2025:
 - Preventive Maintenance Observation – Comprehensive Radio Communication System (CRCS) – Metro Center



Appendix C

Appendix C: Documents Reviewed

ORGANIZATIONAL CHARTS AND DEPARTMENT RESPONSIBILITIES:

- Communications Engineering Organizational Chart (10/01/2024)
- COSI Employees and Budgeted Positions List (no date)
- COSI Personnel Details Chart (no date)
- COSI Physical Security and Radio Network Organizational Chart (06/26/2024)
- COSI Physical Security and Radio Networks Roles and Responsibilities (no date)
- COSI Physical Security Engineering Roles and Responsibilities (no date)
- Equipment Testing and Locksmith Organizational Chart (no date)
- Radio Department Personnel List (12/03/2024)
- Technical Training and Development Department Personnel List (no date)

PROCEDURES/POLICIES/MANUALS/FORMS:

- ATC-1000, Instructions for Testing and Inspection of ATC Apparatus and Systems (09/13/2023)
- Communications Equipment Protection Standards List (03/11/2025)
- High Voltage Safety Gloves Procedures (05/07/2025)
- INFR-COSI-COME-PMI-01-00, West Falls Church Train Wash Motion Warning System PM Instructions (10/2024)
- INFR-COSI-COME-PMI-02-02, Shady Grove Train Wash Motion Warning System PM Instructions (10/2024)
- INFR-COSI-COME-PMI-03-00, Alexandria Train Wash Motion Warning System PM Instructions (10/2024)
- INFR-COSI-COME-PMI-04-00, Branch Avenue Train Wash Motion Warning System Inspection and Cleaning PM Instructions (10/2024)
- INFR-COSI-COME-PMI-05-00, New Carrollton Train Wash Motion Warning System PM Instructions (10/2024)
- INFR-COSI-COME-PMI-06-00, Glenmont Train Wash Motion Warning System PM Instructions (10/2024)
- INFR-COSI-COME-PMI-07-00, Greenbelt Train Wash Motion Warning System PM Instructions (11/20/2024)

- INFR-COSI-COME-PMI-08-04, Communications equipment Inspection and Room Cleaning PM Instructions (11/20/2024)
- INFR-COSI-COME-PMI-09-00, Four Mile Run (T01) Bus Garage Temporary Gas Detection System PM Instructions (11/20/2024)
- INFR-COSI-COME-PMI-10-02, CTF (T38) Bus Garage Methane Gas Detection Systems PM Instructions (11/20/2024)
- INFR-COSI-COME-PMI-11-02, Andrews Federal Center (T41) Bus Garage Methane Gas Detection Systems PM Instructions (11/20/2024)
- INFR-COSI-COME-PMI-12-02, Shepard Parkway (T75) Bus Garage Methane Gas Detection Systems PM Instructions (11/20/2024)
- INFR-COSI-COME-PMI-13-03, Passenger Information Display Sign PM Instructions (11/20/2024)
- INFR-COSI-PLN-01-00, Maintenance Control Plan (03/06/2025)
- Job Plan 1061, Fire Alarm (FA) Systems Inspection PM Instructions (07/19/2022)
- Memorandum on PPE Requirements for Communication Systems Personnel (03/19/2025)
- Office of Procurement and Materials Best Practices Manual (09/04/2024)
- PMI E15000, Public Address System (PA) Inspection/Alignment PM Instructions (01/11/2022)
- PMI E17000, CCTV Camera PM Instructions (04/16/2024)



PROCEDURES/POLICIES/MANUALS/FORMS: (CONTINUED)

- Policy 8.11/7, Purchase Card Policy (07/28/2023)
- SOP 19-05, Blanket Purchase Agreement (11/18/2021)
- SOP 204-01, Equipment Calibration Procedure (03/31/2023)
- Standard 4480-2-02/01, Personal Protective Equipment Program (09/09/2024)
- WMATA Project Implementation Manual, Volume I (06/2022)
- WMATA Project Implementation Manual, Volume II (08/2020)
- WMATA-SARE-1.09.03, Inspection, Measurement and Test Equipment Procedure (10/31/2023)

