QICO 2019

CYQ4 REVIEWS

Washington Metropolitan Area Transit Authority
WMATA

January 17, 2020

Engineering and Maintenance

10. *Elevator/Escalator Operation Center*
11. *ATC System Configuration Management Plan*

Service Delivery

12. *Cinder Bed Contract Management*

Safety Review

13. *Engineering and Architecture*
14. *Safety and Environmental Management*

Quality Assurance, Internal Compliance & Oversight (QICO)
Promoting Transparency, Accountability and Public Confidence

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WHAT WE DO

What is QICO?

The Office of Quality Assurance, Internal Compliance & Oversight (QICO) is an internal management function that partners with other departments to provide an objective review. Authorized by the General Manager as outlined in the Quality Management System Plan (QMSP).

Why QICO Performed These Reviews?

These internal reviews are intended to provide Metro senior management with an assessment of the following areas:

- Office of Elevators and Escalators Operations Center (EOC)
- ATC System Configuration Management Plan
- Cinder Bed Contract Management
- Engineering & Architecture
- Department of Safety and Environmental Management

QICO's Methodology:

- Develop relevant review activities by identifying and assessing risks to policies, procedures & standards, quality & compliance, and traceability.
- Review documentation, observe processes and interview key personnel.
- Review findings and required actions are rated based on level of risk, which ranges on a scale from "Insignificant" to "High"

Note: An itemized internal Corrective and Preventive Action (iCAPA) is developed for each required action to achieve effective and measurable resolution of identified concerns. To check the status of iCAPA implementation go to: wmata.com/initiatives/transparency/

WHAT WE FOUND | CYQ4 INTERNAL QUALITY & SAFETY REVIEWS — Dec 2019

WHAT WE WILL DO MOVING FORWARD

Engineering & Maintenance

10. Elevators/Escalators Operation Center (EOC)

Wins:

✓ EOC reporting directly to Engineering, in lieu of Service and Maintenance, provides checks and balances between ELES groups.

Action Areas Identified During Review:

- Adherence to existing documentation would improve consistency.
- Developing comprehensive procedures would encourage efficiency and thoroughness.
- A documented training program would promote adherence to procedures.
- Creating a formal review program would improve job performance and data quality.

Key Takeaways

10. *ELES could improve the efficiency and performance of EOC functions by developing core procedures, a quality control plan and a defined training curriculum.*

- Update 212-SOP-36 and/or establish new procedures, establish and implement a controlled curriculum, and establish a formal quality control plan.
- For details on committed action plans see the following iCAPAs: QICO-EOC-19-01, QICO-EOC-19-02, and QICO-EOC-19-03.

11. ATC System Configuration Management Plan

Wins:

✓ Safe Signal Project and Project Coordinator position created.

Action Areas Identified During Review:

- Following guidelines of document revision process for configuration item documents promotes compliance with System Configuration Plan.
- Using controlled data sheets would ensure ATC system infrastructure integrity.
- Former ATCM Leadership did not follow System Configuration Management Plan.
- Adhering to Operations Management Services (OPMS) standard operating procedures is essential to maintaining current Technical Skills.

11. *Communication lapse between ATCE, RIME, and ATCM compromised system configuration control within ATC Design Control Board.*

- Develop training plan for the ATC-4000 manual, and update ATC-4000 manual to define technical content allowed in internal documentation.
- For details on committed action plans see the following iCAPAs: QICO-ASCM-19-01, and QICO-ASCM-19-02.

Service Delivery

12. Cinder Bed Contract Management

Wins:

✓ Effective tracking of the contract Key Performance Indicators (KPI) by the Contract Management Team resulted in improved contractor accountability.

Action Areas Identified During Review:

- Documentation of the contract management processes and the associated activities allows for effective, sustainable and traceable oversight activities.
- An established Continuity of Operations Plan (COOP) allows for continuous and uninterrupted contract oversight.

Key Takeaways

12. *Established and documented processes support sustainability, effectiveness, and efficienct contract management.*

- Develop documented procedures and a Continuity of Operations Plan (COOP) for the Contract Management Team.
- For details on committed action plans see the following iCAPAs: QICO-CIND-19-01 and QICO-CIND-19-02.

Internal Safety Review

13. Engineering & Architecture

Wins:

✓ Automatic Train Control Engineering has a documented process to create and capture Configuration Controlled Items.

Action Areas Identified During Review:

- Participation in routine safety committee meetings is essential to continuously improve safety throughout the Authority.
- Conducting and recording Configuration Change Control Board meetings is vital to effectively tracking configuration changes.
- Effective configuration management is critical to assuring all WMATA assets are consistently maintained to standards.
- Consistent administration of design control board meetings results in a more effective change control database.
- Following Office of Emergency Management Standards for the development of the Continuity of Operations Annex is essential in the event of an emergency.
- Establishing a quality control program to verify compliance to rules and procedures promotes effective safety awareness.
- Consistent participation in the Safety and Security Certification Review process is essential to assure the safety and security of new systems and equipment.
- Maintaining a training and certification matrix for employees and contractors' highlights required competencies and reinforces compliance.

Key Takeaways

13. *Refinement of the configuration management processes and consistent participation in safety committees is essential to maintaining a safety-first culture.*

- Establish a consistent presence at all applicable safety committee meetings, a document control process for the COOP plan, a quality control program to verify rulebook compliance, and a training matrix.
- For details on committed action plans see the following iCAPAs: QICO-ENGA-19-01, QICO-ENGA-19-02, QICO-ENGA-19-03, QICO-ENGA-19-04, and QICO-ENGA-19-05.

14. Department of Safety and Environmental Management

Wins:

✓ WMATA's 2018 SSPP is inclusive of bus safety operations, although not required by FTA regulations.

Action Areas Identified During Review:

- The utilization of the hazard management module will promote compliance with the SSPP and effectively track and mitigate hazards.
- Defined and detailed inspection procedures are important to effectively perform facility and equipment safety inspections.
- Timely and periodic reviews and updates of governing documents are important to promote compliance.

14. *Establishing documented procedures for safety inspections and consistently tracking hazards are important to promote a safety-first culture.*

- Establish a solution to effectively manage all hazards to resolution, develop, train on, and implement a standardized inspection procedure, and review and revise SAFE governing documents.
- For details on committed action plans see the following iCAPAs: QICO-SAFE-19-01, QICO-SAFE-19-02, and QICO-SAFE-19-03.

Washington Metropolitan Area Transit Authority

INTERNAL REVIEW 2019

Internal Review: Engineering & Maintenance

(10) Elevator/Escalator Operation Center

November 1, 2019

Quality Assurance, Internal Compliance & Oversight (QICO)

Promoting Transparency, Accountability, & Public Confidence

ENGINEERING & MAINTENANCE

SERVICE DELIVERY

CAPITAL PROGRAM – MANAGEMENT & EXECUTION

INTERNAL SAFETY REVIEW

What is QICO?

- The Office of Quality Assurance, Internal Compliance & Oversight (QICO) is an internal management function that partners with other departments to provide an objective review. QICO and the internal review process are authorized by the General Manager as outlined in the Quality Management System Plan (QMSP).

Why QICO Performed This Review:

- This internal review is intended to provide Metro senior management with an assessment of the state of EOC process and promote the actions needed to mitigate concerns identified as a result of this internal review.

QICO's Methodology:

- Develop relevant review activities by identifying and assessing any risks to policies, procedures & standards, quality & compliance, and traceability.
- Review documentation, observe processes, and interview key personnel.
- Review findings and required actions are rated based on severity of risk, which ranges on a scale from "Insignificant" to "High".

INTERNAL REVIEW SUMMARY

September 2019

(10) Elevator/Escalator Operation Center (EOC)

Key Takeaway:
ELES could improve the efficiency and performance of EOC functions by developing core procedures, a quality control plan and a defined training curriculum.

Wins:

✓ EOC reporting directly to Engineering, in lieu of Service and Maintenance, provides checks and balances between ELES groups.

Items Resolved During the Review:

✪ EOC job descriptions were updated per the three-year HR standard.

Areas for Improvement:

- Adherence to existing documentation would improve consistency.
- Developing comprehensive procedures would encourage efficiency and thoroughness.
- A documented training program would promote adherence to procedures.
- Creating a formal review program would improve job performance and data quality.

Required Actions:

- **QICO-EOC-19-01:** Update 212-SOP-36 and/or establish new procedures to formalize and assure compliance with key job functions.
- **QICO-EOC-19-02:** Establish and implement a controlled curriculum that encompasses all training requirements of EOC personnel.
- **QICO-EOC-19-03:** Establish a formal quality control plan for monitoring and improving all EOC activities.

Note: An itemized internal Corrective and Preventive Action (iCAPA) is developed for each required action to achieve effective and measurable resolution of identified concerns. To check the status of iCAPA implementation go to https://www.wmata.com/initiatives/transparency/

10.1. FUNCTIONAL OVERVIEW AND STRUCTURE

ELES Operation Center (EOC)

WMATA's Office of Elevator and Escalator Services (ELES) provides vertical transportation through 318 elevators and 618 escalators located throughout the District of Columbia, Maryland, and Virginia. These assets are located in rail stations, bus garages and a variety of administrative and support structures. ELES maintains an operations center at the Carmen Turner Facility (CTF) that provides 24/7 monitoring of elevator and escalator assets, responds to entrapments and other emergencies during revenue hours, provides support to ELES field technicians, handles MAXIMO work orders, and other functions. To coordinate this extensive network of assets, EOC maintains 24-hour communication with ELES technicians, Field Supervisors, local emergency resources and internal WMATA branches such as the Rail Operations Control Center (ROCC) and Bus Operations Communication Center (BOCC).

EOC monitors, directs and identifies the need for personnel to assist with the day-to-day operations of vertical transportation while committing to the safety of all customers. Coordination of tasks such as patron emergencies, inclement weather adjustments, bus bridge requests, mechanical trouble and elevator and escalator service interruptions are handled by EOC Dispatchers.

The EOC is operated by one Manager, one Asst. Superintendent, three Supervisors and ten Dispatchers. The Dispatchers are integral within EOC for monitoring and managing assets. Dispatchers can monitor elevator and escalator operation from one central location. When Dispatchers are notified of accidents/incidents and service issues, they formulate an approach to keep the elevators and escalators operating as effectively and safely as possible. Elevators and escalators are maintained throughout the system by technicians performing preventive and corrective maintenance. EOC Supervisors:

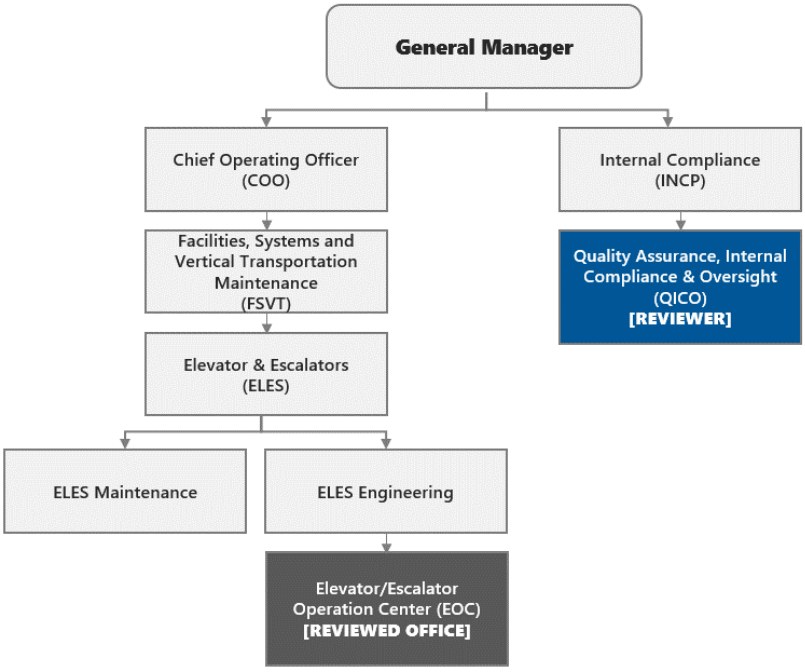
- provide EOC Dispatchers with direction and monitor their daily activities,
- keep EOC management updated with pertinent information (such as emergency situations and major asset outages),
- interface with the ELES maintenance group to assist in the performance of asset maintenance.

While EOC interacts and works closely with ELES maintenance, the activities and functions of the maintenance group and the remainder of the engineering group are not included within the scope of this internal review.

Improving technology has played an important role in how EOC has been able to improve operations over the years. Nearly every Metro Station is equipped with cameras and asset monitoring via the Supervisory Control and Data Acquisition (SCADA) network. EOC Dispatchers use this system to monitor the real-time activities in and around elevators and escalators.

Organizational Structure and Background

Within WMATA, the EOC reports to the ELES, which in turn reports to the Managing Director of Facilities, Systems, and Vertical Transportation Maintenance (FSVT). As shown in the organization chart, QICO is independent of this function, reporting to the General Manager through Internal Compliance (INCP). The scope of this internal review is to assess functional processes within the ELES Operation Center to verify effectiveness and identify areas for improvement. The following organizational chart is current at time of this report.



In this internal review, QICO is assessing the following functions:

Engineering/EOC Manager	EOC Asst. Superintendent	EOC Supervisor	EOC Dispatcher
-Oversee and manage EOC staff and operations -Direct engineering design and construction work	-Plan, schedule and coordinate work assignments -Communicate with partnering departments and overseeing day-to-day operations	-Manage and administer work assignments -Schedule picks, overtime, hot work permits, staff coverage, parts deliveries, and pickups	-Manage data entry and update in Maximo -Coordinate elevator and escalator maintenance and repair crew assignments

10.2. REVIEW SCOPE

ELES Documentation Review

- 212-SOP-36 Rev.2 EOC Desktop Procedure (September 2018)
- 2019 Hurricane Plan ELES Draft (February 2019)
- EOC org chart (March 2019)
- June high failure rate report (July 2019)
- Camera monitoring data
- June MTBF report for elevators
- Maximo review of 1,670 ELES work orders (April 1-June 30, 2019)
- Virtual EOC emails (August 1-7,2019)
- EOC bid sheet
- EOC Weekly Metrics (June 29-July 4, 2019)
- June Monthly Elevator Availability Report
- June Monthly Elevator MTBF Report
- June Monthly Escalator Availability Report
- June Monthly Escalator MTBF Report

Personnel Discussions

- EOC Dispatchers
- EOC Supervisor
- EOC Asst. Superintendent

Field Assessments

- QICO personnel shadowed four of each EOC shift (supervisor and dispatchers; day shift, evening shift, and night shift), for a total of twelve ELES assessments monitoring shift activities.

10.3. WHAT WORKED WELL (WINS)

Wins are categorized by Quality Measures and rated according to Risk Assessment

W-EOC-19-01	Regulations & Oversight	Reduces Service Delivery Risk	Owner – EOC

✓ **EOC reporting directly to Engineering, in lieu of Service and Maintenance, provides checks and balances between ELES groups.**

Discussion

- EOC reporting to Engineering creates a reporting structure independent of Service and Maintenance, allowing both functions within ELES to be mutually informed of and involved with incidents/accidents and out-of-order assets. This structure permits Engineering to review repair data submitted by ELES technicians for accuracy and completeness.

10.4. ITEMS RESOLVED DURING REVIEW

Items resolved are categorized by Quality Measures

R-EOC-19-01	Skills Management	Legal & Compliance	Owner – EOC

✪ **EOC job descriptions were updated per the three-year HR standard.**

Discussion

- QICO reviewed all EOC job descriptions in the Job Description Library, and noted as below:
    - The job description for EOC service dispatcher (code #1780) had not been updated since 2000. The average length of service for dispatchers is 3.5 years.
    - The job description for EOC supervisor (code #5293) had no date of approval and no signature.
    - Per HR-TA-P01-00, a job description should be reviewed and evaluated with the Office of Compensation (COMP) minimally every three years to ensure relevance and accuracy of the minimum qualifications, essential functions, knowledge, skills, abilities and technology/tools.
- The updated job descriptions had been submitted by ELES to HR prior to this Internal Review, and now these updates appear on the HR web site.

10.5. AREAS FOR IMPROVEMENT

Findings are categorized by Quality Measures and rated according to Risk Assessment

F-EOC-19-01 Work Standards **Service Delivery – Elevated (3,5)** **Owner – EOC**

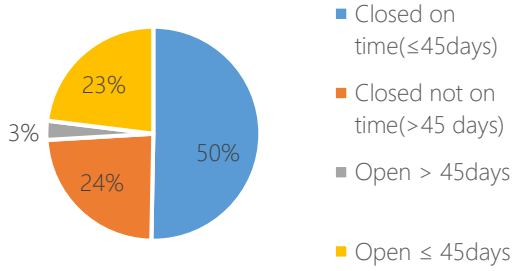
- **Adherence to existing documentation would improve consistency.**

Discussion

- QICO requested all EOC job-related SOPs/instructions; the following SOPs were received:
  - 212-SOP-36 Rev.2 EOC Desktop Procedure (2018)
  - 2019 Hurricane Plan ELES Draft (2019)
- 75% of interviewed EOC personnel were unaware of the existing two submitted SOPs and/or their locations.
  - Per P/I 1.1/3, section 5.0, documents such as SOPs should be disseminated to all applicable personnel, vetting confirmation should be received from all personnel, training should be held on the contents, and the document should be stored in an appropriate location.
  - Per 112-SOP-02 Sec 7.09, 212-SOP-36 should be available on the ELES website at the intended point of use, but it is not posted.
- At no time did QICO observe EOC personnel access a printed or electronic copy of 212-SOP-36.
- Per 212-SOP-36 EOC General Procedures 6.2.1, EOC dispatchers are required to develop a single end-of-shift report to maintain the accuracy and consistency of Dispatcher tasks during shift turn-over.
  - Dispatchers are currently not creating an end-of-shift report (no reports were created during any assessment).
  - Supervisors therefore have no reports to review, which is also a discrepancy per 212-SOP-36 EOC General Procedures 6.1.1.
- QICO conducted two field assessments of each shift (day, evening, night) to observe the activities of the Dispatchers. These activities were compared with the requirements of 212-SOP-36. The assessments yielded the following observations:
  - Dispatchers did not communicate important and critical information to ELES staff, the next shift and the rest of the organization through email in four of six assessments. (6.2.5)
  - Maximo ELES OOS (Out of Service) report was not reviewed by Dispatchers in two of six assessments. (7.1.1.4)
  - Dispatchers did not notify the Regional Supervisor of an outage in the applicable sector once out of two such opportunities. (7.2.1.1.1)
  - Dispatchers did not review the ELES-WAPPR-NEW query in Maximo in all five opportunities observed. (7.1.1)
  - When initiating a work order, Dispatchers did not confirm there were no existing duplicate work orders in five of six assessments (7.1.3). However, less than 1% of work orders reviewed had duplicates.
  - Dispatchers did not determine if any existing Limited Maintenance (LM) work orders could be completed during the current work order action and notify the Supervisor in all three opportunities observed. (7.2.3 Work Order Management)
  - A Dispatcher did not enter the appropriate codes in a work order in one of six assessments. (7.2.10)

- QICO reviewed 1,670 work orders (created between 4/1/2019 and 6/30/2019) covered 30 elevators and 70 escalators across 12 stations in Maximo and discovered the following (see Graph 1):
  - 50% of work orders were closed on time in compliance of 212-SOP-36 Work order management section 7.9.1.
  - 24% of work orders were not closed within 45 days after completion of work order, out of compliance of 212-SOP-36 section 7.9.1.
  - 23% of work orders were open and in progress within 45 days after creation.
  - 3% of work orders remained open without any progress over 45 days after creation.

Graph 1: Maximo Work Order Review

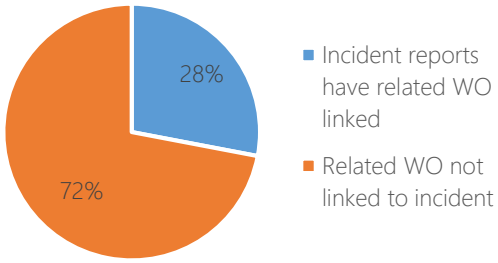


F-EOC-19-01 Work Standards Service Delivery – Elevated (3,5) Owner – EOC

- QICO reviewed 25 elevator entrapment incident reports in Maximo (created between 8/21/19 and 9/16/19) and found:
  - 18 of the 25 reports do not link the related Maximo work order with the "Related Records", which is out of compliance with the SOP.
  - Seven out of the 25 have Maximo work order numbers linked into "Related Records" tab per 212-SOP-36 section 7.1.8.2.

- Adherence to current procedures would improve information transfer between shifts, reduce work orders open past the closure date, and promote linking of work orders to incident reports.

Graph 2: Maximo ELES Incident Report Review



F-EOC-19-02 Work Standards Service Delivery – Moderate (3,3) Owner – EOC

- **Developing comprehensive procedures would encourage efficiency and thoroughness.**

Discussion

- During the field assessments, QICO observed Dispatchers performing tasks for which there are no documented procedures. These tasks include proper telephone dialogue, camera monitoring, and transfer of data from Virtual EOC to Maximo.
- The following SOPs are currently in development with no due date for completion and no drafts were provided:
  - EOC COOP plan (Continuity of Ops)
  - EOC incident/accident response manual/SOP
  - EOC data entry manual/SOP
  - EOC remote monitoring/SCADA manual/SOP
  - EOC camera monitoring manual/SOP
- Better defined work instructions would codify and standardize how all job functions should be performed by EOC personnel. Additionally, more complete and specific documentation will allow establishment of baseline performance indicators, which is the cornerstone of a quality management plan.

F-EOC-19-03	Skills Management	Service Delivery – Moderate (3,3)	Owner – EOC

- **A documented training program would promote adherence to procedures.**

Discussion

- There are no recorded instructions or requirements for training. Training records were requested but none were provided because training activities are not documented.
- Currently, On-the-Job Training (OJT), consisting of verbal direction and demonstration of daily tasks, is the only training provided. During interviews with EOC personnel, QICO was informed Dispatchers are assigned to work with a Supervisor or an established Dispatcher to learn the required processes. No documented curriculum is in place to ensure Dispatchers are prepared to perform all aspects of their job. No OJT was observed.
- All training must conform to the WMATA System Safety Program Plan (SSPP) Training; details are specified in section 16.0 of the SSPP.
- A comprehensive training program would promote consistency in job performance across EOC personnel.