TRAINING:

- COSI ELM Training Records (no date)
- COSI Monthly Training Report (no date)

INSPECTION AND MAINTENANCE:

- AM ITNC Nice System Daily Check PM (09/2023 to 02/2025)
- CCTV Corrective Maintenance Work Orders List (10/2022 to 02/2025)
- Communications Asset Calibration Work Order Request List (no date)
- Communications PMI List (03/13/2025)
- Communications System PM Schedule (04/2025)
- Communications Test Equipment Status List (01/2024 to 12/2024)
- COMR Reliability Trend and Performance Analysis Reports (02/2023 to 02/2025)
- CRCS Subsite Quantar Optimization PMI Work Orders (12/2023 to 02/2025)
- Electrical Gloves Inventory and Calibration List (no date)
- Emergency Gates Access Control System Testing and Annually Test Report Form (02/10/2022)
- General Order and Track Right Authorization System Requests (11/2024 to 03/2025)
- Intrusion Alarm System Testing and Intrusion Alarm Test



INSPECTION AND MAINTENANCE: (CONTINUED)

- Datasheet (11/02/2018)
- MICC Microphone Maintenance Tickets (01/2023 to 02/2025)
- PM ITNC Nice System Daily Check PM (09/2023 to 02/2025)
- Radio Audio Quality Check Records (01/2022 to 02/2025)
- Radio Communications PM Schedule (04/2025)
- Radio Corrective Maintenance Work Orders List (10/2022 to 02/2025)
- Station Mezzanines Emergency Gates Access Control System Inspection PM Instructions (02/10/2022)
- Weekly Radio Checks and Scans Schedule (no date)

INTERNAL REVIEWS:

- Internal Review: Engineering and Maintenance, Radio Coverage (03/02/2023)

SAFETY CERTIFICATION:

- Communication Systems Hazard Log (02/2025)

OTHER DOCUMENTS:

- Above Ground Fragnet and RF Site Location List (03/26/2025)
- Communications Room Locations List (no date)
- Radio Equipment Room Locations List (no date)
- Workload and Resource Analysis for COMMs (11/01/2023)

Appendix D

Appendix D: Public Transportation Agency Safety Plan Elements

This audit was based on the WMATA Public Transportation Agency Safety Plan (PTASP) effective December 31, 2024 (Rev. 5.0) and is guided by the below, relevant PTASP elements. The WMSC reserves the right to diverge from the below-highlighted elements if warranted.

1. General Requirements

- a. Transit Agency Information
- d. Safety Performance Targets (including Safety Performance Target Setting Methodology and Timeline, Safety Performance Targets, and System Reliability Targets)
- f. Development and Implementation of a Safety Management System (SMS)

2. Safety Management Policy

- a. Safety Management Policy
- b. Employee Safety Reporting Program
- c. Communication of the Safety Management Policy
- d. Necessary Authorities, Accountabilities, and Responsibilities (including Accountable Executive, SMS Executive, Agency Leadership and Executive Management, Key Staff, and Safety Committees)

3. Safety Risk Management

- a. Safety Risk Management Process (including Safety Hazard Identification, Safety Risk Assessment, and Safety Risk Mitigation)
- b. Ongoing Management of Safety Risk (including Occupational Safety and Health Risk Management, Operational Safety Risk Management, Safety Certification, and Environmental Risk Management)

4. Safety Assurance

- a. Safety Performance Monitoring and Measurement (including Monitoring Operations and Maintenance Procedures, Monitoring of Operational Safety Risk Mitigations, Safety Investigations, Information Monitoring, and Emergency Risk Management)
- b. Management of Change
- c. Continuous Improvement
- d. Corrective Action Plans

5. Safety Promotion

- a. Competencies and Training (including Employee Safety Training, Safety Rules and Procedures Training, Contractor Safety, Training Recordkeeping, Compliance with Training Requirements, and SMS-specific Training Requirements)
- b. Safety Communication (including Direct Staff Communication, Hazard and Safety Risk Information, and Employee Safety Reporting Program Engagement)





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