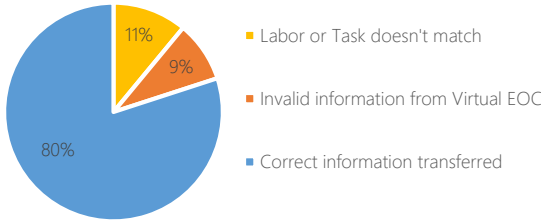
F-EOC-19-04	Quality Control	Service Delivery – Moderate (3,4)	Owner – EOC

- **Creating a formal review program would improve job performance and data quality.**

Discussion

- EOC does not employ a formalized quality control program to monitor and improve compliance to 212-SOP-36. There is no current process to actively monitor response times and verify accuracy of work order information.
- QICO reviewed 100 emails from Virtual EOC and compared the data in the email to the data recorded in Maximo. As shown in Graph 3 to the right, 20% of the reviewed emails contained information that did not match the work order or had invalid data.
- A quality control program as described in P/I 1.15/1 section 4.00 would permit EOC management to evaluate job performance indicators such as call response time, data quality, etc. This will allow management to better direct resources, improve training, and reveal opportunities for overall process refinement.

Graph 3: Virtual EOC vs Maximo comparison (100 Virtual EOC emails were reviewed)



10.6. SUMMARY OF REQUIRED ACTIONS

QICO-EOC-19-01 **Action Owner – EOC** **Overall Risk – Moderate (3,4)**

Required Action: Update 212-SOP-36 and/or establish new procedures to formalize and assure compliance with key job functions.

Applicable Findings

- **F-EOC-19-01:** Adherence to existing documentation would improve consistency.
  - **Measure:** Policies, Procedures & Standards **Risk:** Service Delivery – Risk Rating (3,5)
- **F-EOC-19-02:** Developing comprehensive procedures would encourage efficiency and thoroughness.
  - **Measure:** Policies, Procedures & Standards **Risk:** Service Delivery – Risk Rating (3,3)

QICO-EOC-19-02 **Action Owner – EOC** **Overall Risk – Moderate (3,3)**

Required Action: Establish and implement a controlled curriculum that encompasses all training requirements of EOC personnel.

Applicable Findings

- **F-EOC-19-03:** A documented training program would promote adherence to procedures.
  - **Measure:** Policies, Procedures & Standards **Risk:** Service Delivery – Risk Rating (3,3)

QICO-EOC-19-03 **Action Owner – EOC** **Overall Risk – Moderate (3,4)**

Required Action: Establish a formal quality control plan for monitoring and improving all EOC activities.

Applicable Findings

- **F-EOC-19-04:** Creating a formal review program would improve job performance and data quality.
  - **Measure:** Quality & Compliance **Risk:** Service Delivery – Risk Rating (3,4)

Internal Corrective and Preventive Actions (iCAPAs) are designated to address each Required Action listed above.

Washington Metropolitan Area Transit Authority

INTERNAL REVIEW 2019

Internal Review: Engineering and Maintenance

(11) ATC System Configuration Management Plan

October 7th, 2019

Quality Assurance, Internal Compliance & Oversight (QICO)

Promoting Transparency, Accountability, & Public Confidence

ENGINEERING & MAINTENANCE

SERVICE DELIVERY

CAPITAL PROGRAM – MANAGEMENT & EXECUTION

INTERNAL SAFETY REVIEW

What is QICO?

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Why QICO Performed This Review:

- This internal review is intended to provide Metro senior management with an assessment of Automatic Train Control engineering and maintenance processes to promote actions needed to address any concerns.

QICO's Methodology:

- Develop relevant review activities by identifying and assessing any risks to policies, procedures & standards, quality & compliance, and traceability.
- Review documentation, observe processes, and interview key personnel.
- Review findings and required actions are rated based on severity of risk, which ranges on a scale from "Insignificant" to "High".

INTERNAL REVIEW SUMMARY

October 2019

(11) ATC System Configuration Management Plan

Key Takeaway: *Communication lapse between ENGA Office of Automatic Train Control Engineering (ATCE) and Rail Infrastructure Maintenance and Engineering (RIME) Office of Automatic Train Control Maintenance (ATCM) compromised system configuration control within ATC Design Control Board*.

Wins:

✓ Safe Signal Project and Project Coordinator position created.

Items Resolved During the Review:

✪ Review and revision of ATC procedures by the ATC Design Control Board

Areas for Improvement:

- Following established guidelines of document revision process for Configuration Item documents ensures compliance with System Configuration Management Plan.
- Using controlled data sheets would ensure ATC system infrastructure integrity.
- Former ATCM Leadership did not follow System Configuration Management Plan.
- Adhering to Operations Management Services (OPMS) standard operating procedures is essential to maintaining current Technical Skills Maintenance Training Department (TSMT) training methodology.

Required Actions:

- **QICO-ASCM-19-01:** Develop training plan for the ATC-4000 manual, inclusive of front-line supervisors, Technical Skills Maintenance Training Department (TSMT) training instructors, and middle and upper management, to streamline safety and design principles.
- **QICO-ASCM-19-02:** Update ATC-4000 manual to define technical content allowed in internal documentation that ATCM management may issue to ATCM personnel.

Note: An itemized internal Corrective and Preventive Action (iCAPA) is developed for each required action to achieve effective and measurable resolution of identified concerns. To check the status of iCAPA implementation go to https://www.wmata.com/initiatives/transparency/

11.1. FUNCTIONAL OVERVIEW AND STRUCTURE

Return to Automatic Train Operation (ATO) and System Configuration Management.

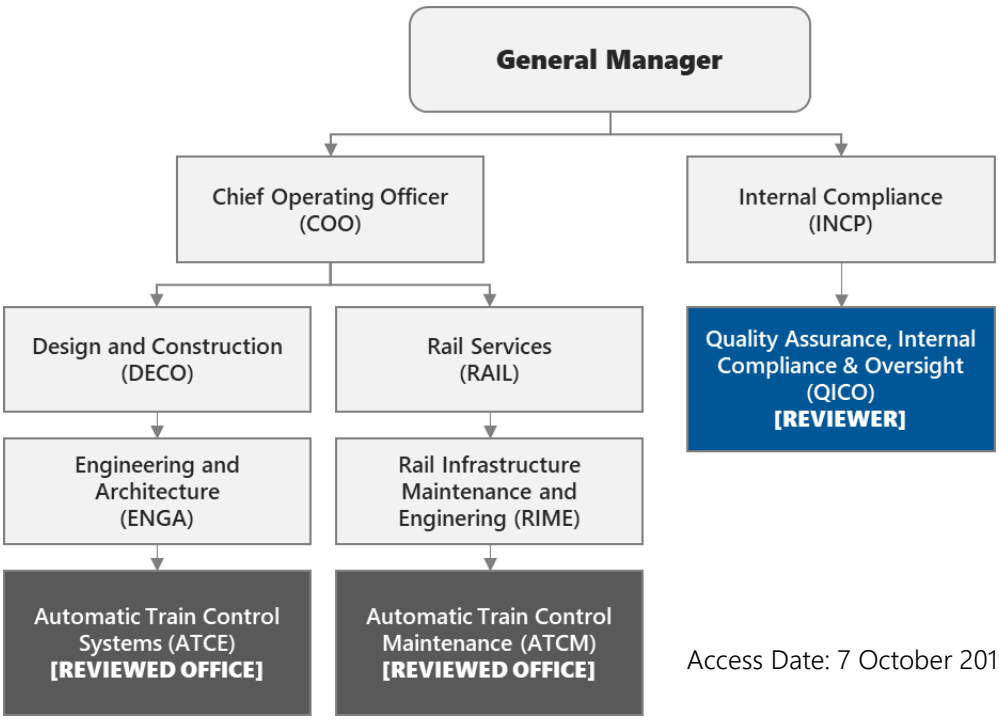
Automatic Train Operation (ATO) is a subsystem within the Automatic Train Control System. As such, ATO performs functions normally performed by the operator. This includes acceleration, deceleration, speed regulation, programmed stopping and door control (in conjunction with Automatic Train Protection and the train to way-side communication system).

WMATA's Automatic Train Control (ATC) system was originally built with ATO capability. However, WMATA ceased ATO operations after the accident at Fort Totten in 2009 and now only operates trains in manual. As of this report date, due to difficulties encountered during WMATA's "Return to ATO Operation" effort, WMATA management decided to delay "Return to ATO" and "Automatic Door Operation" goals. Observed discrepancies (findings) in WMATA's ATC System Configuration Management Plan occurred in this timeframe.

The initial scope of QICO Internal Review activity pertained to WMATA's ongoing "return to automatic train operation" from the Infrastructure perspective (wayside ATC equipment) and not developments on the railcar. As such, this internal review does not contain information about WMATA's car borne equipment.

Organizational Structure and Background

The Organization chart below depicts Automatic Train Control Engineering (ATCE) reporting to the Chief Operating Officer (COO) through the departments of Engineering and Architecture (ENGA) and Design & Construction (DECO). Automatic Train Control Maintenance (ATCM) also reports to the Chief Operating Officer through the department of Rail Infrastructure Maintenance and Engineering (RIME) and the Department of Rail Services (RAIL). As shown in the organizational structure, chart, QICO is independent of this function, reporting to the General Manager through Internal Compliance (INCP).



Access Date: 7 October 2019

To clarify the relationship between ATCE and ATCM, WMATA's System Safety Program Plan (SSPP) section 3.10.6 is referenced to outline their responsibilities below:

ENGA supports the overall mission of WMATA to provide safe, reliable and efficient transportation options throughout the DC Metro area by providing engineering and project management services for infrastructure renewal and adjacent construction. In addition, the ENGA groups work closely with Maintenance and Operations to verify the transit system is well-maintained and any engineering issues on existing systems are properly evaluated and remediated.

NOTE: The above section from the SSPP also appears verbatim on ENGA's Metroweb site.

ATC Engineering (a sub-group of ENGA) provides policies and procedures for the testing, inspection and maintenance in the ATC-1000, 2000, 3000 and 4000 documents. Each document provides guidelines in specific areas:

- ATC-1000 – Mandatory safety critical inspection and test procedures (FRA regulatory compliance tests).
- ATC-2000 – Guidelines for incident investigation, corrective maintenance and modification to ATC systems.
- ATC-3000 – Technical procedures for ATC systems which are not covered in the ATC-1K, i.e. non-vital systems, preventive maintenance and non-periodic adjustment procedures.
- ATC-4000 – Establishes the System Configuration Management Plan, ATC engineering authority and responsibility, defines the design control board and compliance policy.

ATCM (a sub-group of RIME) is responsible for the control, maintenance, inspection, modification, overhaul, test and repair of Infrastructure systems. The Automatic Train Control Branch (ATCM) verifies the availability of wayside equipment and personnel in order to guarantee continuous safe, effective and economic rail operation.

The ATCM mission statement from the Metroweb site is:

- Automatic Train Control Maintenance provides for the safe and efficient movement of trains through a series of track circuits and integrated logic for routing and speed controls. To that end, ATCM endeavors to ensure that the Authority's business and mission critical automatic train control systems are maintained according to established standards and procedures.

11.2. REVIEW SCOPE

Documentation Review

- System Safety Program Plan
- ATC-1000
- ATC-2000
- ATC-3000
- ATC-4000
- ATCM Maintenance Bulletins
- ATCE Engineering Bulletins
- TSMT Procedures
- ATCM Data Sheets
- Training Records

Personnel Discussions

- ATCM General Superintendent
- ATCE Engineering Manager
- Vehicle Program Services (CENV) engineer.
- Maintenance of Operation Control (MOC) Superintendent
- ATC Project Manager

Field Assessments

- ATCM Spillover Adjustment Class
- Red Line Auto Door Operation Testing of 3K and 7K Railcars
- ATCM AFTC Detection Signal Level Test PMI Activity
- ATCM Shunt Verification Test PMI activity
- Attended ATCM Safety Stand down meetings

11.3. WHAT WORKED WELL (WINS)

Wins are categorized by Quality Measures and rated according to Risk Assessment

W-ASCM-19-01 Policies, Procedures & Standards **Improves Change Management** **Owner – ENGA/RIME**

✓ **Safe Signal Project and Project Coordinator position created.**

Discussion

- A review of ATC initiatives was conducted by ENGA/RAIL/ATCE and ATCM with priorities assigned to all ongoing initiatives. This focus of priorities has become the "Safe Signals" program.
- The value of regular ATC design control board meetings to review and update ATC procedures has been recognized by RAIL and ENGA and was an outcome of the "Safe Signals" program.
- A Safe Signal Project Coordinator position was created by RIME (and filled [redacted], 2019), to coordinate effort between ATCE and ATCM.
- As future procedure revisions become necessary, the Safe Signal Project Coordinator will schedule meetings, streamline communication and resolve issues.

11.4. ITEMS RESOLVED DURING REVIEW

Items resolved are categorized by Quality Measures

R-ASCM-19-01 Traceability **Improves Document Control** **Owner – ATCM/ATCE**

✪ **Review and revision of ATC procedures by the ATC Design Control Board.**

Discussion

- Due to the backlog of procedures needing update, review and approval, regular meetings between ATCM and ATCE began in [redacted] to review and update existing procedures and testing techniques. As a result, all ATC-1000 and ATC-3000 procedures have been reviewed and revised (as needed) by August 2019. These meetings resulted from the Safe Signals Program and were also attended by SAFE (Department of Safety & Environmental Management) and TSMT (Technical Skills Maintenance Training) representatives (QICO also attended as an observer). The advantages are:
    - Provided a positive environment for all departments affected by procedure revisions to participate and ask questions.
    - Streamline the Design Control Board approval process. The estimated time for updated procedure submission to [redacted] for signature process is [redacted]. After all design control board members sign revised procedures they will be issued to personnel. This adheres to ATC-4000 configuration system management plan requirements.
    - This will have positive impact on closing of iCAPA QICO-ATC-17-02 (Review and perform necessary revision to maintenance documentation, including a maintenance control policy) due to ATCE and ATCM following established maintenance document policy set forth in ATC-4000 Rev 1.0, 1/21/2016.

11.5. AREAS FOR IMPROVEMENT

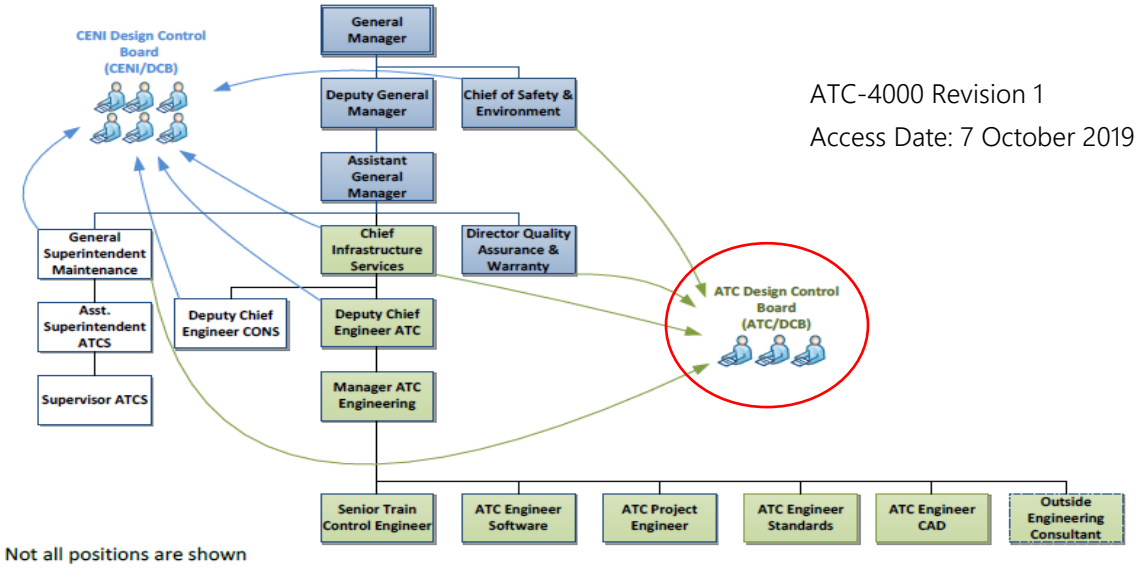
Findings are categorized by Quality Measures and rated according to Risk Assessment

F-ASCM-19-01 Policies, Procedures & Standards Change Management – Elevated (4,3) Owner- ATCM

- **Following established guidelines of document revision processes for Configuration Item (CI) documents ensures compliance with system configuration management plan.**

Discussion

- During an ATCM "all hands meeting" in [redacted], ATCM was observed distributing an "Updated ATC-1000 Track Circuit PMI's" (Periodic Maintenance and Inspections) pamphlet to ATCM personnel. The revision of this handout was observed to be Rev 5.0; however, the current approved revision level of ATC-1000 manual procedures are Rev 3. No Design Control Board review signatures were found (ATCE, ATCM, SAFE) on this pamphlet.
- Para 4002.3 of the ATC 4000 manual classifies ATC-1000 manual procedures as configuration items, to be reviewed by the ATC Design Control Board.
- The ATC-4000 manual is the governing document for the ATC System Configuration Management Plan (SCMP). The SCMP is designed to ensure that WMATA's Automatic Train Control (ATC) Systems, Subsystems and Equipment are in satisfactory condition to enable the continued integrity, safety and reliability of the ATC systems, over time, for the public and employees.
- Additionally, ATC 4000 defines the Design Control Board as "The ATC/DCB is authorized by the DGM and established, under this ATC-4002 standard, as the ATC configuration management design control board responsible to review and approve changes or deviations to technical documents (AETDs) managed by ATC Engineering, which may or may not necessarily have a direct impact on the ATC system and are required to communicate essential information about or require both intrusive and non-intrusive actions to the ATC system"
- In addition, the roles of each group are defined by WMATA's System Safety Program Plan, including ENGA's role to "verify the transit system is well maintained and any engineering issues on existing systems are properly evaluated and remediated".
- Figure 1 below illustrates the ATC Design Control Board (circled) reporting structure in ATC-4000. An ATC Engineer would prepare the technical document (AETD) and it would be approved by ATC Engineering, ATCM, and SAFE. QICO could be requested to review to ensure document quality.



ATC-4000 Revision 1

Access Date: 7 October 2019

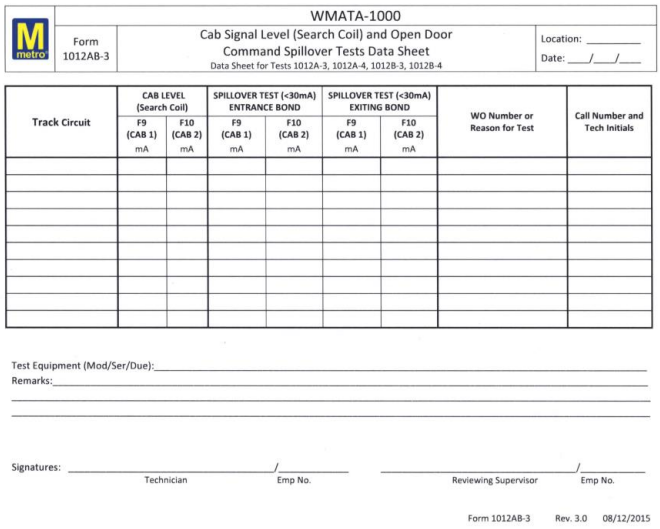
Figure 1 ATC-4002.3

F-ASCM-19-02 Traceability **Document Control – Elevated (4,3)** **Owner - ATCM**

- **Using approved data sheets would ensure ATC system infrastructure integrity.**

Discussion

- ATCM provided QICO with rail current data collected from the ATC Maintenance Spillover (AUTO DOOR) Campaign #14452717, performed in Q1. The data sheets (Figure 2) used were not the approved data sheets provided in the ATC-1000 manual form 1012AB-3 (Figure 1) as required by the source procedure 1012A-4. While no reason was given for the data sheet change, QICO observed an unapproved and unnumbered Spillover Circuit Adjustment procedure distributed in class (described in F-ASCM-19-04). QICO was unable to verify if the proper procedure was used. These data sheets (Figure 2) do not reference a test procedure number. The data sheets (Figure 2) also include frequency pass/fail criteria without referencing the source procedure. Two instances of rail current frequency were discovered out of tolerance at [redacted] stations. [redacted]). However, no corrective work orders have been found in [redacted] in relation to the discrepancies.
- These observations have a negative impact on the closure of Tri-State Oversight Committee CAPs # TOC-ATC-15-006 (developing a procedure to perform quality spot checks of a supervisor's work) and TOC-ATC-15-011 (developing a procedure for quality control spot checks and documentation of supervisor's spot checks of ATCM technicians). Supervisors did not refer to properly approved documents when evaluating test data and no corrective work orders for values out of tolerance to Design Control Board approved bulletin EIB-0003-SYS rev 0.0. were found in [redacted].



WMATA-1000

Form 1012AB-3

Cab Signal Level (Search Coil) and Open Door Command Spillover Tests Data Sheet

Data Sheet for Tests 1012A-3, 1012A-4, 1012B-3, 1012B-4

Location: _____

Date: ___/___/___

Track Circuit	CAB LEVEL (Search Coil) F9 (CAB 1) mA	CAB LEVEL (Search Coil) F10 (CAB 2) mA	SPILLOVER TEST (<30mA) ENTRANCE BOND F9 (CAB 1) mA	SPILLOVER TEST (<30mA) ENTRANCE BOND F10 (CAB 2) mA	SPILLOVER TEST (<30mA) EXITING BOND F9 (CAB 1) mA	SPILLOVER TEST (<30mA) EXITING BOND F10 (CAB 2) mA	WO Number or Reason for Test	Call Number and Tech Initials

Test Equipment (Mod/Ser/Due):_____

Remarks:_____

Signatures: _____/_____ Technician Emp No. _____/_____ Reviewing Supervisor Emp No.

Form 1012AB-3 Rev. 3.0 08/12/2015

Figure 1 (ATC 1000 Data Sheets)

PLATFORM CAB LEVEL & SPILLOVER TEST DATA SHEET FOR US&S AF-800/AF-800W CIRCUITS

Spillover Test

STATION C03 DATE 10/10/2018 STATION C03 DATE 10/10/2018

[redacted]

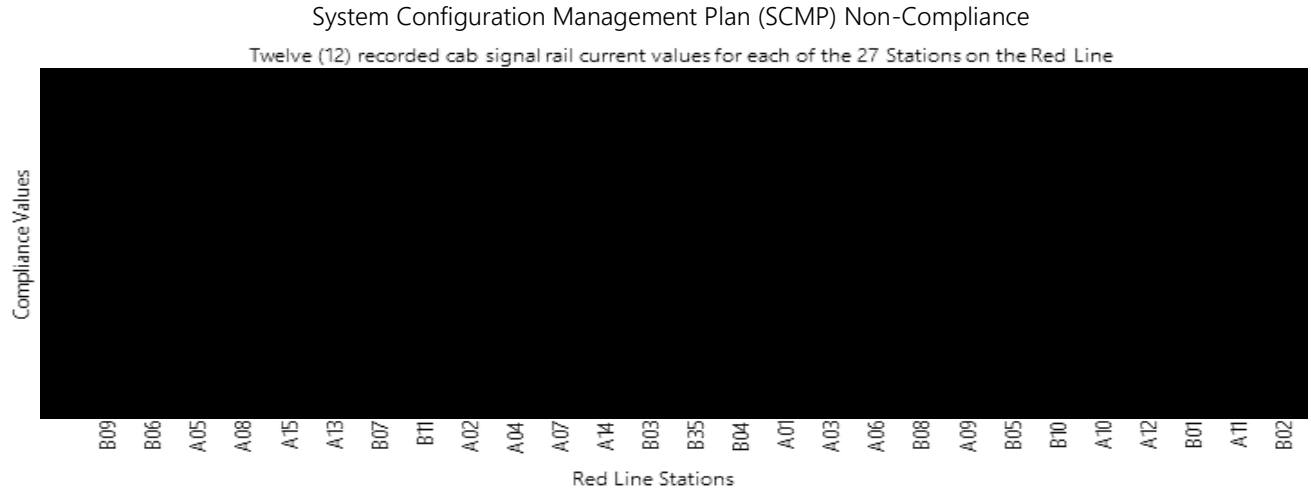
Figure 2 (ATCM issued Data Sheets)

F-ASCM-19-03 Traceability **Document Control – Elevated (4,3)** **Owner ATCM**

- **Former ATCM Leadership did not follow the System Configuration Management Plan.**

Discussion

- An Engineering Information Bulletin (EIB-0003-SYS rev 0.0) was issued on 10/01/2018 and approved by ATC Engineering/ATCM/SAFE (constituting the ATC Design Control Board, see Figure 1). This bulletin established new rail current values for cab signals. [redacted] ATCM issued its own Maintenance Bulletin, ATCMB # 20181205-07, changing the same rail current values for cab signals again, signed only by the ATCM Leadership, and issued this ATCMB (Automatic Train Control Maintenance Bulletin) to its personnel. Engineering Information Bulletins are Class 1 (Configuration Item) documents requiring review and signature of the ATC design control board; however, Maintenance Bulletins are Class 3 documents, which do not require review and signatures. This effectively attempts to incorrectly reclassify the information from Class 1 to Class 3.
- QICO sampled 27 stations where rail current levels were measured, adjusted and recorded during the ATCM Spillover Campaign # 14452717 to the last approved Engineering Information Bulletin EIB-18-0003-SYS. While Spillover current values were within tolerance, the chart below shows the number of out of tolerance recorded values for cab signal current at the 27 sampled stations. The chart also illustrates how Design Control cannot be preserved if changes in ATCM maintenance practices have not followed the appropriate approval process. Per interview with ENGA engineers, excessively high current values increase the risk of cab signals (including door open commands) improperly entering adjacent track circuits and effecting other trains. Cab Signal Current values are carefully selected and standardized to prevent this. Deviation from the configuration management plan specifications have added to the complexity of troubleshooting failed automatic operating systems.



F-ASCM-19-04 Traceability **Document Control – Elevated (4,3)** **Owner- TSMT**

- **Adhering to OPMS standard operating procedures is essential to maintaining current TSMT training methodology.**

Discussion

- During a [redacted] TSMT class for ATCM Spillover Circuit Adjustment, ATC Maintenance procedures. TSMT was observed distributing "Updated ATC-1002B DC Vital Relay Inspection and Test" to personnel prior to the documents completing the proper review process. These unapproved procedures created by ATCM and distributed by TSMT were observed to be at revision 4, (current revision level of this procedure within the ATC-1000 manual change matrix is 0.0)
- The training document used for the Cab Level & Spillover Circuit Adjustment class mentioned in bullet point above was marked "SEPTEMBER 11, 2018 REV. 8" for AF-800W equipment. The document is further identified as being prepared by ATCM personnel. The approved ATC-1000 procedure 1012A-4 for AF-800W equipment is dated 1/21/2016 and at Rev 3. QICO has observed differences between the training handout and procedure 1012A-4.
- The training document used for the Cab Level & Spillover Circuit Adjustment class mentioned in first bullet point above was marked 'DRAFT: For Training and Troubleshooting ONLY" for the Alstom Gen.3 and Gen.4 portion.
- The OPMS (Operations Management Services) Standard Operating Procedures document dated 5/31/2016 para 6.3.1 states "training materials should be authoritative" as well as para 6.6.2.3 "If the standard or information is any way safety related, SAFE, or its subsequent, must also approve of the information". ATC training materials should be traceable to procedures properly approved through the ATC-4000 process.
- ELM training records (Excel spread sheets) obtained from TSMT, used to track ATCM personnel OJT status are not complete. TSMT does not have all OJT documents from ATCM for blended course "Cabsig". The description of "Cabsig" is "TSMT ATC platform Cab Signal Level & Spillover measurement testing". QICO has been unable to obtain any OJT documents from ATCM as of 8/23/2019.

11.6. SUMMARY OF REQUIRED ACTIONS

QICO-ASCM-19-01 **Action Owner – RIME, TSMT, ATCM** **Overall Risk – Elevated (4,3)**

Required Action: Develop training plan of ATC-4000 manual, inclusive of front-line supervisors, TSMT training instructors, and middle and upper management, to streamline safety and design principles.

Applicable Findings

- **F-ASCM-19-01:** Following established guidelines of document revision processes for Configuration Items (CI) documents ensures compliance with System Configuration Management Plan.
  - **Measure:** Policies, Procedures & Standards. **Risk:** Safety – Elevated (4,3)
- **F-ASCM-19-02**: Using approved data sheets would ensure ATC system infrastructure integrity.
  - **Measure:** Traceability **Risk:** Safety – Elevated (4,3)
- **F-ASCM-19-04:** Adhering to OPMS standard operating procedures is essential to maintaining current TSMT training methodology.
  - **Measure:** Traceability **Risk:** Safety – Elevated (4,3)

QICO-ASCM-19-02 **Action Owner – ATCE** **Overall Risk – Elevated (4,3)**

Required Action: Update ATC-4000 manual to further define technical content permitted in documentation issued by ATCM management to ATCM personnel.

Applicable Findings

- **F-ASCM-19-03:** Former ATCM Leadership did not follow System Configuration Management Plan.
  - **Measure:** Traceability **Risk:** Safety – Elevated (4,3)

Internal Corrective and Preventive Actions (iCAPAs) are designated to address each Required Action listed above.

Washington Metropolitan Area Transit Authority

INTERNAL REVIEW 2019

Internal Review: Service Delivery

(12) Cinder Bed Contract Management

September 10, 2019

Quality Assurance, Internal Compliance & Oversight (QICO)

Promoting Transparency, Accountability, & Public Confidence

ENGINEERING & MAINTENANCE

SERVICE DELIVERY

CAPITAL PROGRAM – MANAGEMENT & EXECUTION

INTERNAL SAFETY REVIEW

What is QICO?

- The Office of Quality Assurance, Internal Compliance & Oversight (QICO) is an internal management function that partners with other departments to provide an objective review. Authorized by the General Manager as outlined in the Quality Management System Plan (QMSP).

Why QICO Performed This Review:

- This internal review is intended to provide Metro senior management with an assessment of the overall contract management of the Cinder Bed Rd. Bus Operation (CQ18068) Contract, and promote the actions needed to address any concerns.

QICO's Methodology:

- Review documentation, observe processes, and interview key personnel.
- Rate findings and required actions based on severity of risk, which ranges on a scale from "Insignificant" to "High".

INTERNAL REVIEW SUMMARY

September 2019

(12) Cinder Bed Rd. Bus Operations Contract Management

Key Takeaway:
Established and documented processes support sustainability, effectiveness, and efficiency contract management.

Wins:

✓ Effective tracking and monitoring of the contract Key Performance Indicators (KPI) by the Contract Management Team resulted in improved contractor accountability.

Areas for Improvement:

- Documentation of the contract management processes and the associated activities allows for effective, sustainable and traceable oversight activities.
- An established Continuity of Operations Plan (COOP) allows for continuous and uninterrupted contract oversight.

Required Actions:

- **QICO-CIND-19-01:** Develop documented procedures for the Contract Management Team activities in accordance with the Authority's QMSP.
- **QICO-CIND-19-02:** Develop a Continuity of Operations Plan (COOP) for the Cinder Bed Road Contract Management Team.

=Note: An itemized internal Corrective and Preventive Action (iCAPA) is developed for each required action to achieve effective and measurable resolution of identified concerns. To check the status of iCAPA implementation go to https://www.wmata.com/initiatives/transparency/

12.1. FUNCTIONAL OVERVIEW AND STRUCTURE

Bus Transportation – Cinder Bed Road Contract Management

Metro has constructed a new facility for bus operation at Cinder Bed Road in Lorton, Virginia. This facility operates nine (9) bus lines with 80 WMATA supplied buses. The operation and maintenance of the bus fleet and facility are contracted through [redacted] - "Cinder Bed Road Bus Operations & Maintenance". This three (3)-year contract was formally awarded in October 2018 with an operational start date of December 30, 2018.

The WMATA Cinder Bed Road Contract Management Team consists of the following personnel:

- Dedicated Contract Management Staff
  - Project Manager (also the Contracting Officer's Technical Representative (COTR))
  - Project Analyst
- Supporting Staff
  - Contracting Officer
  - Maintenance Manager
  - Other BUSV Personnel as required (Ex. Performance, BOCC, etc.)

It is the Contract Management Team's responsibility to oversee the contractor's performance as it relates to all Cinder Bed Road operations, maintenance, and facility management functions to ensure adherence to the conformed contact specifications. In addition to the contract management, the Project Manager is responsible for contract administration and invoice review.

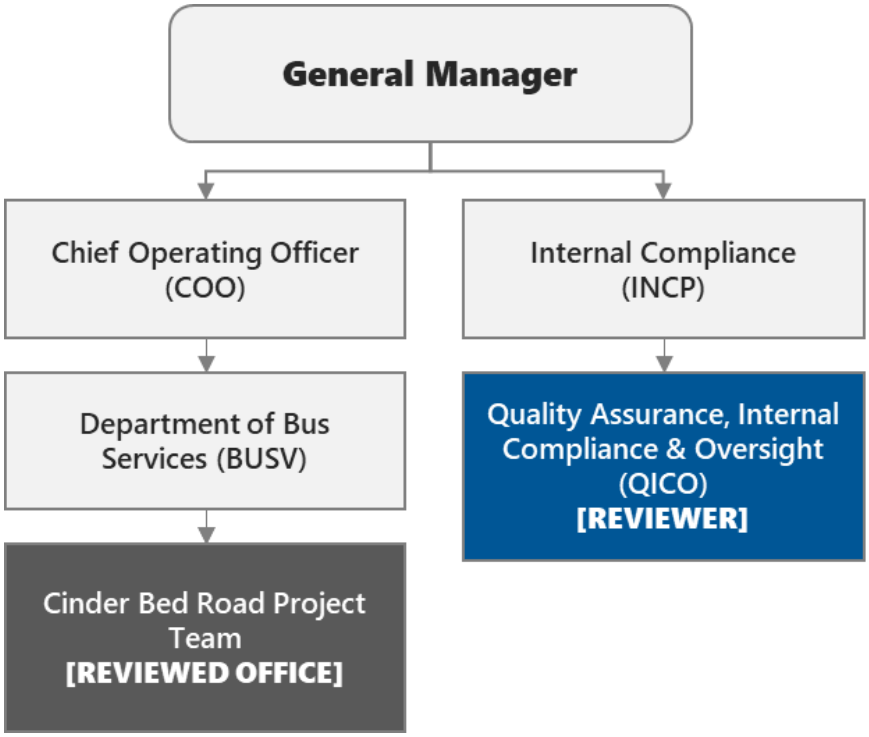
The Contract Management Team performs contract oversight activities to include assessments, inspections, monitoring, and compliance, while documenting and communicating any corrective actions that may arise.

Key Performance Indicators (KPIs) established by the contract to measure the overall success of the contract operation and maintenance functions are monitored and evaluated by the Contract Management Team to verify the contractor is meeting the KPIs goals. These KPIs include areas of Safety, On Time Performance, Reliability, Preventive Maintenance, Equipment Availability, and Customer Relations.

This Internal Review was conducted from July 31 through September 13, 2019. The scope assessed the effectiveness of WMATA's contract management processes including business activities and documentation in ensuring contractor performance.

Organizational Structure and Background

Within WMATA, the Cinder Bed Road Contract Management Team reports to the Chief Operating Officer (COO) by means of the Department of Bus Services (BUSV). As shown in the organization chart, QICO is independent of this function reporting to the General Manager through Internal Compliance (INCP). The scope of this internal review is limited to an assessment of Cinder Bed Road Contract Management Team and did not include a review of other WMATA departments/offices or the contractor.



12.2. REVIEW SCOPE

Documentation Review

- Conformed Contract [redacted]
- Contract Deliverables (CDRLs) 0001-0043

Personnel Discussions

- Dedicated Contract Management Staff
  - Project Manager (COTR)
  - Project Analyst
- Supporting Staff
  - Maintenance Manager
  - Asst. Superintendent BUSV Operations

Field Site Assessments

- Bus Observations, Pentagon Rail Station (C07), Lower Level Bus Loop
- Bus Observations, King Street Rail Station (C13), Temporary Bus Loop
- Bus Inspections, Cinder Bed Rd. Facility Yard

12.3. WHAT WORKED WELL (WINS)

Wins are categorized by Quality Measures and rated according to Risk Assessment

W-CIND-19-01 **Application and Fulfillment** *Reduces Service Delivery and Safety Risk* **Owner – BUSV**

✓ **Effective tracking and monitoring of the contract Key Performance Indicators (KPI) by the Contract Management Team resulted in improved contractor accountability.**

Discussion

- The Contract Management Team conducts daily monitoring of the KPIs that are generated through Maximo and [redacted] systems with Information Technology support and advise the contractor of any performance issues as they arise. These KPIs include Safety, On Time Performance, Reliability, Preventive Maintenance, Equipment Availability, and Customer Relations.
- The Key Performance Indicators' goals are defined in detail within the contract. Failure to meet or maintain the levels of performance required results in credits withheld from the monthly billing. The Project Manager monitors the actual KPIs and recommends the applicable credits for each month's invoicing.
- Due to the continued challenges in meeting the KPIs' goals, a detailed notice (Cure Notice) of required corrective actions was issued to the contractor's corporate management by WMATA's Contracting Officer.

12.4. AREAS FOR IMPROVEMENT

Findings are categorized by Quality Measures and rated according to Risk Assessment

F-CIND-19-01 Policies, Procedures, & Standards **Moderate – Risk (3,3)** **Owner – BUS**

- **Documentation of the contract management processes and the associated activities allows for effective, sustainable and traceable contract oversight activities.**

Discussion

- There are no documented procedures for management activities, document control, quality management, safety planning, training, or corrective actions.
- The Contract Management Team functions based on past experiences, undocumented best business practices, and undocumented lessons learned to manage and oversee the contract.
- Scheduling site visits, inspections, observations, follow-ups, and day-to-day business activities are planned on a "white board" rather than through a controlled and a monitored quality document.
- QICO was provided with 22 records of field assessments and bus inspections. These records and their templates/forms are not controlled with a document number, revision number and date, which can create inconsistencies in data capturing and work tracking activities.
- Below are examples of important activities conducted by The Contract Management Team that need standardization and documentation:
    - The Contract Management Team conducts monthly field visits which are performed on in-service buses at two locations, Pentagon (C07) and King Street (C13) Rail Stations. By conducting field visits at these two locations, all in-service buses are assessed each month.
    - Each bus is boarded, and specific observations are made on critical systems and operator awareness. Observations are conducted quickly as to not interrupt service during rush hours.
    - The Contract Management Team also conducts detailed maintenance inspections on 25% of the fleet monthly. These inspections are performed in the Cinder Bed Road facility storage yard and include: interior, exterior, and engine compartment multi-point inspections.
    - Project Manager compiles the results of observations and/or inspections and submits them to the contractor. The contractor is then responsible for creating work orders in Maximo, completing the repair, and closing the work order within 30 days. The Contract Management Team follows-up in Maximo to verify tickets are created. Once these tickets are closed within the required time allowed, the Contract Management Team conducts field visits to ensure the work was indeed completed.

F-CIND-19-02 Policies, Procedures, & Standards **Moderate – Risk (3,3)** **Owner – BUS**

- **An established Continuity of Operations Plan (COOP) allows for continuous and uninterrupted contract oversight.**

Discussion

- Currently, the Contract Management Team does not have a documented plan to backfill the duties of an employee in case they are temporary or permanently out of the office for various reasons (vacation, illness, emergencies, etc.). In addition, there is no detailed plan or process to define department activities and employee responsibilities.
- Due to the limited number of Contract Management Team personnel and undocumented processes and activities, there is no COOP plan in place to ensure contract oversight functions and activities continue with no business interruption.

12.5. SUMMARY OF REQUIRED ACTIONS

QICO-CIND-19-01 **Action Owner – BUS** **Overall Risk – Moderate (3,3)**

Required Action: Develop documented procedures for the Contract Management Team activities in accordance with the Authority's QMSP.

Applicable Findings

- **F-CIND-19-01: Documentation of the contract management processes and the associated activities allows for effective, sustainable and traceable oversight activities.**
  - **Measure:** Policy, Procedures, & Standards **Risk:** Service Delivery – Risk Rating (3,3)

QICO-CIND-19-02 **Action Owner – BUS** **Overall Risk – Moderate (3,3)**

Required Action: Develop a Continuity of Operations Plan (COOP) for the Cinder Bed Road Contract Management Team.

Applicable Findings

- **F-CIND-19-02: An established Continuity of Operations Plan (COOP) allows for continuous and uninterrupted contract oversight.**
  - **Measure:** Policy, Procedures, & Standards **Risk:** Service Delivery – Risk Rating (3,3)

Internal Corrective and Preventive Actions (iCAPAs) are designated to address each Required Action listed above.

Washington Metropolitan Area Transit Authority

INTERNAL REVIEW 2019

Internal Review: Internal Safety Review

(13) Engineering and Architecture

September 20, 2019

Quality Assurance, Internal Compliance & Oversight (QICO)

Promoting Transparency, Accountability, & Public Confidence

ENGINEERING & MAINTENANCE

SERVICE DELIVERY

CAPITAL PROGRAM – MANAGEMENT & EXECUTION

INTERNAL SAFETY REVIEW

What is QICO?

- The Office of Quality Assurance, Internal Compliance & Oversight (QICO) is an internal management function that partners with other departments to provide an objective review. QICO and the internal review process is authorized by the General Manager as outlined in the Quality Management System Plan (QMSP).

Why QICO Performed This Review:

- This internal safety review is intended to provide Metro senior management with an assessment of the state of Engineering and Architecture (ENGA) compliance to WMATAs System Safety Program Plan (SSPP) and promote the actions needed to address any concerns.

QICO's Methodology:

- Develop relevant review activities by identifying and assessing any risks to policies, procedures & standards, quality & compliance, and traceability.
- Review documentation, observe processes, and interview key personnel.
- Review findings and required actions are rated based on severity of risk, which ranges on a scale from "Insignificant" to "High".

INTERNAL REVIEW SUMMARY

September 2019

(13) Engineering and Architecture

Key Takeaway:

Refinement of the configuration management processes and consistent participation in safety committees is essential to maintaining a safety-first culture.

Wins:

✓ Automatic Train Control Engineering has a documented process to create and capture Configuration Controlled Items.

Areas for Improvement:

- Participation in routine safety committee meetings is essential to continuously improve safety throughout the Authority.
- Conducting and recording Configuration Change Control Board meetings is vital to effectively tracking configuration changes affecting multiple disciplines throughout the Authority.
- Effective configuration management is critical to assuring all WMATA assets are consistently maintained to standards.
- Consistent administration of design control board meetings results in a more effective change control database.
- Following Office of Emergency Management Standards for the development of the Continuity of Operations Annex is essential to maintaining mission critical operations in the event of an emergency.
- Establishing a quality control program to verify compliance to rules and procedures promotes effective safety awareness.
- Consistent participation in the Safety and Security Certification Review process is essential to assure the safety and security of new or rehabilitated facilities, systems, and equipment.
- Maintaining a training and certification matrix for employees and contractors highlights required competencies and reinforces compliance.

Required Actions:

- **QICO-ENGA-19-01**: Effectively document and establish a consistent presence at all applicable safety committee meetings.
- **QICO-ENGA-19-02:** Establish controls to ensure proper configuration management.
- **QICO-ENGA-19-03:** Establish a document control process for the COOP plan in accordance with Office of Emergency Management standards.
- **QICO-ENGA-19-04:** Develop a quality control program to verify rulebook compliance.
- **QICO-ENGA-19-05:** Develop a training matrix for each position within ENGA and establish a documented process to record and periodically audit required safety training and certifications for employees and contractors.

Note: An itemized internal Corrective and Preventive Action (iCAPA) is developed for each required action to achieve effective and measurable resolution of identified concerns. To check the status of iCAPA implementation go to https://www.wmata.com/initiatives/transparency/

13.1. FUNCTIONAL OVERVIEW AND STRUCTURE

Engineering and Architecture (ENGA)

ENGA supports the overall mission of WMATA to provide safe, reliable, and efficient transportation options throughout the DC Metro area by providing engineering and project management services for infrastructure renewal and adjacent construction. In addition, the ENGA department is designed to work with Maintenance and Operations groups to ensure the transit system is well maintained and any engineering issues on existing systems are properly evaluated and remediated.

The objective of the ENGA Internal Safety Review (ISR) is to internally validate that routine operations, system extensions, new projects, rehabilitated facilities, systems, and equipment under the purview of the Design & Construction department are as safe as reasonably possible per WMATA's System Safety Program Plan (SSPP). The SSPP is an authority-wide safety plan created by the Department of Safety & Environmental Management (SAFE) in accordance with Federal Transit Administration (FTA) guidelines (49 CFR 659), and details WMATA's approach to satisfying the 21 required elements for system safety.

Out of the 21 elements, the following 10 elements were found applicable to ENGA:

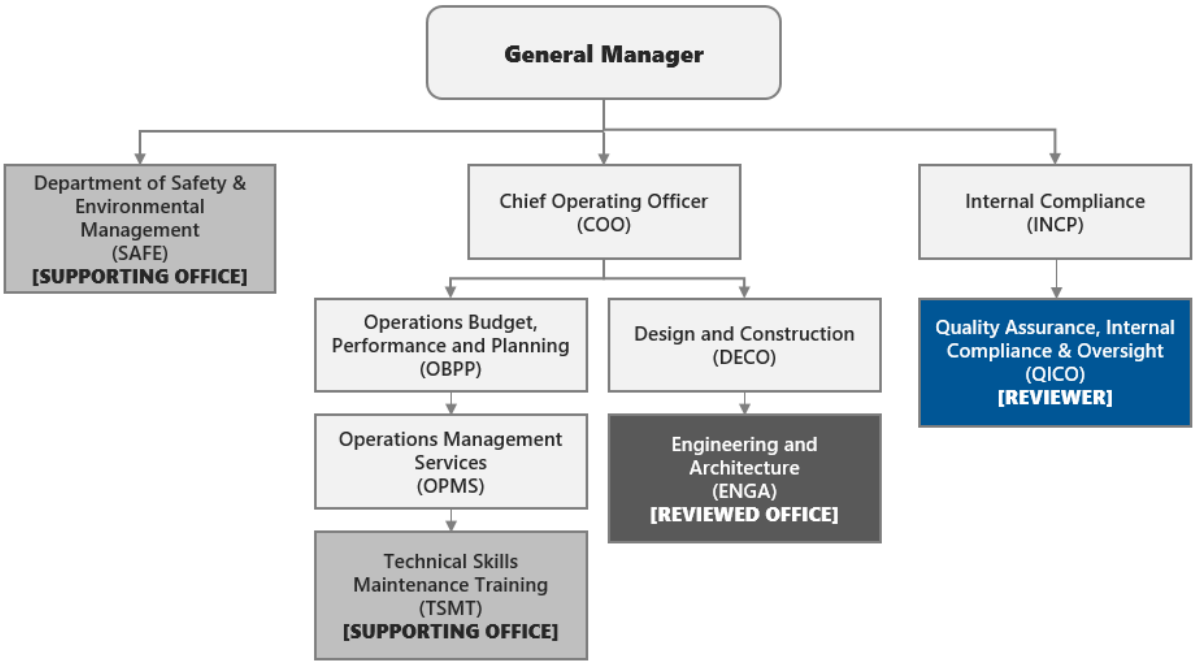
- Hazard Management (Element 6)
- System Modification (Element 7)
- Safety Certification (Element 8)
- Safety Data Acquisition (Element 9)
- Accident/Incident Investigation (Element 10)
- Emergency Management Program (Element 11)
- Rules Compliance (Element 13)
- Training and Certification Program (Element 16)
- Configuration Management and Control (Element 17)
- Procurement Process (Element 21)

Organizational Structure and Background

Within WMATA, the Office of Engineering and Architecture (ENGA) reports to the Chief Operating Officer (COO) through Design & Construction (DECO). As shown in the organization chart, QICO is independent of this function, reporting to the General Manager through Internal Compliance (INCP). The scope of this internal safety review is to assess compliance with the System Safety Program Plan (SSPP).

Engineering and Architecture (ENGA) is comprised of the following seven (7) departments:

- Automatic Train Control Systems (ATCS)
- Communications and Network Systems (COMS)
- Power Engineering (PWRS)
- Architecture (ARCH)
- Civil Engineering (CIVL)
- Configuration Management (CFGM)
- Mechanical Engineering (MECH)



13.2. REVIEW SCOPE

Documentation Review

- WMATA System Safety Program Plan (SSPP), 2018
- WMATA Safety & Security Certification Plan (SSCP), 2015
- WMATA P/I 1.2/2 Organization Chart Management, 2018
- WMATA P/I 1.2/0 Configuration Change Control Board (CCCB), 2019
- WMATA P/I 4.14/3 Design Control Board, 2019
- WMATA P/I 4.41 Joint Development and Adjacent Construction (JDAC), 2018
- WMATA P/I 4.10/4 Configuration Control Management, 2019
- WMATA P/I 10.4/1 Incident and Accident Investigation, 2018
- WMATA P/I 10.2/4 Safety Committees, 2019
- WMATA P/I 1.15/0 Rule Book Management, 2009
- SOP 114-02 - Engineering Modification Instruction Procedure, 2017
- FTA Office of Safety and Security: Recommended Best Practices for States Conducting Three-Year Safety Review, 2009
- RWP Training Records for all ENGA personnel
- Configuration Control Board Meeting Notes (2017)
- Design Control Board Meeting Notes (2016)
- Automatic Train Control Engineering Configuration Item Records (2016,2017,2018,2019)

Personnel Discussions

- Director of Engineering and Architecture
- Automatic Train Control Engineering Manager
- Senior Train Control Engineer
- SAFE Process Engineering and STAT Manager
- Deputy Chief Safety Certification and Engineering
- Director of Civil Engineering
- Senior Program Manager of Configuration Management
- Director of Power Engineering
- Director of Mechanical Engineering
- Director of Communications and Network Systems

13.3. WHAT WORKED WELL (WINS)

Wins are categorized by Safety Measures and rated according to Risk Assessment

W-ENGA-19-01 Configuration Management **Reduces Safety Risk** **Owner – ATCS**

✓ **Automatic Train Control Engineering has a documented process to create and capture Configuration Controlled Items.**

Discussion

- ATC Engineering has developed instructions on how to create and capture Configuration Controlled Items (e.g., Engineering Modification Instructions (EMIs) and Temporary Configuration Plans (TCPs)), which are contained in their ATC 4000 – Systems Configuration Management Plan Instructions and Procedures Manual.
- ATC Engineering submitted an electronic record of all their EMIs and TCPs created from March 2016 to June 2019.

13.4. AREAS FOR IMPROVEMENT

Findings are categorized by Safety Measures and rated according to Risk Assessment

F-ENGA-19-01 Safety Management **Safety** – Moderate **(2,5)** **Owner – ENGA**

- **Participation in routine safety committee meetings is essential to continuously improve safety throughout the Authority.**

Discussion

- There was no evidence (e.g. agendas, minutes, action logs, sign-in sheets) supporting ENGA's presence in major facility safety committee meetings or conducting exclusive Local Safety Committee (LSC) meetings, discussion with all ENGA department leads indicated that none of ENGA's individual offices participates in safety committee meetings except for ATCS which conducted their first LSC meeting in July 2019.
- Per Policy/Instruction (P/I) 10.2/4, Departments and Offices are responsible for having an established Local Safety Committees (LSC) to represent their work force and must communicate the LSC process to their work force at least annually.
- Per SSPP 5.7, the Local Safety Committees (LSCs) are established to address local safety issues, the Hazard Management Process, and to assist in developing effective safety programs. There is typically one LSC at every major facility. The LSCs establish and foster a close working relationship with employees, unions, and management regarding safety issues.

F-ENGA-19-02 Configuration Management **Safety** – Elevated **(3,5)** **Owner – ENGA**

- **Conducting and recording Configuration Change Control Board meetings is vital to effectively tracking configuration changes affecting multiple disciplines throughout the Authority.**

Discussion

- There was no evidence (e.g. agendas, minutes, action logs, configuration change log, sign-in sheets) supporting ENGA conducting a Configuration Change Control Board (CCCB) meeting on a quarterly basis, ENGA director and Sr. Program Manager of the Office of Configuration Management (CFGM) were only able to submit meeting notes for two meetings conducted in January and April of 2017.
- In February 2019, P/I 1.20/0, established policy for WMATA's CCCB. The role of the CCCB is to ensure that proposed changes to As-Is Configuration, which affect more than one discipline or stakeholder have been fully coordinated, documented, and disseminated across all elements of Metro.
- This policy established the following requirements:
    - Section 3.04, the CCCB will meet quarterly, or more frequently if required by work load.
    - Section 5.03, the CCCB is chaired by the Managing Director, Engineering and Architecture and consists of ten additional representatives.
    - Section 5.05, the chairman of the CCCB will establish a meeting agenda and record meeting minutes to document reviews of proposed changes, voting of board members and approval of the proposed changes to facility, and system, and subsystem in coordination with all departments.
    - Section 5.06, all facility, system or subsystem related As-Is configuration documents will be provided to ENGA and stored in an accessible location.

F-ENGA-19-03 Configuration Management **Safety** – Elevated **(4,4)** **Owner – ENGA**

- **Effective configuration management is critical to assuring all WMATA assets are consistently maintained to standards.**

Discussion

- There was no evidence (e.g. a record of all approved configuration changes) supporting the proper management of configuration changes; discussion with ENGA director indicated that configuration documents (i.e. As-builts, As-Is Drawings) resulting from an EMI or Capital project closure are not returned to CFGM for documents to be properly updated and stored.
- Per SSPP 17.1, WMATA P/I 4.10/3, Configuration Control Management establishes authority and responsibility to manage the configuration of all WMATA Infrastructures: Metrorail facilities and Metrobus facilities. The Chief Engineer and the Chief of Infrastructure Services (CENI), now Chief Engineer of DECO and Director of ENGA respectfully, are responsible for the implementation of this policy.
- Additionally, Per P/I 4.10/3,
    - Section 4.02, ENGA is responsible for establishing and maintaining configuration control of all Metro standards for existing facilities and systems of Metrorail, Metrobus, and Metro Access. This includes ensuring that all systems are accurately recorded; changes are known, approved and documented; and records are updated such that any system can be upgraded, redesigned, rehabilitated, reconfigured for operational changes, or restored in the event of its failure or damage.
    - Section 4.05, CFGM is responsible for coordinating the configuration control management of Metro facilities, systems, and subsystems, including the documents that describe, detail and identify Metro facilities, systems, and subsystems. CFGM will be responsible for the following four stages of the configuration control management process:
        - Core Documents, Change Management, Document Updates, and New Facilities.

F-ENGA-19-04 Configuration Management **Safety** –Elevated **(3,5)** **Owner – ENGA**

- **Consistent administration of design control board meetings results in a more effective change control database.**

Discussion

- There was no evidence (e.g. agendas, minutes, action logs, proposed issue and disposition logs, sign-in sheets) supporting ENGA conducting and effectively recording DCB meetings on a routine basis; ENGA was only able to submit notes for two DCB meetings conducted in September and October of 2016.
- There was no evidence supporting ENGA performing audits on DCB records; ENGA director stated that they currently do not perform audits on DCB records.
- Per SSPP 17.2, The Design Control Board (DCB) is responsible for establishing, maintaining, and promulgating architectural and engineering criteria and standards for the design, construction, reconstruction, maintenance, and operation of the Metro system. Further, the DCB provides the process for adopting new standards, approving changes and/or deviations to the existing standards. The board consists of five individuals; the chairperson, one representative from each of the following departments ENGA, SAFE, and Metro Transit Police Department (MTPD), and the fourth representative will be a representative of the department that is the subject of the variance being reviewed by DCB.
- Additionally, per P/I 4.14/3, DCB responsibilities are as follows:
    - Section 4.02, ENGA is responsible for establishing meeting schedules and providing for the administration of the DCB, implementing the changes approved by the DCB in design and construction as necessary, and for maintaining a database for change control. ENGA shall track all reported changes and shall act to preserve the efficient operations of the DCB and shall:
        - Verify that the DCB meets monthly or at a frequency to be outlined, audit the records.
        - Audit the records of the DCB from time to time to ensure that all reviews are being performed as required herein. Provide comments and guidance for improvement of the process and for revisions to this P/I.
        - Refer changes that occurred without the approval of the DCB and CCCB to the Chief Engineer – DECO.
    - Section 4.05, Director of CFGM is responsible for maintaining the Metro Standard Drawings, Design Drawings, Design Criteria, and Specifications. CFGM is also responsible for making revisions approved by DCB and modifications to architectural, civil, electrical, mechanical, structural, and other engineering documents.
    - Section 4.06, all decisions of the DCB shall be communicated in writing to:
        - The requesting department
        - All members of the CCCB for review and approval of any change to the existing As-Is facility, system, or subsystem.
        - The DCB shall keep a record of all issues referred to it and have an accounting of the disposition of all issues.

F-ENGA-19-05 Emergency Management **Safety** – Moderate **(4,2)** **Owner – ENGA**

- **Following Office of Emergency Management Standards for the development of the Continuity of Operations Annex is essential to maintaining mission critical operations in the event of an emergency.**

Discussion

- The Continuity of Operations (COOP) plan provided by ENGA was an uncontrolled word document slated for a January 2018 revision, the COOP plan currently posted on ENGA intranet website was from 2014.
- Per SSPP 11.8, The Continuity of Operations (COOP) Plan must provide strategic guidelines necessary for enhancing WMATA's ability to continue or rapidly resume essential transportation services regardless of an emergency, incident, threat, or infrastructure disruption and be exercised (tested practically) on an annual basis. An annex, to the COOP, has to be developed for each department describing roles and responsibilities, Essential Functions (EFs), delegation of authority, order of succession, communications, essential records, and continuity/back-up facilities.
- A Safety Liaison Officer from Office of Emergency Management (OEM) stated the following:
    - There is a template available for each department COOP plan
    - COOP plan must be reviewed annually.
    - COOP plan must be signed off by senior leadership.

    (A Procedure highlighting the above requirements are in development)

F-ENGA-19-06 Safe Work Standards **Safety** – Moderate **(3,3)** **Owner – ENGA**

- **Establishing a quality control program to verify compliance to rules and procedures promotes effective safety awareness.**

Discussion

- There was no evidence supporting ENGA maintaining a quality control program for rulebook compliance, ENGA director stated that currently there isn't a program in place.
- ENGA personnel may be subject to safety hazards while conducting field activities. The implementation of a rulebook compliance quality control program would reinforce safety awareness and promote local safety committees dialogue.
- Per the P/I 1.15/0 Rule Book Management, all offices with employee's subject to the Metrorail Safety Rules and Procedures Handbook are required to develop a documented quality control program to ensure compliance to rules and procedures. This program must include compliance checks, corrective actions, analysis, and record-keeping requirements.
- According to Section 5.08 of this P/I, the quality control program shall include the following elements:
    - Rule Prioritization
    - Roles and Responsibilities
    - Compliance Checks
    - Corrective Action to address non-compliance
    - Record Keeping
    - Metrics
    - Analysis

F-ENGA-19-07 Managing Safety in System Modification **Safety** – Moderate **(3,3)** **Owner – ENGA**

- **Consistent participation in the Safety and Security Certification Review process is essential to assure the safety and security of new or rehabilitated facilities, systems, and equipment.**

Discussion

- There was no evidence indicating ENGA's consistent presence in the Safety and Security Certification Review process.
- No ENGA procedures were provided that provides guidance or defined workflow for their participation in SSRC or collaboration with SAFE.
- Review of the monthly Safety and Security Certification Review Committee (SCRC) meeting minutes from February 2019 to July 2019 indicate that an ENGA representative attended only one (16.7%) of the six meetings.
- Per SSPP 8.4, the Safety and Security Review Committee (SCRC) is a subcommittee of the Executive Safety Committee (ESC) that is established to oversee implementation of the SSC process and for ensuring that certifiable levels of operational safety and security items are completed and verified prior to start of new revenue service, or the placement of rehabilitated facilities and systems into service/use.
- Per WMATA Safety & Security Certification Plan (SSCP) (March 2015), the Chief Engineer, Infrastructure (CENI) (now Director of ENGA) is delegated the responsibility for the acquisition, construction and for completing the safety and security certification process (with SAFE) for new facilities, and systems. This responsibility includes the research, planning, design, engineering, construction, manufacturing, and testing of all new facilities and systems.

F-ENGA-19-08 Safety Training & Certification **Safety** – Low **(2,3)** **Owner – ENGA**

- **Maintaining a training and certification matrix for employees and contractors highlights required competencies and reinforces compliance.**

Discussion

- There was no evidence supporting each ENGA department maintaining a training and certification matrix for their personnel; discussions with all ENGA department leads indicated that none of the ENGA departments maintain a training matrix for each position or employee within their department or perform periodic reviews of training records.
- Right-Of-Way Worker Protection (RWP) training records provided by Technical Skills and Maintenance Training (TSMT) indicated that 99% of the 144 WMATA ENGA personnel had current RWP certifications.
- Per SSPP 16.1, it is the responsibility of each department head or their designee to develop and maintain a required training matrix for each position and employee within their department and to verify that the matrix is kept current. According to SSPP 16.5, training requirements for each position and employee must be included in the training database.
- Supervisors and employees are required to review periodically, training records to verify that the required training and certifications are being completed by employees. Each department is responsible for establishing safety-training requirements, in conjunction with SAFE.
- As a resource, SAFE has created a Job Safety Training Profile by Job Title training matrix located on their intranet website highlighting recommended training courses for specific job titles in various departments.

13.5. SUMMARY OF REQUIRED ACTIONS

QICO-ENGA-19-01 **Action Owner – ENGA** **Overall Risk –** Moderate (3,4)

Required Action: Effectively document and establish a consistent presence at all applicable safety committee meetings.

Applicable Findings

- **F-ENGA-19-01:** Participation in routine safety committee meetings is essential to continuously improve safety throughout the Authority.
  - **Measure:** Safety Management **Risk:** Safety – Moderate (2,5)
- **F-ENGA-19-07:** Consistent participation in the Safety and Security Certification Review process is essential to assure the safety and security of new or rehabilitated facilities, systems, and equipment.
  - **Measure:** Managing Safety in System Modification **Risk:** Safety – Moderate (3,3)

QICO-ENGA-19-02 **Action Owner – ENGA** **Overall Risk –** Elevated (3,5)

Required Action: Establish controls to ensure proper configuration management.

Applicable Findings

- **F-ENGA-19-02:** Conducting and recording Configuration Change Control Board meetings is vital to effectively tracking configuration changes affecting multiple disciplines throughout the Authority.
  - **Measure:** Configuration Management **Risk:** Safety – Elevated (3,5)
- **F-ENGA-19-03:** Effective configuration management is critical to assuring all WMATA assets are consistently maintained to standards.
  - **Measure:** Configuration Management **Risk:** Safety – Elevated (4,4)
- **F-ENGA-19-04:** Consistent administration of design control board meetings results in a more effective change control database.
  - **Measure:** Configuration Management **Risk:** Safety – Elevated (3,5)

QICO-ENGA-19-03 **Action Owner – ENGA** **Overall Risk –** Moderate (4,2)

Required Action: Establish a document control process for the COOP plan in accordance with Office of Emergency Management standards.

Applicable Findings

- **F-ENGA-19-05:** Following Office of Emergency Management Standards for the development of the Continuity of Operations Annex is essential to maintaining mission critical operations in the event of an emergency.
  - **Measure:** Emergency Management **Risk:** [Safety – Moderate (4,2)

QICO-ENGA-19-04 **Action Owner – ENGA** **Overall Risk –** Moderate (3,3)

Required Action: Develop a quality control program to verify rulebook compliance.

Applicable Findings

- **F-ENGA-19-06:** Establishing a quality control program to verify compliance to rules and procedures promotes effective safety awareness.
  - **Measure:** Safe Work Standards **Risk:** Safety – Moderate (3,3)

QICO-ENGA-19-05 **Action Owner – ENGA** **Overall Risk –** Low (2,3)

Required Action: Develop a training matrix for each position within ENGA and establish a documented process to record and periodically audit required safety training and certifications for employees and contractors.

Applicable Findings

- **F-ENGA-19-08:** Maintaining a training and certification matrix for employees and contractors highlights required competencies and reinforces compliance.
    - **Measure:** Safety Training and Certification **Risk:** Safety – Low (2,3)

Internal Corrective and Preventive Actions (iCAPAs) are designated to address each Required Action listed above.

Washington Metropolitan Area Transit Authority

INTERNAL SAFETY REVIEW 2019

Internal Review: Internal Safety Review

(14) Department of Safety and Environmental Management

October 30, 2019

Quality Assurance, Internal Compliance & Oversight (QICO)

Promoting Transparency, Accountability, & Public Confidence

ENGINEERING & MAINTENANCE

SERVICE DELIVERY

CAPITAL PROGRAM – MANAGEMENT & EXECUTION

INTERNAL SAFETY REVIEW

INTERNAL SAFETY REVIEW SUMMARY

October 2019

(14) Department of Safety and Environmental Management

Key Takeaway:
Establishing documented procedures for safety inspections and consistently tracking hazards are important to promote a safety-first culture.

What is QICO?

- The Office of Quality Assurance, Internal Compliance & Oversight (QICO) is an internal management function that partners with other departments to provide an objective review. QICO and the internal review process are authorized by the General Manager as outlined in the Quality Management System Plan (QMSP).

Why QICO Performed This Review:

- This internal review is intended to provide Metro senior management with an assessment of the Department of Safety and Environmental Management's compliance with federal regulations and WMATA's System Safety Program Plan (SSPP), and promote the actions needed to address any concerns.

QICO's Methodology:

- Develop relevant review activities by identifying and assessing any risks to policies, procedures & standards, quality & compliance, and traceability.
- Review documentation, observe processes, and interview key personnel.
- Rate findings and required actions based on severity of risk, which ranges on a scale from "Insignificant" to "High".

Wins:

✓ WMATA's 2018 SSPP is inclusive of bus safety operations, although not required by FTA regulations.

Areas for Improvement:

- The utilization of the hazard management module will promote compliance with the SSPP and effectively track and mitigate hazards.
- Defined and detailed inspection procedures are important to effectively perform facility and equipment safety inspections.
- Timely and periodic reviews and updates of governing documents are important to promote compliance.

Required Actions:

- **QICO-SAFE-19-01:** Establish a solution to effectively manage all hazards to resolution as specified in the SSPP. *(Risk Rating: Elevated)*
- **QICO-SAFE-19-02:** Develop, train on, and implement a standardized inspection procedure for SAFE personnel to effectively perform facility and equipment safety inspections. *(Risk Rating: Elevated)*
- **QICO-SAFE-19-03:** Review and revise SAFE governing documents to ensure organizational policies and procedure are current. *(Risk Rating: Moderate)*

Note: An itemized internal Corrective and Preventive Action (iCAPA) is developed for each required action to achieve effective and measurable resolution of identified concerns. To check the status of iCAPA implementation go to https://www.wmata.com/initiatives/transparency/

14.1. FUNCTIONAL OVERVIEW AND STRUCTURE

Department of Safety and Environmental Management (SAFE)

The Department of Safety & Environmental Management (SAFE) is responsible for establishing and maintaining a safe environment for all employees and customers through the direction, oversight, development and implementation of a system safety program utilizing a Safety Management System (SMS) approach. SAFE apprises and updates the agency as to local and federal safety requirements; provides identification, elimination and proper disposal of chemical, environmental, and other related hazards; recommends the design and fabrication of safety equipment; and conducts a systematic proactive approach to analysis and surveillance of operational safety for passengers and employees as well as all agency facilities, operational work areas, and equipment.

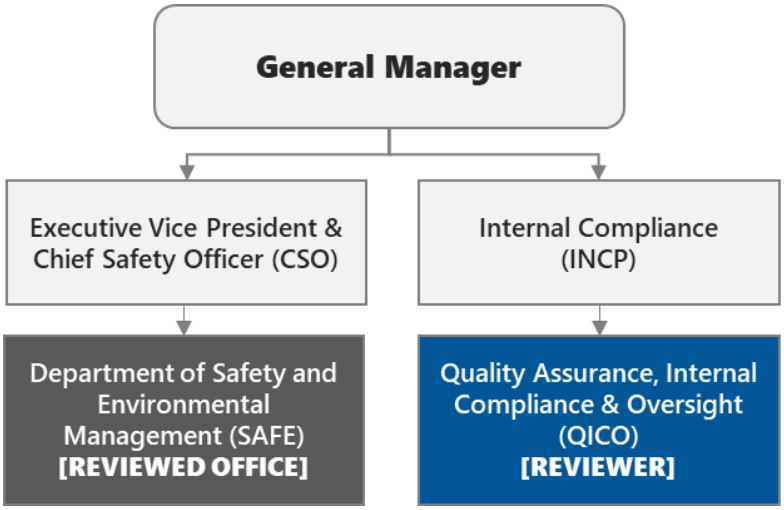
The objective of the Department of Safety & Environmental Management Internal Safety Review (ISR) is to internally validate that the management of construction safety, safety certification, safety data collection and analysis, industrial hygiene, safety training, safety program implementation, regulatory compliance, and environmental protection are in compliance with WMATA's 2018 SSPP. The SSPP is WMATA's safety plan created by the Department of Safety & Environmental Management (SAFE) in accordance with Federal Transit Administration (FTA) guidelines, 49 Code of Federal Regulations (CFR) Part 659, and details WMATA's approach to satisfying the 21 required elements for system safety.

Out of the 21 elements, the following 19 elements were found applicable to SAFE:

- Policy Statement and Authority for SSPP (Element 1)
- Goals and Objectives (Element 2)
- Overview of Management Structure (Element 3)
- SSPP Control and Update (Element 4)
- 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)
- Accident Investigation (Element 10)
- Emergency Management Program (Element 11)
- Rules Compliance (Element 13)
- Facilities and Equipment Inspections (Element 14)
- Maintenance Audits and Inspections (Element 15)
- Training and Certification for Employees and Contractors (Element 16)
- Configuration Management and Control (Element 17)
- Compliance with Local, State and Federal Requirements (Element 18)
- Hazardous Materials Program (Element 19)
- Procurement Process (Element 21)

Organizational Structure and Background

Within WMATA, the Department of Safety and Environmental Management (SAFE) reports to the Chief Safety Officer (CSO). As shown in the organization chart, QICO is independent of this function, reporting to the General Manager through Internal Compliance (INCP). The scope of this internal review is to evaluate compliance with the System Safety Program Plan (SSPP).



SAFE is comprised of the following six (6) offices:

- Assistant Chief Safety Officer (ACSO)
- Occupational Safety and Health (OSH)
- Bus and MetroAccess Safety
- Environmental Management and Industrial Hygiene (EMIH)
- Industrial Hygiene (IH)
- Rail and Facilities Safety

14.2. REVIEW SCOPE

Documentation Review

- System Safety Program Plan (SSPP), January 2018
- Federal Transit Administration (FTA) 49 CFR Part 659, dated April 29, 2005
- WMSC State Safety Oversight Program Standard 2019, dated July 11, 2019
- Policy Instruction (P/I): 1.1/3 Document Governance and Hierarchy, dated June 3, 2019
- P/I: 10.2/4 Safety Committees, dated March 29, 2019
- P/I: 10.4/1 Incident and Accident Investigation, dated May 29, 2018
- P/I: 10.6 Fatigue Risk Management Policy, dated November 14, 2013
- P/I: 10.7/1 Hours of Service Limitations for Prevention of Fatigue, dated December 7, 2015
- Operations Administration Procedure (OAP) 600-11 SSPP Review and Comments, Rev. 2 July 31, 2019
- OAP 600-12 Safety Hotline Process, Rev. 1 October 17, 2017
- Procedure 2011-001 Hazard Management Procedure, dated July 1, 2011
- Standard Operating Procedure (SOP) 800-01 Bus and Rail Investigations, Rev. 0 October 30, 2017
- SOP 200-08 Engineering Modification, dated October 30, 2018
- Safety & Security Certification Plan (SSCP) 2015, Rev. 3 March 30, 2015
- Environmental Management Policy Manual (EMPM), Rev. 3 January 2018
- WMATA Construction Safety and Environmental Manual, March 2013
- Safety Officer Guide, Rev. 2 dated June 1, 2017
- Sampling of ten (10) station inspections from 8/22/19 to 9/22/19
- Sampling of four (4) rail yard inspections from 10/18/18 to 6/19/19
- Sampling of five (5) bus garage Inspections from 8/29/19 to 10/2/19
- Sampling of three (3) preliminary and final investigation reports from July 1, 2019 to August 31, 2019
- Temporary Change Notice 19-BR-46-02
- SAFE A&I Reporting Score Cards August 2019 to September 2019
- WMATA Quality Management System Plan (QMSP), Rev. 1.3 August 17, 2018

Personnel Discussions

- Safety Operations Manager
- Fire Marshall
- Deputy Chief, Safety Certification
- Deputy Chief, Rail and Facilities Safety
- Manager, Rail and Facilities Safety
- Deputy Chief, Bus and MetroAccess Safety
- Manager, Bus and MetroAccess Safety
- Deputy Chief, Occupational Safety and Health
- Manager, Fatigue Risk Management System (FRMS)
- Manager, Corporate Safety and Analysis
- Deputy Chief, Environmental Management & Industrial Hygiene

Field Assessments

- Observed construction worksites on WMATA properties with construction safety manager
- Observed Clarendon station with rail facilities safety officer
- Attended Shady Grove Local Safety Committee meeting
- Observed Pentagon station with manager of performance monitoring
- Observed two (2) investigation interviews with manager of investigations
- Observed Andrews Federal Center Bus Facility with Bus Safety Officer

14.3. WHAT WORKED WELL (WINS)

Wins are categorized by Safety Measures and rated according to Risk Assessment

W-SAFE-19-01	Training, Certification & Compliance	Reduces Regulations & Oversight Risk	Owner – SAFE

✓ **WMATA's 2018 SSPP is inclusive of bus safety operations, although not required by FTA regulations.**

Discussion

- FTA 49 CFR Part 659 requirements are inclusive of rail fixed guideway systems. However, WMATA's 2018 SSPP also includes bus safety operations in addition to rail, promoting a uniform safety program.

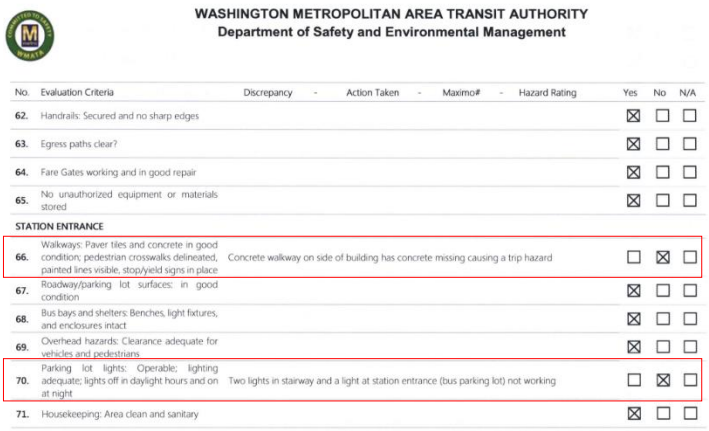
14.4. AREAS FOR IMPROVEMENT

Findings are categorized by Safety Measures and rated according to Risk Assessment

F-SAFE-19-01 Hazard Management **Assets & Activities / Document Control (4,4)** **Owner – SAFE**

- **The utilization of the hazard management module will promote compliance with the SSPP and effectively track and mitigate hazards.**

Requirements	Discussion
- As per FTA CFR 49 § 659.31 Hazard management process: (a) The oversight agency must require the rail transit agency to develop and document in its system safety program plan a process to identify and resolve hazards during its operation. (b)(4) The hazard management process must, at a minimum, identify the mechanism used to track through resolution the identified hazard(s). - As per WMSC Program Standard 2019, WMATA must use a Safety Management System (SMS) or Hazard Management type process to address risks and hazards and to collect, track, and analyze data to develop leading indicators to prevent likelihood of future events. - As per WMATA SSPP Section 6.2.6.1 Hazard Resolution Management and Tracking, the SMS Hazard Management Module will be used for tracking identified hazards and the hazard resolution process. - As per Hazard Management Procedure 2011-001 Section 4.1, Hazards identified shall be entered into the SMS and analyzed by SAFE in collaboration with the appropriate safety committees, departments, and personnel. - FTA Corrective Action Plan (CAP) FTA-TSR-18-003: WMATA must evaluate the efficacy of its current hazard procedure and revise as appropriate to ensure that the hazards are identified and resolved. - As per WMATA 2018 SSPP Section 15.1 Systems and Facilities Subject to Maintenance Program, SAFE, SMNT and ATCS track loss of shunt defects through the Hazard Management Process.	- As part of a document request, QICO reviewed 10 station inspection checklists provided by SAFE, which were inclusive of 41 discrepancies identified. None of the identified discrepancies had a hazard rating and none were entered into the Hazard Management Module. *Figure 1* shows an example of one of the checklists with discrepancies lacking a hazard rating. - Upon review of the Safety Hotline application, 60 submissions were identified as hazards between September 1, 2019 and September 30, 2019. None of the identified hazards were entered into the Hazard Management Module as shown in *Figure 2*. - There are zero (0) 'loss of shunt' hazards entered into the hazard management module between January 1, 2019 and October 17, 2019. - Hazard Management Procedure 2011-001 has no listed requirement for review or revision. However, upon the review of this procedure QICO noted that some job titles are obsolete, some departments mentioned have been reorganized, the Tri-State Oversight Committee (TOC) has since been dissolved, and some responsibilities mentioned have shifted (example: The Internal Safety Review Process). - Loss of shunt notifications are emailed to SAFE management daily, then must be investigated by ATC personnel to be identified as hazards.



WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY
Department of Safety and Environmental Management

No.	Evaluation Criteria	Discrepancy	Action Taken	Maximo#	Hazard Rating	Yes	No	N/A
62.	Handrails: Secured and no sharp edges					☒	☐	☐
63.	Egress paths clear?					☒	☐	☐
64.	Fare Gates working and in good repair					☒	☐	☐
65.	No unauthorized equipment or materials stored					☒	☐	☐
STATION ENTRANCE								
66.	Walkways: Paver tiles and concrete in good condition; pedestrian crosswalks delineated, painted lines visible, stop/yield signs in place	Concrete walkway on side of building has concrete missing causing a trip hazard				☐	☒	☐
67.	Roadway/parking lot surfaces: in good condition					☒	☐	☐
68.	Bus bays and shelters: Benches, light fixtures, and enclosures intact					☒	☐	☐
69.	Overhead hazards: Clearance adequate for vehicles and pedestrians					☒	☐	☐
70.	Parking lot lights: Operable; lighting adequate; lights off in daylight hours and on at night	Two lights in stairway and a light at station entrance (bus parking lot) not working				☐	☒	☐
71.	Housekeeping: Area clean and sanitary					☒	☐	☐

Figure 1: Example of Station Inspection Checklist

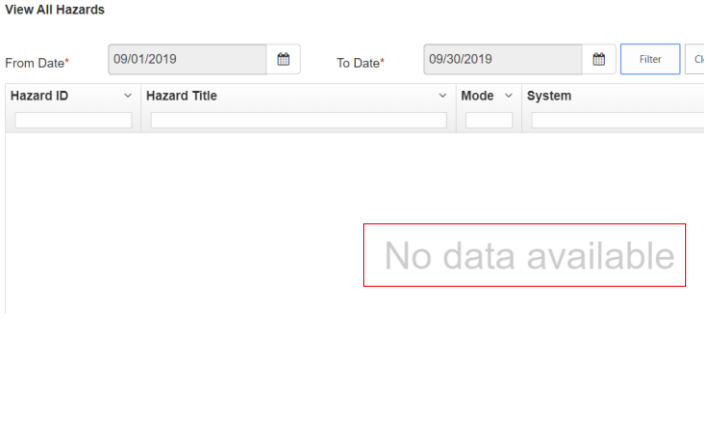


Figure 2: Screenshot of the HMM between 9/1/19 and 9/30/19

F-SAFE-19-02 Policies, Procedures & Standards **Safe Work Standards (4,4)** **Owner – SAFE**

- **Defined and detailed inspection procedures are important to effectively perform facility and equipment safety inspections.**

Requirements	Discussion
- As per FTA CFR 49 Part § 659.19 System Safety Program Plan contents: Description of the process used for facilities and equipment safety inspections, including: Identification of the facilities and equipment subject to regular safety-related inspection and testing, techniques used to conduct inspections and testing, inspection schedules and procedures, and description of how results are entered into the hazard management process. - As per SSPP Section 14 Facilities and Equipment: Inspections of WMATA's facilities are made by maintenance technicians, supervisors, safety officers and managers, to detect and correct unsafe conditions and deteriorating equipment conditions. - As per WMATA QMSP Section 3.5.1 Departmental Processes: Operations, maintenance, engineering, and support departments shall provide processes, including applicable parameters, required to directly maintain and operate the transit system or support operation, as appropriate.	- SAFE personnel are required to perform safety related inspections of WMATA's facilities and equipment. - SAFE was able to provide documents showing that they performed several facility inspections. However, they could not produce any procedures that detail how those inspections are to be performed. - Such procedures need to include inspection criteria, frequency of inspections (schedule), responsibilities, forms and templates, etc. - The Safety Officer Guide 2017 has generic instructions on performing workplace inspections, yet it does not provide detailed procedures on how to perform those inspections as per Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), and internal requirements.
- As per SSPP Section 5.15, SAFE has established nine (9) Regional Safety Field Offices to which safety officers are assigned to work with facility managers as safety consultants and inspectors in support of the Hazard Management Program, the Local Safety Committees, and all Safety Facility Improvement Programs. Safety Officers are assigned to the Red Line, Blue/Orange Line, Silver Line, and Yellow/Green Line to provide safety services to RSTO's Line Management staffs.	- Per discussions with SAFE management: o Rail Safety Officers (RSO) are not assigned regions. o RSOs are assigned stations and yards for inspection. However, they do not have permanent space in those locations. o RSOs on-call are responsible for any Safety Hotline calls or incidents that occur during their shift. o RSOs are responsible for the entire rail system. - RSOs are centrally located at Jackson Graham Building.
- Per WMATA 2018 SSPP Section 21.4 Inspection of Inventory Material, SAFE performs storeroom inspections of MetroAccess contractor facilities for compliance. - Per WMATA DRAFT 2019 SSPP Section 21.4 Inspection of Inventory Material, SAFE performs storeroom inspections of MetroAccess contractor facilities for compliance.	- SAFE was not able to provide any records of MetroAccess storeroom inspections. - Storeroom inspections of MetroAccess facilities are essential to prevent the unintended use of any materials, parts, and equipment that do not meet the established criteria and specifications. - QICO was unable to find a requirement for SAFE to conduct storeroom inspections other than the SSPP.

F-SAFE-19-03 Policies, Procedures & Standards **Safe Work Standards (3,3)** **Owner – SAFE**

- **Timely and periodic reviews and updates of governing documents are important to promote compliance.**

Requirement	Discussion
- As per P/I 1.1/3 Document Governance and Hierarchy section 5.03(b)(2), Triennial Review Cycle for P/Is: every three (3) years, Offices or Departments with assigned ownership of P/Is are responsible for reviewing the policies within their areas. - As per SSPP Section 5.5 Safety Responsibilities and Tasks Matrix provided in exhibit 5-1 lists the SSPP sections and other pertinent documents that describe safety related responsibilities performed by the appropriate department/office. - Per the review date requirement within each document and P/I 1.1/3 Section 5.03 (a)(1)(v)(1), the owner shall review and revise, if necessary, the document following prescribed review timelines.	- The following documents are past due for review: o SOP 800-01 Incident and Accident Investigations of Bus and Rail was last reviewed October 30, 2017 and was due for review November 1, 2018. o OAP 600-12 Safety Hotline Process was last reviewed October 17, 2017 and was due for review October 1, 2018. o OAP 200-01 Third Rail Insulating Mats was last reviewed March 29, 2018 and was due for review April 1, 2019. - WMATA Safety and Security Certification Plan Rev. 3 was last reviewed March 30, 2015 and was due for review March 30, 2018.

14.5. SUMMARY OF REQUIRED ACTIONS

QICO-SAFE-19-01 **Action Owner – SAFE** **Overall Risk – Elevated (4,4)**

Required Action: Establish a solution to effectively manage all hazards to resolution as specified in the SSPP.

Applicable Findings

- **F-SAFE-19-01: The utilization of the hazard management module will promote compliance with the SSPP and effectively track and mitigate hazards.**
  - **Measure:** Hazard Management. **Risk:** Assets and Activities/Document Control – Risk Rating (4,4)

QICO-SAFE-19-02 **Action Owner – SAFE** **Overall Risk – Elevated (4,4)**

Required Action: Develop, train on, and implement a standardized inspection procedure for SAFE personnel to effectively perform facility and equipment safety inspections.

Applicable Findings

- **F-SAFE-19-02: Defined and detailed inspection procedures are important to effectively perform facility and equipment safety inspections.**
  - **Measure:** Policies, Procedures & Standards. **Risk:** Safe Work Standards – Risk Rating (4,4)

QICO-SAFE-19-03 **Action Owner – SAFE** **Overall Risk – Moderate (3,3)**

Required Action: Review and revise SAFE governing documents to ensure organizational policies and procedure are current.

Applicable Findings

- **F-SAFE-19-04: Timely and periodic reviews and updates of governing documents are important to promote compliance.**
  - **Measure:** Policies, Procedures & Standards. **Risk:** Safe Work Standards – Risk Rating (3,3)

Internal Corrective and Preventive Actions (iCAPAs) are designated to address each Required Action listed above.

INTERNAL CORRECTIVE AND PREVENTATIVE ACTIONS (iCAPAs)

ELEVATOR/ESCALATOR OPERATION CENTER iCAPAs

Return to Summary of Required Actions

INTERNAL REVIEW

Service Delivery

In response to the internal review report regarding the Office of Elevators and Escalators (ELES) Operations Center (EOC), the Office of Quality Assurance, Internal Compliance & Oversight (QICO) has coordinated the development of three iCAPAs. The iCAPAs have been developed to address required actions and the associated findings.

EXECUTIVE LEADERSHIP OF RESPONSIBLE PARTIES

Internal Corrective and Preventive Action (iCAPA) Commitment

[redacted] 1-13-2020

Joseph Leader *Date*
Executive Vice President & Chief Operating Officer

EXECUTIVE LEADERSHIP OF RESPONSIBLE PARTIES

Internal Corrective and Preventive Action (iCAPA) Commitment

[redacted] 1-14-2020

Hakim Davis *Date*
Vice President, Quality Assurance, Internal Compliance & Oversight (QICO)

[redacted] 1/14/20

Eric Christensen *Date*
Executive Vice President, Internal Compliance (INCP)

[redacted] 1/15/20

Paul J. Wiedefeld *Date*
General Manager & Chief Executive Officer (GM/CEO)

Purpose and Scope

On November 19, 2019, the Office of Quality Assurance, Internal Compliance & Oversight (QICO) issued an Engineering & Maintenance Internal Review report for the Office of Elevators and Escalators (ELES) Operations Center (EOC). This internal Corrective and Preventive Action (iCAPA) report is developed to address associated finding(s) and required action(s) for QICO-EOC-19-01.

Required Action

QICO-EOC-19-01	*Elevators and Escalators (ELES) Operations Center (EOC)*	Moderate

Required Action(s): Update 212-SOP-36 and/or establish new procedures to formalize and assure compliance with key job functions.

- F-EOC-19-01: Adherence to existing documentation would improve consistency.

  Measure: Quality Control *Risk: Moderate – Strategic (3,5)*

- F-EOC-19-02: Developing comprehensive procedures would encourage efficiency and thoroughness.

  Measure: Quality Control *Risk: Moderate – Service Delivery (3,3)*

Action Plan Overview

ELES EOC will retire standard operating procedure (SOP) 212-SOP-36. It will be replaced by a new procedure to bring ELES EOC into conformity with current ELES EOC business practices. ELES EOC has updated some of its processes and procedures to align itself with changes in maintenance reporting and documentation and this new SOP will incorporate these changes.

Business Impact – Budget/Cost Estimate

Process Improvement – A current process/procedure needs to be optimized to address the Required Action(s). This type of initiative does not need additional resources because current manpower will be used to improve the process.

	Actionable Items	Description	Responsible Party[1]	Est Start[2]	Est End[3]
1.	Modify Existing or Establish New Procedures	ELES EOC will submit the standard operating procedure (SOP) in replacement of SOP 212-SOP-36. The SOP will include but is not limited to: • ELES EOC incident/accident response manual • ELES EOC data entry manual • ELES EOC remote monitoring • ELES EOC camera monitoring manual	Madhavan Kozhipurath (EOC/ENG)	01/08/20	01/06/21
2.	QICO CAP Verification Report	QICO will evaluate actionable items submitted to confirm there is reasonable evidence that the findings and this required action have been resolved, taking into account the actionable item descriptions and performance measures.	QICO	01/06/21	02/10/21

Performance Measures

- EOC will provide evidence of distribution and implementation.

[1] In the event of personnel or departmental changes, responsibilities for actionable items shall transfer to the new leadership.

[2] Est Start – Estimated Start Date.

[3] Est End – Estimated Completion Date.

[4] Offices designated as supporting roles provide subject matter expertise to responsible parties during action development and are not directly responsible for delivery of actionable items listed above.

Responsible Parties

EOC/ENG	Madhavan Kozhipurath	[redacted] 12/19/19 (Signature/Date)
ELES	Henock Yohannes	[redacted] 12/19/19 (Signature/Date)
ELES	Mitchell Nici	[redacted] 12-19-2019 (Signature/Date)

Second-Level Responsibility

ELES	Rodolfo Bitar	[redacted] 12-19-19 (Signature/Date)

Purpose and Scope

On November 19, 2019, the Office of Quality Assurance, Internal Compliance & Oversight (QICO) issued an Engineering & Maintenance Internal Review report for the Office of Elevators and Escalators (ELES) Operations Center (EOC). This internal Corrective and Preventive Action (iCAPA) report is developed to address associated finding(s) and required action(s) for QICO-EOC-19-02.

Required Action

QICO-EOC-19-02	***Elevators and Escalators (ELES) Operations Center (EOC)*** ***Operations Management Services (OPMS)*** ***Office of Technical Skills and Maintenance Training (TSMT)***	Moderate

Required Action(s): Establish and implement a controlled curriculum that encompasses all training requirements of EOC personnel.

- F-EOC-19-03: A documented training program would promote adherence to procedures.

Measure: Quality Control *Risk: Moderate – Strategic (3,3)*

Action Plan Overview

ELES EOC has recognized training of new dispatchers and re-certification of existing dispatchers is a core value in delivering quality service. Our approach to improve training is two-fold: comprehensive training for new dispatchers and dispatcher awareness training and certification of existing staff. The latter is especially important as it will allow processes and internal ELES business practice changes to be updated and included in on-going dispatcher training.

ELES EOC will be working with WMATA internal resources to develop a series of training videos and future video library. This will allow training to be done in real time, on-demand. It will also provide consistency in content and establish a context on which to build a video knowledge library in the future.

Business Impact – Budget/Cost Estimate

Process Improvement – A current process/procedure needs to be optimized to address the Required Action(s). This type of initiative does not need additional resources because current manpower will be used to improve the process.

Actionable Items		Description	Responsible Party[1]	Est Start[2]	Est End[3]
1.	Training Plan	EOC will develop and provide a timeline to include the schedule and training metrics for updated/new procedures as mentioned in QICO-EOC-19-01.	Madhavan Kozhipurath (EOC)	01/06/21	04/28/21
2.	Training Curriculum	ELES EOC will develop training modules based on the updated/new procedures in replacement of SOP 212-SOP-36. ELES EOC will submit training modules.	Madhavan Kozhipurath (EOC)	05/05/21	12/29/21
3.	Dispatcher Training	ELES EOC will provide training to all dispatchers on the updated/new procedures in replacement of SOP 212-SOP-36. ELES EOC will submit evidence of training.	Madhavan Kozhipurath (EOC)	12/29/21	03/02/22
4.	QICO CAP Verification Report	QICO will evaluate actionable items submitted to confirm there is reasonable evidence that the findings and this required action have been resolved, taking into account the actionable item descriptions and performance measures.	QICO	03/02/22	04/06/22

Performance Measures

- EOC will provide evidence that 95% of active dispatchers have completed training.

[1] In the event of personnel or departmental changes, responsibilities for actionable items shall transfer to the new leadership.

[2] Est Start – Estimated Start Date.

[3] Est End – Estimated Completion Date.

[4] Offices designated as supporting roles provide subject matter expertise to responsible parties during action development and are not directly responsible for delivery of actionable items listed above.

Responsible Parties

EOC/ENG	Madhavan Kozhipurath	[redacted] 12/19/19
ELES	Henock Yohannes	[redacted] 12/19/19 (Signature/Date)
ELES	Mitchell Nici	[redacted] 12-19-2019 (Signature/Date)

Second-Level Responsibility

ELES	Rodolfo Bitar	[redacted] 12-19-19 (Signature/Date)

Purpose and Scope

On November 19, 2019, the Office of Quality Assurance, Internal Compliance & Oversight (QICO) issued an Engineering & Maintenance Internal Review report for the Office of Elevators and Escalators (ELES) Operations Center (EOC). This internal Corrective and Preventive Action (iCAPA) report is developed to address associated finding(s) and required action(s) for QICO-EOC-19-03.

Required Action

QICO-EOC-19-03	*Elevators and Escalators (ELES) Operations Center (EOC)*	Moderate

Required Action(s): Establish a formal quality control plan for monitoring and improving all EOC activities.

personnel.

- F-EOC-19-04: Creating a formal review program would improve job performance and data quality.

Measure: Quality Control *Risk: Moderate – Strategic (3,4)*

Action Plan Overview

ELES EOC management has been working to develop a quality plan that measures performance and quality against established metrics and standards to improve job performance and data quality.

ELES EOC will create an EOC Quality Control Plan document for improving job performance and data quality.

Business Impact – Budget/Cost Estimate

Process Improvement – A current process/procedure needs to be optimized to address the Required Action(s). This type of initiative does not need additional resources because current manpower will be used to improve the process.

	Actionable Items	Description	Responsible Party[1]	Est Start[2]	Est End[3]
1.	EOC Quality Control Plan	ELES EOC will develop and provide a Quality Control Plan.	Madhavan Kozhipurath (EOC)	01/08/20	09/30/20
2.	QICO CAP Verification Report	QICO will evaluate actionable items submitted to confirm there is reasonable evidence that the findings and this required action have been resolved, taking into account the actionable item descriptions and performance measures.	QICO	09/30/20	01/06/21

Performance Measures

- EOC will provide evidence that all active Supervisors have knowledge of the EOC Quality Control Plan.
- QICO will evaluate 3 months of documentation verifying adherence to the Quality Control Plan.

[1] In the event of personnel or departmental changes, responsibilities for actionable items shall transfer to the new leadership.

[2] Est Start – Estimated Start Date.

[3] Est End – Estimated Completion Date.

[4] Offices designated as supporting roles provide subject matter expertise to responsible parties during action development and are not directly responsible for delivery of actionable items listed above.

Responsible Parties

EOC/ENG	Madhavan Kozhipurath	[redacted] (Signature/Date)	12/19/19
ELES	Henock Yohannes	[redacted] (Signature/Date)	12/19/19
ELES	Mitchell Nici	[redacted] (Signature/Date)	12/19/2019

Second-Level Responsibility

ELES	Rodolfo Bitar	[redacted] (Signature/Date)	12-19-19

ATC SYSTEM CONFIGURATION MANAGEMENT PLAN iCAPAs

Return to Summary of Required Actions

INTERNAL REVIEW

Service Delivery

In response to the internal review report regarding Automatic Train Control (ATC) System Configuration Management Plan (ASCM), the Office of Quality Assurance, Internal Compliance & Oversight (QICO) has coordinated the development of two iCAPAs. The iCAPAs have been developed to address required actions and the associated findings.

EXECUTIVE LEADERSHIP OF RESPONSIBLE PARTIES

Internal Corrective and Preventive Action (iCAPA) Commitment

[redacted] 12-17-19

Joseph Leader *Date*
Executive Vice President & Chief Operating Officer

[redacted] 12-19-19

Laura Mason *Date*
Executive Vice President Capital Delivery

WMATA INTERNAL OVERSIGHT

Internal Corrective and Preventive Action (iCAPA) Commitment

[redacted] 12-19-19

Hakim Davis *Date*
Vice President, Quality Assurance, Internal Compliance & Oversight (QICO)

[redacted] 1/1/20

Eric Christensen *Date*
Executive Vice President, Internal Compliance (INCP)

[redacted] 1/6/20

Paul J. Wiedefeld *Date*
General Manager & Chief Executive Officer (GM/CEO)

Purpose and Scope

On October 7, 2019, the Office of Quality Assurance, Internal Compliance & Oversight (QICO) issued the ATC System Configuration Management Plan Internal Review report. This internal Corrective and Preventive Action (iCAPA) report is developed to address associated finding(s) and required action(s) for QICO-ASCM-19-01.

Required Action

QICO-ASCM-19-01	***Technical Skills Maintenance Training Department (TSMT)*** ***Office of Automatic Train Control Maintenance (ATCM)*** ***Office of Automatic Train Control Engineering (ATCE)*** ***Office of Operations Management Services (OPMS)***	*Elevated*

Required Action(s): Develop and implement a training plan of ATC-4000 manual, inclusive of front-line supervisors, TSMT/ATC training instructors, and middle and upper management, to streamline safety and design principles.

- F-ASCM-19-01: Following established guidelines of document revision processes for Configuration items (CI) documents ensures compliance with System Configuration Management Plan.

  Measure: Policies, Procedures & Standards *Risk: Elevated – Safety (4,3)*

- F-ASCM-19-02: Using controlled data sheets would ensure ATC system infrastructure integrity.

  Measure: Traceability *Risk: Elevated – Safety (4,3)*

- F-ASCM-19-04: Adhering to OPMS standard operating procedures is essential to maintaining current TSMT training methodology.

  Measure: Traceability *Risk: Elevated – Safety (4,3)*

Action Plan Overview

Technical Skills Maintenance Training Department (TSMT) will update the ATC-4000 training curriculum to capture changes to ATC-4000 and develop a training plan to cascade these changes to ATCM staff in accordance with OPMS. TSMT will implement ATC-4000 training to ATCM staff such that their day to day operations are compliant.

Business Impact – Budget/Cost Estimate

Process Improvement – A current process/procedure needs to be optimized to address the Required Action(s). This type of initiative does not need additional resources because current manpower will be used to improve the process.

	Actionable Items	Description	Responsible Party[1]	Est Start[2]	Est End[3]
1.	ATC-4000 Training Curriculum	Provide current ATC-4000 training curriculum in compliance with OPMS SOPs. TSMT to submit approved training curriculum.	Joseph Robinson TSMT Supporting Office[4]: Atousa Vali (ATCE) Jameel Rogers (ATCM)	05/01/20	08/05/20
2.	ATC-4000 Manual Training Plan	Develop training plan of the ATC-4000 manual. Include front-line supervisors, TSMT training instructors, and middle and upper management in the training requirement. TSMT to submit ATC-4000 manual training plan.	Joseph Robinson TSMT Supporting Office[4]: Atousa Vali (ATCE) Jameel Rogers (ATCM)	08/03/20	10/07/20
3.	Deliver ATC-4000 Training	Train ATC Maintenance staff to approved curriculum. TSMT to submit Enterprise Learning Management (ELM) record.	Joseph Robinson (TSMT) Supporting Office[4]: Atousa Vali (ATCE) Jameel Rogers (ATCM)	10/07/20	01/06/21
4.	QICO CAP Verification Report	QICO will evaluate actionable items submitted to confirm there is reasonable evidence that the findings and this required action have been resolved, taking into account the actionable item descriptions and performance measures.	QICO	01/06/21	02/03/21

Performance Measures

- 95% ATCM-4000 manual training compliance for active front-line supervisors, TSMT training instructors, and middle and upper management. Provide training sign in sheets or ELM records as evidence.

[1] In the event of personnel or departmental changes, responsibilities for actionable items shall transfer to the new leadership.

[2] Est Start – Estimated Start Date.

[3] Est End – Estimated Completion Date.

[4] Offices designated as supporting roles provide subject matter expertise to responsible parties during action development and are not directly responsible for delivery of actionable items listed above.

Responsible Parties

TSMT	Joseph Robinson	[redacted] 12/3/19 (Signature/Date)

Supporting Role Acknowledgement

ATCE	Atousa Vali	[redacted] 12/3/2019 (Signature/Date)
ATCM	Jameel Rogers	[redacted] 12/4/19 (Signature/Date)

Second-Level Responsibility

OPMS	Linda Stoffregen	[redacted] 12/3/19 (Signature/Date)

Purpose and Scope

On October 7, 2019, the Office of Quality Assurance, Internal Compliance & Oversight (QICO) issued the ATC System Configuration Management Plan Internal Review report. This internal Corrective and Preventive Action (iCAPA) report is developed to address associated finding(s) and required action(s) for QICO-ASCM-19-02.

Required Action

QICO-ASCM-19-02	***Office of Automatic Train Control Engineering (ATCE)*** ***Office of Automatic Train Control Maintenance (ATCM)*** ***Department of Safety and Environment Management (SAFE)***	*Elevated*

Required Action(s): Update ATC-4000 manual to further define technical content permitted in documentation issued by ATCM management to ATCM personnel.

- F-ASCM-19-03: Former ATCM leadership did not follow System Configuration Management Plan.

  Measure: Traceability *Risk: Elevated – Safety (4,3)*

Action Plan Overview

Office of Automatic Train Control Engineering will revise and update the ATC-4000 manual to further clarify technical documentation differences and monitor ATCM's utilization of approved data sheets.

Business Impact – Budget/Cost Estimate

Process Execution – A current process/procedure exists that meets the Required Action(s), but needs to be executed. This type of initiative does not need additional resources.

	Actionable Items	Description	Responsible Party[1]	Est Start[2]	Est End[3]
1.	Update ATC-4000 Manual	Chief ATC Engineer to update ATC-4000 manual in accordance with System Safety Configuration Management Plan. ATCE will submit updated ATC-4000 Manual.	Atousa Vali (ATCE) Supporting Office[4]: Jameel Rogers (ATCM) Angel Gonzales (SAFE)	10/07/19	04/29/20
2.	Utilize Approved Data Sheets	General Superintendent of ATC Maintenance to demonstrate the use of approved data sheets provided by engineering such as EIBs, EABs, EMIs, and TCPs. Ensure the data sheets include a test procedure number. ATCM will provide completed data sheets.	Jameel Rogers (ATCM) Supporting Office[4]: Atousa Vali (ATCE)	10/07/19	01/29/20
3.	QICO CAP Verification Report	QICO will evaluate actionable items submitted to confirm there is reasonable evidence that the findings and this required action have been resolved, taking into account the actionable item descriptions and performance measures.	QICO	04/01/20	05/27/20

Performance Measures

- Provide two (2) quarters of completed data sheets.

[1] In the event of personnel or departmental changes, responsibilities for actionable items shall transfer to the new leadership.

[2] Est Start – Estimated Start Date.

[3] Est End – Estimated Completion Date.

[4] Offices designated as supporting roles provide subject matter expertise to responsible parties during action development and are not directly responsible for delivery of actionable items listed above.

Responsible Parties

ATCE	Atousa Vali	[redacted] (Signature/Date)	11/22/2019
ATCM	Jameel Rogers	[redacted] (Signature/Date)	11/29/2019

Supporting Role Acknowledgement

SAFE	Angel Gonzales	[redacted] (Signature/Date)	11/27/2019

Second-Level Responsibility

ENGA	Nichalos Gardner	[redacted] (Signature/Date)	11/27/19
RIME	Chief of RIME - SVP Rail Services	[redacted] (Signature/Date)	12/03/19

CINDER BED CONTRACT MANAGEMENT iCAPAs

Return to Summary of Required Actions

INTERNAL REVIEW

Service Delivery

In response to the internal review report regarding Cinder Bed Road Contract Management, the office of Quality Assurance, Internal Compliance & Oversight (QICO) has coordinated the development of two (2) iCAPAs. The iCAPAs outline the findings, recommendations and requirements to be addressed, and a detailed action plan outlining responsible parties and specific actionable items.

EXECUTIVE LEADERSHIP OF RESPONSIBLE PARTIES

Internal Corrective and Preventive Action (iCAPA) Commitment

[redacted] 1-7-2020

Joseph Leader
Executive Vice President & Chief Operating Officer *Date*

EXECUTIVE LEADERSHIP OF RESPONSIBLE PARTIES

Internal Corrective and Preventive Action (iCAPA) Commitment

[redacted] 1-8-2020

Hakim Davis *Date*
Vice President, Quality Assurance, Internal Compliance & Oversight (QICO)

[redacted] 1/10/20

Eric Christensen *Date*
Executive Vice President, Internal Compliance (INCP)

[redacted] 1/10/20

Paul J. Wiedefeld *Date*
General Manager & Chief Executive Officer (GM/CEO)

Purpose and Scope

On September 13, 2019, the Office of Quality Assurance, Internal Compliance & Oversight (QICO) issued the Cinder Bed Road Contract Management Internal Review report. This internal Corrective and Preventive Action (iCAPA) report is developed to address associated finding(s) and required action(s) for QICO-CIND-19-01.

Required Action

QICO-CIND-19-01	*Department of Bus Services (BUSV)*	Moderate

Required Action(s): Develop documented procedures for the Contract Management Team activities in accordance with the Authority's QMSP.

- Documentation of the contract management processes and the associated activities allows for effective, sustainable and traceable oversight activities.

Measure: Policy, Procedures, & Standards *Risk:* Moderate – Service Delivery *3,3*

Action Plan Overview

The Department of Bus Services (BUSV) – Cinder Bed Road Contract Management will develop and implement documented contract management processes to include:

- Quality Procedures (*Reference: WMATA's Quality Management System Plan (QMSP)*)
  - Document Control Procedure
  - Inspection and Testing Procedure
  - Quality Records Procedure
  - Corrective Action Procedure

Business Impact – Budget/Cost Estimate

Process Improvement – A current process/procedure needs to be optimized to address the Required Action(s). This type of initiative does not need additional resources because current manpower will be used to improve the process.

Actionable Items		Description	Responsible Party[1]	Est Start[2]	Est End[3]
1.	Develop Document Control Procedure	Develop Document Control Procedure to outline how quality records are created, controlled, and archived in accordance with WMATA's QMSP (Reference: 3.2). Associated blank forms/templates for documentation will accompany the procedure.	Y. Manfra (BUSV)	10/01/19	02/28/20
2.	Develop Inspection and Testing Procedure	Develop Inspection and Testing Procedure to outline quality activities being performed by the contract management personnel overseeing the contractor in accordance with WMATA's QMSP (Reference 3.6). Associated blank forms/templates for documentation will accompany the procedure.	Y. Manfra (BUSV)	10/01/19	02/28/20
3.	Develop Corrective Action Procedure	Develop Corrective Action Procedure in accordance with WMATA's QMSP (*Reference: 3.9).* Associated blank forms/templates for documentation will accompany the procedure.	Y. Manfra (BUSV)	10/01/19	02/28/20
4.	Develop Quality Record Procedure	Develop Quality Record Procedure to outline how quality records are identified, collected, completed, and stored in accordance with WMATA's QMSP (*Reference: 3.10).* Associated blank forms/templates for documentation will accompany the procedure.	Y. Manfra (BUSV)	10/15/19	02/28/20
5.	QICO CAP Verification Report	QICO will evaluate actionable items submitted to confirm there is reasonable evidence that the findings and this required action have been resolved, taking into account the actionable item descriptions and performance measures.	QICO	02/28/20	03/31/20

Performance Measures

- Approved (by signature) Document Control Procedure in compliance with WMATA's QMSP – Section 3.2 (Actionable Item #1).

[1] In the event of personnel or departmental changes, responsibilities for actionable items shall transfer to the new leadership.

[2] Est Start – Estimated Start Date.

[3] Est End – Estimated Completion Date.

[4] Offices designated as supporting roles provide subject matter expertise to responsible parties during action development and are not directly responsible for delivery of actionable items listed above.

Performance Measures

- Approved (by signature) Inspection and Testing Procedure in compliance with WMATA's QMSP – Section 3.6 (Actionable Item #2).
- Approved (by signature) Quality Record Procedure in compliance with WMATA's QMSP – Section 3.9 (Actionable Item #3).
- Approved (by signature) Corrective Action Procedue in compliance with WMATA's QMSP – Section 3.10 (Actionable Item #4).

Responsible Parties

BUSV Yvonne Manfra [redacted]

(Signature/Date)

Second-Level Responsibility

BUSV Robert Potts [redacted] 9/19/19

(Signature/Date)

Purpose and Scope

On September 13, 2019, the Office of Quality Assurance, Internal Compliance & Oversight (QICO) issued the Cinder Bed Road Contract Management Internal Review report. This internal Corrective and Preventive Action (iCAPA) report is developed to address associated finding(s) and required action(s) for QICO-CIND-19-02.

Required Action

QICO-CIND-19-02	*Department of Bus Services (BUSV)*	Moderate

Required Action(s): Develop a Continuity of Operations Plan (COOP) for the Cinder Bed Road Contract Management Team.

- An established Continuity of Operations Plan (COOP) allows for continuous and uninterrupted contract oversight.

Measure: Policy, Procedures, & Standards *Risk:* Moderate – Service Delivery *3,3*

Action Plan Overview

The Department of Bus Services (BUSV) – Cinder Bed Road Contract Management will update the Continuity of Operations Plan to include a susession plan for the Cinder Bed Road Contract Management personnel.

Business Impact – Budget/Cost Estimate

Process Improvement – A current process/procedure needs to be optimized to address the Required Action(s). This type of initiative does not need additional resources because current manpower will be used to improve the process.

	Actionable Items	Description	Responsible Party[1]	Est Start[2]	Est End[3]
1.	Develop Continiuity of Operations Plan (COOP)	Update the Department of Bus Services (BUSV) Continuity of Operations Plan (COOP) to include a sucession plan for the Cinder Bed Road Contract Management personnel.	Y. Manfra (BUSV)	09/23/19	03/30/20
2.	QICO CAP Verification Report	QICO will evaluate actionable items submitted to confirm there is reasonable evidence that the findings and this required action have been resolved, taking into account the actionable item descriptions and performance measures.	QICO	04/30/20	05/31/20

Performance Measures

- Updated and approved (by signature) BUSV COOP including a sucession plan for the Cinder Bed Road Contract Management personnel (Actionable Item #1).

[1] In the event of personnel or departmental changes, responsibilities for actionable items shall transfer to the new leadership.

[2] Est Start – Estimated Start Date.

[3] Est End – Estimated Completion Date.

[4] Offices designated as supporting roles provide subject matter expertise to responsible parties during action development and are not directly responsible for delivery of actionable items listed above.

Responsible Parties

BUSV Yvonne Manfra [redacted]

(Signature/Date)

Second-Level Responsibility

BUSV Robert Potts [redacted] 9/19/19

(Signature/Date)

ENGINEERING AND ARCHITECTURE iCAPAs

Return to Summary of Required Actions

INTERNAL SAFETY REVIEW

Service Delivery

In response to the internal safety review report regarding Engineering and Architecture (ENGA), the Office of Quality Assurance, Internal Compliance & Oversight (QICO) has coordinated the development of five iCAPAs. The iCAPAs have been developed to address required actions and the associated findings.

EXECUTIVE LEADERSHIP OF RESPONSIBLE PARTIES

Internal Corrective and Preventive Action (iCAPA) Commitment

[redacted] 12/19/19

Laura Mason *Date*
Executive Vice President Capital Delivery

WMATA INTERNAL OVERSIGHT

Internal Corrective and Preventive Action (iCAPA) Commitment

[redacted] 12/19/19

Hakim Davis *Date*
Vice President, Quality Assurance, Internal Compliance & Oversight (QICO)

[redacted] 1/1/20

Eric Christensen *Date*
Executive Vice President, Internal Compliance (INCP)

[redacted] 1/6/20

Paul J. Wiedefeld *Date*
General Manager & Chief Executive Officer (GM/CEO)

Purpose and Scope

On September 20, 2019, the Office of Quality Assurance, Internal Compliance & Oversight (QICO) issued the Internal Safety Review report. The objective of the ENGA Internal Safety Review (ISR) is to internally validate that routine operations, system extensions, new projects, rehabilitated facilities, systems, and equipment under the purview of the Design and Construction department are as safe as reasonably possible per WMATA's System Safety Program Plan (SSPP). The SSPP is a WMATA wide safety plan created by the Department of Safety and Environmental Management (SAFE) in accordance with Federal Transit Administration (FTA) guidelines (49 CFR 659), and details WMATA's approach to satisfying the 21 required elements for system safety.

This internal Corrective and Preventive Action (iCAPA) report is developed to address associated finding(s) and required action(s) for QICO-ENGA-19-01.

Required Action

QICO-ENGA-19-01	*Office of Engineering and Architecture (ENGA)*	Moderate

Required Action(s): Effectively document and establish a consistent presence at all applicable safety committee meetings.

- F-ENGA-19-01: Participation in routine safety committee meetings is essential to continuously improve safety throughout the Authority.
  - Measure: Safety Management Risk: Safety – Moderate (2,5)
- F-ENGA-19-07: Consistent participation in the Safety and Security Certification Review process is essential to assure the safety and security of new or rehabilitated facilities, systems, and equipment.
  - Measure: Managing Safety in System Modification Risk: Safety – Moderate (3,3)

Measure: Safety Management *Risk:* Moderate – Safety *(3,4)*

Action Plan Overview

ENGA will attend Safety Certification Review Committee (SCRC) meetings (either in person or via Conference Call) as required by Policy/Instruction 10.2/4. ENGA will have management and non-management attendance at Local Safety Committee (LSC) meetings as required by Policy/Instruction 10.2/4.

Business Impact – Budget/Cost Estimate

Process Improvement – A current process/procedure needs to be optimized to address the Required Action(s). Additional manpower is needed in the form of the restoration, recruiting, and onboarding a replacement for the safety officer that retired from the group in 2018. The requirement will be addressed by having the duty covered as much as practically possible by an existing staff member as an additional duty.

	Actionable Items	Description	Responsible Party[1]	Est Start[2]	Est End[3]
1.	Establish a consistent presence at Local Safety Committee Meetings	ENGA will participate in routine local safety committee meetings. ENGA will submit sign-in sheets and meeting minutes.	Philip Browne ENGA Nichalos Gardner ENGA	11/01/19	05/01/20
2.	Establish effective communication to disseminate safety committee meeting minutes to ENGA internal departments	ENGA will develop a communication technique (e.g. email, department meetings) to disseminate safety committee meeting minutes to ENGA departmental staff (e.g. ATCS, COMS, PWRS, CIVL, CFGM, MECH, Architecture)	Philip Browne ENGA Nichalos Gardner ENGA	11/01/19	05/01/20
3.	Establish a consistent presence in Safety and Security Review Committee meetings	Participation in routine Safety and Security Certification Review committee meetings. SAFE will submit sign-in sheets and meeting minutes.	Lucelle Rosati SAFE Nichalos Gardner ENGA	11/01/19	05/01/20
4.	QICO CAP Verification Report	QICO will evaluate actionable items submitted to confirm there is reasonable evidence that the findings and this required action have been resolved, taking into account the actionable item descriptions and performance measures.	QICO	05/01/20	06/01/20

Performance Measures

- 6 months of meeting minutes and sign-in sheets demonstrating consistent attendance as specified under deliverable #1 and #3.
- Evidence of local safety committee meetings minutes being disseminated to internal ENGA departments as specified under deliverable #2.

[1] In the event of personnel or departmental changes, responsibilities for actionable items shall transfer to the new leadership.

[2] Est Start – Estimated Start Date.

[3] Est End – Estimated Completion Date.

[4] Offices designated as supporting roles provide subject matter expertise to responsible parties during action development and are not directly responsible for delivery of actionable items listed above.

Responsible Parties

ENGA	Philip Browne	[redacted] (Signature/Date)	11.21.19
ENGA	Nichalos Gardner	[redacted] (Signature/Date)	11/21/19

Supporting Role Acknowledgement

SAFE	Lucelle Rosati	[redacted] (Signature/Date)	11/25/19

Purpose and Scope

On September 20, 2019, the Office of Quality Assurance, Internal Compliance & Oversight (QICO) issued the Internal Safety Review report. The objective of the ENGA Internal Safety Review (ISR) is to internally validate that routine operations, system extensions, new projects, rehabilitated facilities, systems, and equipment under the purview of the Design and Construction department are as safe as reasonably possible per WMATA's System Safety Program Plan (SSPP). The SSPP is a WMATA wide safety plan created by the Department of Safety and Environmental Management (SAFE) in accordance with Federal Transit Administration (FTA) guidelines (49 CFR 659), and details WMATA's approach to satisfying the 21 required elements for system safety.

This internal Corrective and Preventive Action (iCAPA) report is developed to address associated finding(s) and required action(s) for QICO-ENGA-19-02.

Required Action

QICO-ENGA-19-02	***Office of Engineering and Architecture (ENGA)***	Elevated

Required Action(s): Establish controls to ensure proper configuration management.

- F-ENGA-19-02: Conducting and recording Configuration Change Control Board meetings is vital to effectively tracking configuration changes affecting multiple disciplines throughout the Authority.
  - Measure: Configuration Management Risk: Safety – Elevated (3,5)
- F-ENGA-19-03: - Effective configuration management is critical to assuring all WMATA assets are consistently maintained to standards.
  - Measure: Configuration Management Risk: Safety – Elevated (4,4)
- F-ENGA-19-04: Consistent administration of design control board meetings results in a more effective change control database.
  - Measure: Configuration Management Risk: Safety – Elevated (3,5)

Measure: Configuration Management *Risk:* Elevated – Safety *(3,5)*

Action Plan Overview

ENGA will conduct Configuration Change Control Board meetings on a quarterly basis as required by Policy/Instruction 1.20/0. ENGA will conduct Design Control Board meetings on a monthly basis as required by Policy/Instruction 4.14/3. ENGA will establish a change control database purposed to track and properly store configuration controlled items.

Business Impact – Budget/Cost Estimate

Process Execution – A current process/procedure exists that meets the Required Action(s), but needs to be executed. This type of initiative does not need additional resources.

	Actionable Items	Description	Responsible Party[1]	Est Start[2]	Est End[3]
1.	Conduct Required Configuration Change Control Board Meetings	ENGA will conduct Configuration Change Control Board meetings on a quarterly basis and provide meeting records (i.e., sign in sheets and minutes) for three quarterly meetings.	Donald Falken ENGA Nichalos Gardner ENGA	11/01/19	08/03/20
2.	Conduct Required Design Control Board Meeetings	ENGA will conduct Design Control Board meetings on a monthly basis and provide meeting records (i.e., sign in sheets and minutes) for six monthly meetings.	Nichalos Gardner ENGA	11/01/19	05/04/20
3.	Establish an Effective Change Control Database	ENGA to establish an effective change control database to track and store configuration controlled items (e.g. EMI, TCP, As-builts, Drawing Modifications).	Donald Falken ENGA Nichalos Gardner ENGA	11/01/19	05/04/20
4.	Establish a Database to Keep Record of all Proposed Issues	ENGA to establish a database to keep record of all proposed issues and dispositions submitted to the Design Control Board.	Nichalos Gardner ENGA	11/01/19	05/04/20
5.	QICO CAP Verification Report	QICO will evaluate actionable items submitted to confirm there is reasonable evidence that the findings and this required action have been resolved, taking into account the actionable item descriptions and performance measures.	QICO	08/03/20	08/31/20

Performance Measures

- Meeting minutes and sign-in sheets demonstrating consistent administration of 3 quarterly meetings as specified under deliverable #1
- 6 months of meeting minutes and sign-in sheets demonstrating consistent administration of meeting as specified under deliverable #2
- 6 months of records demonstrating consistent administration of all configuration controlled items, proposed issues and dispositions as specified under deliverable #3 and #4

[1] In the event of personnel or departmental changes, responsibilities for actionable items shall transfer to the new leadership.

[2] Est Start – Estimated Start Date.

[3] Est End – Estimated Completion Date.

[4] Offices designated as supporting roles provide subject matter expertise to responsible parties during action development and are not directly responsible for delivery of actionable items listed above.

Responsible Parties

ENGA	Donald Falken	[redacted] (Signature/Date)
ENGA	Nichalos Gardner	[redacted] (Signature/Date) 11/21/19

INTERNAL CORRECTIVE AND PREVENTIVE ACTION (iCAPA) QICO-ENGA-19-03

Purpose and Scope

On September 20, 2019, the Office of Quality Assurance, Internal Compliance & Oversight (QICO) issued the Internal Safety Review report. The objective of the ENGA Internal Safety Review (ISR) is to internally validate that routine operations, system extensions, new projects, rehabilitated facilities, systems, and equipment under the purview of the Design and Construction department are as safe as reasonably possible per WMATA's System Safety Program Plan (SSPP). The SSPP is a WMATA wide safety plan created by the Department of Safety and Environmental Management (SAFE) in accordance with Federal Transit Administration (FTA) guidelines (49 CFR 659), and details WMATA's approach to satisfying the 21 required elements for system safety.

This internal Corrective and Preventive Action (iCAPA) report is developed to address associated finding(s) and required action(s) for QICO-ENGA-19-03.

Required Action

QICO-ENGA-19-03	*Office of Engineering and Architecture (ENGA)*	Moderate

Required Action(s): Establish a document control process for the COOP Plan in accordance with Office of Emergency Management standards.

- F-ENGA-19-05: Following Office of Emergency Management Standards for the development of the Continuity of Operations Plan is essential to maintaining mission critical operations in the event of an emergency.
  - Measure: Emergency Management Risk:: Safety – Moderate (4,2)

Measure: Emergency Management *Risk:* Moderate – Safety *(4,2)*

Action Plan Overview

ENGA will update the current COOP Plan in accordance with Office of Emergency Management standards.

Business Impact – Budget/Cost Estimate

Process Improvement – A current process/procedure needs to be optimized to address the Required Action(s). This type of initiative does not need additional resources because current manpower will be used to improve the process.

Actionable Items		Description	Responsible Party[1]	Est Start[2]	Est End[3]
1.	Update Continuity of Operations Plan in accordance with OEM standards	ENGA will update their current Continuity of Operations (COOP) Plan in accordance with the Office of Emergency Management (OEM) standards.	Nichalos Gardner ENGA	11/01/19	02/03/20
2.	QICO CAP Verification Report	QICO will evaluate actionable items submitted to confirm there is reasonable evidence that the findings and this required action have been resolved, taking into account the actionable item descriptions and performance measures.	QICO	02/03/20	03/26/20

Performance Measures
- Evidence of revised Continuity of Operations Plan updated to ENGA website as specified under deliverable #1.

[1] In the event of personnel or departmental changes, responsibilities for actionable items shall transfer to the new leadership.

[2] Est Start – Estimated Start Date.

[3] Est End – Estimated Completion Date.

[4] Offices designated as supporting roles provide subject matter expertise to responsible parties during action development and are not directly responsible for delivery of actionable items listed above.

Responsible Parties

ENGA	Nichalos Gardner	[redacted]	11/21/19
		(Signature/Date)	

Purpose and Scope

On September 20, 2019, the Office of Quality Assurance, Internal Compliance & Oversight (QICO) issued the Internal Safety Review report. The objective of the ENGA Internal Safety Review (ISR) is to internally validate that routine operations, system extensions, new projects, rehabilitated facilities, systems, and equipment under the purview of the Design and Construction department are as safe as reasonably possible per WMATA's System Safety Program Plan (SSPP). The SSPP is a WMATA wide safety plan created by the Department of Safety and Environmental Management (SAFE) in accordance with Federal Transit Administration (FTA) guidelines (49 CFR 659), and details WMATA's approach to satisfying the 21 required elements for system safety.

This internal Corrective and Preventive Action (iCAPA) report is developed to address associated finding(s) and required action(s) for QICO-ENGA-19-04.

Required Action

QICO-ENGA-19-04	***Office of Engineering and Architecture (ENGA)***	Moderate

Required Action(s): Develop a quality control program to verify rulebook compliance.

- F-ENGA-19-06: Establishing a quality control program to verify compliance to rules and procedures promotes effective safety awareness.
    - Measure: Safe Work Standards Risk: Safety – Moderate (3.3)

Measure: Safe Work Standards *Risk:* Moderate – Safety *(3,3)*

Action Plan Overview

ENGA will develop a quality control checklist to ensure RWP compliance as required by Policy/Instruction 1.15/0. ENGA will also send memo to inform the team of checklist requirements when leading an outage. This memo will also allow ENGA members to take pictures of sign-in sheets when they are out with a RWIC, after ENGA members have completed the job safety briefing.

Business Impact – Budget/Cost Estimate

New/Expanded Initiative or Process – A new initiative needs to be created or a current process/procedure needs to be substantially expanded to address the Required Action(s). Additional resources will be required to address these initiatives.

	Actionable Items	Description	Responsible Party[1]	Est Start[2]	Est End[3]
1.	Develop a Quality Control Plan	ENGA will develop a quality control checklist to ensure processes are in compliance with RWP when applicable. Checklist will mirror the RWP requirements, compliance checks and corrective actions to address non-compliance. ENGA will submit their quality control checklist.	Nichalos Gardner ENGA	11/01/19	09/01/20
2.	Distribute the Quality Control Checklist	ENGA will distribute a memo to all ENGA departmental staff requiring ENGA supervisors to conduct quality control checklists to monitor compliance while ENGA personnel is conducting business in the right of way.	Nichalos Gardner ENGA	11/01/19	09/01/20
3.	QICO CAP Verification Report	QICO will evaluate actionable items submitted to confirm there is reasonable evidence that the findings and this required action have been resolved, taking into account the actionable item descriptions and performance measures.	QICO	09/01/20	09/30/20

Performance Measures

- Provide 3 months of evidence to show completed and signed checklists or job safety briefings derived from quality control program as specified under deliverable #1.

[1] In the event of personnel or departmental changes, responsibilities for actionable items shall transfer to the new leadership.

[2] Est Start – Estimated Start Date.

[3] Est End – Estimated Completion Date.

[4] Offices designated as supporting roles provide subject matter expertise to responsible parties during action development and are not directly responsible for delivery of actionable items listed above.

Responsible Parties

ENGA	Nichalos Gardner	[redacted] 11/27/19 (Signature/Date)

INTERNAL CORRECTIVE AND PREVENTIVE ACTION (iCAPA) QICO-ENGA-19-05

Purpose and Scope

On September 20, 2019, the Office of Quality Assurance, Internal Compliance & Oversight (QICO) issued the Internal Safety Review report. The objective of the ENGA Internal Safety Review (ISR) is to internally validate that routine operations, system extensions, new projects, rehabilitated facilities, systems, and equipment under the purview of the Design and Construction department are as safe as reasonably possible per WMATA's System Safety Program Plan (SSPP). The SSPP is a WMATA wide safety plan created by the Department of Safety and Environmental Management (SAFE) in accordance with Federal Transit Administration (FTA) guidelines (49 CFR 659), and details WMATA's approach to satisfying the 21 required elements for system safety.

This internal Corrective and Preventive Action (iCAPA) report is developed to address associated finding(s) and required action(s) for QICO-ENGA-19-05.

Required Action

QICO-ENGA-19-05	*Office of Engineering and Architecture (ENGA)*	Low

Required Action(s): Develop a training matrix for each position within ENGA and establish a documented process to record and periodically audit required safety training and certifications for employees and contractors.

- F-ENGA-19-08: Maintaining a training and certification matrix for employees and contractors highlights required competencies and reinforces compliance.
    - Measure: Safety Training and Certification Risk: Safety – Low (2.3)

Measure: Safety Training & Certification *Risk:* Moderate – Safety *(2,3)*

Action Plan Overview

Each ENGA department will develop a training matrix for each position

Business Impact – Budget/Cost Estimate

Process Improvement – A current process/procedure needs to be optimized to address the Required Action(s). This type of initiative does not need additional resources because current manpower will be used to improve the process.

	Actionable Items	Description	Responsible Party[1]	Est Start[2]	Est End[3]
1.	Develop ENGA Departmental Training Matrix	Each ENGA department will develop a training matrix with safety-training requirements for each position and employee.	Nichalos Gardner ENGA	11/01/19	04/30/20
2.	Develop a process to record and periodically audit required safety training and certifications	ENGA will develop a process to record and periodically audit training records to verify that required training and certifications are being completed by employees and contractors.	Nichalos Gardner ENGA	11/01/19	06/30/20
3.	QICO CAP Verification Report	QICO will evaluate actionable items submitted to confirm there is reasonable evidence that the findings and this required action have been resolved, taking into account the actionable item descriptions and performance measures.	QICO	06/30/20	07/31/20

Performance Measures

- Evidence of update training matrix as prescribed per actionable item #1.
- ENGA will provide the training recording process and six months of evidence as specified under deliverable #2.

[1] In the event of personnel or departmental changes, responsibilities for actionable items shall transfer to the new leadership.

[2] Est Start – Estimated Start Date.

[3] Est End – Estimated Completion Date.

[4] Offices designated as supporting roles provide subject matter expertise to responsible parties during action development and are not directly responsible for delivery of actionable items listed above.

Responsible Parties

ENGA	Nichalos Gardner	[redacted]	11/21/19
		(Signature/Date)	

DEPARTMENT OF SAFETY AND ENVIRONMENTAL MANAGEMENT iCAPAs

Return to Summary of Required Actions

INTERNAL REVIEW

Safety

In response to the internal safety review report regarding the Department of Safety and Environmental Management (SAFE), the office of Quality Assurance, Internal Compliance & Oversight (QICO) has coordinated the development of three (3) iCAPAs. The iCAPAs outline the findings, recommendations and requirements to be addressed, and a detailed action plan outlining responsible parties and specific actionable items.

EXECUTIVE LEADERSHIP OF RESPONSIBLE PARTIES

Internal Corrective and Preventive Action (iCAPA) Commitment

[redacted] 12/19/19

Theresa Impastato *Date*
Executive Vice President & Chief Safety Officer

EXECUTIVE LEADERSHIP OF RESPONSIBLE PARTIES

Internal Corrective and Preventive Action (iCAPA) Commitment

[redacted] 12/19/19

Hakim Davis *Date*
Vice President, Quality Assurance, Internal Compliance & Oversight (QICO)

[redacted] 1/1/20

Eric Christensen *Date*
Executive Vice President, Internal Compliance (INCP)

[redacted] 1/6/20

Paul J. Wiedefeld *Date*
General Manager & Chief Executive Officer (GM/CEO)

Purpose and Scope

On October 30, 2019, the Office of Quality Assurance, Internal Compliance & Oversight (QICO) issued the Department of Safety and Environmental Management Internal Safety Review report. This internal Corrective and Preventive Action (iCAPA) report is developed to address associated finding(s) and required action(s) for QICO-SAFE-19-01.

Required Action

QICO-SAFE-19-01	*Department of Safety and Environmental Management (SAFE)*	Elevated

Required Action(s): Establish a solution to effectively manage all hazards to resolution as specified in the SSPP.

- The utilization of the hazard management module will promote compliance with the SSPP and effectively track and mitigate hazards.

Measure: Hazard Management *Risk: Elevated – Assets and Activities/Document Control (4,4)*

Action Plan Overview

Comply with requirements to manage hazards established in the SSPP, as well as with the Agency Safety Plan under development. Each WMATA Department/Office is responsible to identify hazards in its daily activities and responsibilities and to fully document all of these activities. Departments/Offices will enter all hazards into the WMATA SMS database or equivalent alternative to enable SAFE to review and monitor hazard management in the departments.

Under the requirements of 49 CFR 673.25(a), WMATA will develop and implement a Safety Risk Management (SRM) Process. All employees, departments, and contractors are required to identify hazards, report them, and mitigate them appropriately. The primary sources will identify reactive hazards (i.e., Safety incident/accident data) and proactive hazard identification (Safety Hotline). Each system will have an indicator identifying the hazard source, incident, or observation.

Once the hazards have been identified, a hazard analysis will be conducted to identify all components and consequences. The hazard will be risk rated by reviewing the probability and severity of the consequence; the mitigation will also be evaluated to determine if the end result will lower the risk rating to an acceptable level. Finally, that mitigation will be put in place to address the hazard.

All of the steps noted above will be captured into the Hazard Management Module or equivalent alternative.

Business Impact – Budget/Cost Estimate

Process Execution – A current process/procedure exists that meets the Required Action(s), but needs to be executed. This type of initiative does not need additional resources.

Actionable Items		Description	Responsible Party[1]	Est Start[2]	Est End[3]
1.	Closure of existing CAP	Closure of FTA-TSR-18-003.	Carla Grano (SAFE) Support Joseph Leader (COO)	07/20/20	06/29/22
2.	QICO CAP Verification Report	QICO will evaluate actionable items submitted to confirm there is reasonable evidence that the findings and this required action have been resolved, taking into account the actionable item descriptions and performance measures.	QICO	07/01/22	07/26/22

Performance Measures

- Three consecutive months exhibiting 90% of confirmed hazards recorded in the SMS Hazard Management Module or equivalent alternative covering the below inputs:
    - Safety hotline
    - Safety incident/accident data

[1] In the event of personnel or departmental changes, responsibilities for actionable items shall transfer to the new leadership.

[2] Est Start – Estimated Start Date.

[3] Est End – Estimated Completion Date.

[4] Offices designated as supporting roles provide subject matter expertise to responsible parties during action development and are not directly responsible for delivery of actionable items listed above.

Responsible Parties

SAFE	Carla Grano	[redacted] (Signature/Date)	12/3/19

Supporting Role Acknowledgement

COO	Joseph Leader	[redacted] (Signature/Date)	12-17-19

Second-Level Responsibility

SAFE	Theresa Impastato	[redacted] (Signature/Date)	12/13

Purpose and Scope

On October 30, 2019, the Office of Quality Assurance, Internal Compliance & Oversight (QICO) issued the Department of Safety and Environmental Management Internal Safety Review report. This internal Corrective and Preventive Action (iCAPA) report is developed to address associated finding(s) and required action(s) for QICO-SAFE-19-02.

Required Action

QICO-SAFE-19-02	*Department of Safety and Environmental Management (SAFE)*	Elevated

Required Action(s): Develop, train on, and implement a standardized inspection procedure for SAFE personnel to effectively perform facility and equipment safety inspections.

- Defined and detailed inspection procedures are important to effectively perform facility and equipment safety inspections.

Measure: Policies, Procedures & Standards *Risk:* Elevated – *Safe Work Standards (4,4)*

Action Plan Overview

Develop new procedure(s) for SAFE inspections of facilities and equipment. The procedure(s) will be developed for fire life safety, bus and MetroAccess safety, rail and facilities safety, incident investigation, performance monitoring, and construction safety.

Business Impact – Budget/Cost Estimate

Process Improvement – A current process/procedure needs to be optimized to address the Required Action(s). This type of initiative does not need additional resources because current manpower will be used to improve the process.

	Actionable Items	Description	Responsible Party[1]	Est Start[2]	Est End[3]
1.	Develop Standardized Inspection Procedure(s)	SAFE will develop standardized inspection procedure(s) for SAFE personnel to perform facility and equipment safety inspections. SAFE will provide new procedure(s).	Douglas Connett (SAFE) Carla Grano (SAFE)	01/01/20	05/27/20
2.	Distribution, Acknowledgement, and Implementation	Dissemination, acknowledgement, and implementation of the standardized procedure(s) for responsible SAFE personnel as described in Actionable Item #1. SAFE will provide signed sheets.	Douglas Connett (SAFE) Carla Grano (SAFE)	06/01/20	01/06/21
3.	QICO CAP Verification Report	QICO will evaluate actionable items submitted to confirm there is reasonable evidence that the findings and this required action have been resolved, taking into account the actionable item descriptions and performance measures.	QICO	01/06/21	02/10/21

Performance Measures

- Evidence that 90% of active safety officers have acknowledged the new procedure(s) as per Actionable Item #2.
- Inspection records covering three consecutive months demonstrating that safety officers are adhering to the new procedure(s).

[1] In the event of personnel or departmental changes, responsibilities for actionable items shall transfer to the new leadership.

[2] Est Start – Estimated Start Date.

[3] Est End – Estimated Completion Date.

[4] Offices designated as supporting roles provide subject matter expertise to responsible parties during action development and are not directly responsible for delivery of actionable items listed above.

Responsible Parties

SAFE	Douglas Connett	[redacted] 12/16/19 (Signature/Date)
SAFE	Carla Grano	[redacted] 12/16/19 (Signature/Date)

Second-Level Responsibility

SAFE	Theresa Impastato	[redacted] 12-13-19 (Signature/Date)

Purpose and Scope

On October 30, 2019, the Office of Quality Assurance, Internal Compliance & Oversight (QICO) issued the Department of Safety and Environmental Management Internal Safety Review report. This internal Corrective and Preventive Action (iCAPA) report is developed to address associated finding(s) and required action(s) for QICO-SAFE-19-03.

Required Action

QICO-SAFE-19-03	*Department of Safety and Environmental Management (SAFE)*	Moderate

Required Action(s): Review and revise SAFE governing documents to ensure organizational policies and procedures are current.

- Timely and periodic reviews and updates of governing documents are important to promote compliance

  Measure: Policies, Procedures & Standards *Risk:* Moderate – *Safe Work Standards (3,3)*

Action Plan Overview

SAFE will review/revise and document the review/revision of SAFE governinig documents for which review is currently overdue. This review is required for the following overdue policies/procedures:

- SOP 800-01 Incident and Accident Investigations of Bus and Rail
- OAP 600-12 Safety Hotline Process
- OAP 200-01 Third Rail Insulating Mats
- WMATA Safety and Security Certification Plan Rev. 3
- SOP 200-03 Confined Space Entry
- SOP 200-08 Engineering Reviews

Business Impact – Budget/Cost Estimate

Process Improvement – A current process/procedure needs to be optimized to address the Required Action(s). This type of initiative does not need additional resources because current manpower will be used to improve the process.

	Actionable Items	Description	Responsible Party[1]	Est Start[2]	Est End[3]
1.	Documents Review and Update	Review/revise all overdue policies, procedures, and standards owned by SAFE. SAFE will provide the revised documents.	Douglas Connett (SAFE) Carla Grano (SAFE) Angel Gonzalez (SAFE)	12/02/19	04/01/20
2.	Distribution of Revised Documents	Provide evidence of dissemination of the updated documents. SAFE will provide copy of safety bulletin or other means used to distribute the documents.	Douglas Connett (SAFE) Carla Grano (SAFE) Angel Gonzalez (SAFE)	04/01/20	04/29/20
3.	QICO CAP Verification Report	QICO will evaluate actionable items submitted to confirm there is reasonable evidence that the findings and this required action have been resolved, taking into account the actionable item descriptions and performance measures.	QICO	05/01/20	05/27/20

Performance Measures

- Evidence of dissemination of the revised documents WMATA-wide.

[1] In the event of personnel or departmental changes, responsibilities for actionable items shall transfer to the new leadership.

[2] Est Start – Estimated Start Date.

[3] Est End – Estimated Completion Date.

[4] Offices designated as supporting roles provide subject matter expertise to responsible parties during action development and are not directly responsible for delivery of actionable items listed above.

Responsible Parties

SAFE	Douglas Connett	[redacted] 12/3/19 (Signature/Date)
SAFE	Carla Grano	[redacted] 12/3/19 (Signature/Date)
SAFE	Angel Gonzalez	[redacted] (Signature/Date)

Second-Level Responsibility

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SUPPLEMENTAL MATERIALS

APPENDIX A: INTERNAL REVIEW QUALITY MEASURES

Policies, Procedures & Standards

- Work Standards: The existence and effectiveness of department policies, procedures, manuals, work instructions, quality control measures, and other requirements that define department activities.
- Work Measurement: The existence and effectiveness of operational goals (indicators) and sound management routines to achieve these goals.
- Change Management: The existence and effectiveness of processes, tools and techniques to manage changes to a system to achieve intended outcomes.
- Skills Management: The existence and effectiveness of a training strategy to ensure personnel are adequately qualified to perform work.

Quality & Compliance

- Application & Fulfillment: Adherence to existing/adopted policies, procedures, and standards; including applicable engineering or other technical requirements that specify material and/or workmanship standards.
- Job Safety: Adherence to safety requirements, including enterprise-wide standards (e.g. MSRPH) or those specific to a particular type of work (e.g. PPE).
- Quality Control: The performance of quality control functions to ensure the consistency and reliability of work performed; including the usage of properly calibrated equipment and compliant materials/parts.
- Regulations & Oversight: Adherence to requirements, guidelines, and recommendations from external/regulatory authorities and internal oversight functions, including items issued for corrective and preventive actions.

Traceability

- Data Assurance: Assessment of the validity, accuracy, consistency, relevance, and completeness of data used to schedule, document, and track work activities.
- Assets and Activities: Assessment of the ability to verify the history, location, or application of an item by means of documented recorded identification; including the quality and validity of data capturing this information.
- Document Control: Assessment of version control, ownership and approval, dissemination, storage and accessibility of business-critical documents.

APPENDIX B: SAFETY REVIEW SYSTEM SAFETY MEASURES

Policies, Procedures & Standards (SSPP Elements 1-5, 12, 13, 15 & 17)

- **Safe Work Standards:** The existence and effectiveness of department policies, procedures, manuals, work instructions, safety and security practices, and other safety and security requirements that define department safe work practices.
- **Work Measurement:** The existence and effectiveness of operational safety goals and sound management routines to achieve these goals.
- **Configuration Management:** The existence and effectiveness of processes, tools, and techniques to manage changes to a system to achieve intended outcomes.
- **Safety Management:** The existence and effectiveness of supervision strategy to ensure personnel are adequately equipped to perform work safely and qualified to perform work to standard.

Training, Certification & Compliance (SSPP Elements 16, 18, 20 & 21)

- **Application & Fulfillment:** Adherence to existing/adopted policies, procedures, and standards; including applicable engineering or other technical requirements that specify material and/or workmanship standards.
- **Job Safety:** Adherence to safety requirements, including enterprise-wide standards (e.g. MSRPH) or those specific to a particular type of work (e.g. PPE).
- **Safety Training & Certification:** The existence and effectiveness of a training strategy to ensure personnel are adequately qualified to perform work.
- **Regulations & Oversight:** Adherence to requirements, guidelines, and recommendations from external/regulatory authorities and internal oversight functions, including items issued for corrective and preventive actions.

Hazard Management (SSPP Elements 6, 10, 11 & 19)

- **Data Assurance:** Assessing the existence of a hazardous condition that has been identified.
- **Assets and Activities:** The performance of gathering all data, conducting interviews & field inspections to determine the risk level and prioritize hazardous conditions and focus available resources on the most serious hazards requiring resolution.
- **Document Control:** Assessing the effectiveness of hazard tracking and documentation of all systems to mitigate and prevent reoccurrence.

Safety (SSPP Elements 7, 8, 9 & 14)

- **Managing Safety in System Modification:** Evaluating and assuring that a proposed modification does not adversely affect the system, vehicle, equipment or facility previously certified under the System Safety & Security process.
- **Emergency Management:** Assessing the management of operational emergencies and preparedness to maintain and continue safe operation under such conditions.
- **Occupational Safety & Health:** Validating the development of Safety programs and the administration of training to required personnel to assure safe and healthful working conditions for employees and contractors.

APPENDIX C: RISK ASSESSMENT

Risk Assessment Methodology

Risk is defined as an uncertain event or condition that, if it occurs, has a positive or negative effect on the organization's objectives and operations (both threats and opportunities). It is assessed on the combination of the probability of occurrence of risk and the severity of the risk. Risk management is an attempt to answer the following questions:

- What can go wrong? – The Risk
- How bad are the consequences? – The Impact
- How often does/will it happen? – The Probability of Occurrence
- Is the risk acceptable? – The Risk Treatment, Remediation

Categories of Risk

- *Service Delivery* – A broad range of risks with direct or indirect impact on daily transit and/or business operations. The risk of direct or indirect losses or other negative effects due to inadequate or failed internal business or transit operations, or from external events that impair internal processes, people, or systems.
- *Financial* – The risk to achievement of the Authority's mission arising from an inability to manage credit, debt and financial leverage, and other financial resources. Financial risk would also include risk arising from adverse movements in market rates or the Authority's inability to meet its obligations.
- *Legal & Compliance* – Risks arising from a failure to comply with applicable laws and regulations and a failure to detect and report activities that are not compliant with statutory, regulatory, or internal policy requirements. Failure to comply with prescribed guidelines and established practices. This would also include a lack of awareness or ignorance of the relevant standards, guidelines or regulations.
- *Safety* - The risk of achievement of the Authority's mission arising from failures to prevent hazards that may cause harm to human, equipment, or the environment. This would also include risk arising from the Authority's inability to comply with safety-related legal or regulatory standards.
- *Strategic* – Risks arising from failure to achieve strategic or tactical objectives, an adverse business decision, or a lack of strategic direction and leadership. This would also include the ineffective implementation of the strategic plans, a lack of business strategies developed to achieve goals, and inadequate resources deployed against the achievement of those goals. Strategic risks can be affected by changes in the political environment such as changes in administration and resulting changes in strategic priorities. Strategic risks can also be triggered by actions of key stakeholders such as the Tri-Jurisdictional law makers or the Federal Transit Administration (FTA).
- *Technology* – The risk of unexpected losses from inadequate systems, breaches in information technology security, and inadequate business continuity planning. This would also include risks to the achievement of the Authority's mission arising from the inability of networks, security, and technologies to meet Metro's evolving needs.
- *Reputation* – The risk to the achievement of the Authority's mission arising from negative internal or external stakeholder opinion. Reputation risk affects the Authority's ability to establish new and/or sustain existing relationships.

Risk Assessment Process

The following risk matrix is used to assess risks within the universe of review areas. The universe (see Table 1) is comprised of the potential range of all review activities and review business units (or departments) that fall within QICO's scope and oversight authority. These business units consist of programs, processes, assets and people which together contribute to the fulfilment of the departments' strategic goals (Goal 1 - Build Safety Culture; Goal 2 - Deliver Quality Service; Goal 3 - Improve Regional Mobility; and Goal 4 - Ensure Fiscal Stability).

Risks are assessed based on the significance of their impact (see horizontal axis in Figure 1) and the probability of occurrence (see vertical axis in Figure 1). The probability ratings are rated on a scale of 1 (minimum) to 5 (maximum) and are driven by the metrics shown on the next page. The impacts ratings are also rated on a scale of 1 (minimum) to 5 (maximum) and are driven by the category of risks, which are then aligned on the metrics shown on the next page.

Each finding is given a severity rating of Insignificant, Low, Moderate, Elevated or High. All areas with Elevated/High ratings are considered to be high risk to the organization's objectives; and need to be mitigated/reduced in severity at the earliest. The risk ratings to the findings are provided as "Type of Risk" followed by "Severity Rating (Impact, Probability)" (e.g. a finding with *"Elevated (4,3)"* would mean a 'significant (4)' impact along with a 'possible (3)' probability of occurrence).

APPENDIX C: RISK ASSESSMENT

Risk Assessment Matrix

Probability of Occurrence	Negligible (1)	Minor (2)	Moderate (3)	Significant (4)	Major (5)
Almost Certain (5)	Low	Moderate	Elevated	High	High
Likely (4)	Low	Low	Moderate	Elevated	High
Possible (3)	Low	Low	Moderate	Elevated	Elevated
Unlikely (2)	Insignificant	Low	Low	Moderate	Moderate
Rare (1)	Insignificant	Insignificant	Low	Moderate	Moderate
Probability / Impact	Potential Impact of Risk				

Risk Scale Definitions

Insignificant	Reasonable assumption that this risk will not occur and unlikely to cause the activity to fail to meet part of its objective.
Low	Reasonable assumption that this risk will likely not occur & may cause a failure of the business process to meet part of its objectives.
Moderate	Reasonable assumption that this risk may occur & may cause a failure of the business process to meet a significant part of its objectives.
Elevated	Reasonable assumption that this risk will likely occur & likely to cause a failure of the business process to meet a significant part of its objectives.
High	Reasonable assumption that this will occur & will cause a failure of the business process to meet its objectives or cause objective failure in other activities.

Potential Impact

(1) Negligible – Unlikely to cause the activity to fail to meet part of its objectives.
(2) Minor – May cause a failure of the business process to meet part of its objectives, which may expose Metro to minor financial losses, less- effective or efficient operations, some non- compliance with laws and regulations, waste of resources, etc.
(3) Moderate – May cause a failure of the business process to meet a significant part of its objectives, or negatively impact the objectives of other activities, which may expose Metro to moderate financial losses, reductions to or ineffectiveness of operations, non- compliance with laws and regulations, sizable waste of resources, etc.
(4) Significant – Likely to cause a failure of the business process to meet a significant part of its objectives, or negatively impact the objectives of other activities, which may expose Metro to significant financial losses, reductions to or ineffectiveness of operations, non- compliance with laws and regulations, sizable waste of resources, etc.
(5) Major – Will cause a failure of the business process to meet its objectives, or cause objective failure in other activities, which may cause or expose Metro to major financial losses, interruptions in operations, failure to comply with laws and regulations, major waste of resources, failure to achieve stated goals, etc.

Probability of Occurrence

(1) Rare – Reasonable assumption that this risk will not occur
(2) Unlikely – Reasonable assumption that this risk will likely not occur
(3) Possible – Reasonable assumption that this risk may occur
(4) Likely – Reasonable assumption that this risk will likely occur
(5) Almost Certain – Reasonable assumption that this will occur

APPENDIX D: TECHNICAL TERMINOLOGY

DESCRIPTION
- **ATC Design Control Board:** The ATC/DCB is authorized by the DGM and established, under this ATC-4002 standard, as the ATC configuration management design control board responsible to review and approve changes or deviations to technical documents (AETDs) managed by ATC Engineering, which may or may not necessarily have a direct impact on the ATC system and are required to communicate essential information about or require both intrusive and non-intrusive actions to the ATC system. The CI documents which are in this category and subject to review and approval by the ATC/DCB are: a. ATC Engineering Standards 1000, 2000, 3000, 4000, 5000, etc. b. ATCS Drawings and Software – New and Revised; c. Hazard Risk Assessments (HRA); d. Engineering Modification Instructions (EMI); e. Engineering Action Bulletins (EAB); f. Engineering Information Bulletins (EIB); and g. Other ATC Engineering Technical Documents (AETDs) as required. The ATC/DCB is responsible for adopting CI documents in these categories shall be comprised of, but not necessarily limited to, the department heads representing ATC Engineering, Maintenance and Safety and /or the group responsible for developing the particular AETD document(s).
- **ATC Engineering Technical Document (AETD**): General term for all ATC Engineering Technical Documents (AETD) and drawings unless specified otherwise within the ATC-4000 manual. A Class 1 AETD is further defined as: a. Engineering Modification Instructions (EMI); b. Engineering Action Bulletins (EABs); c. Engineering Information Bulletins (EIBs); d. Temporary Configuration Plans (TCPs); e. Hazard Risk Assessments (HRAs) f. ATC 1000, 2000, 3000, 4000 & 5000 Instructions.
- **As-Built Drawing:** Drawings that document the final condition in which a facility, system, or subsystem was turned over to Metro at the end of a project.
- **As-Is Drawings:** Drawings that document the present condition of the facility, system, or subsystem as it is in operation. It shall include the changes made after completion of projects by DECO, operating departments, maintainers or any other group.
- **Cab Signal & Spillover Circuits:** This is a safety feature of station platform rail circuits, to automatically reduce Cab Signal levels and prevent rail car door operation if a train does not stop completely within the ends of the platform (train not properly berthed).
- **Class 3 Document:** Class 3 documents do not require CI (Configuration Item). These documents are produced by other internal WMATA departments or are emails correspondence internal or external, industry publications, white papers, ATC Engineering memos, etc., which are of interest or may influence changes to current ATC design, installation or maintenance standards.
- **Configuration Change Control Board (CCCB):** A control board established by the General Manager and Chief Executive Officer, consisting of SAFE, DECO, COO, Metro Access, and SSRV with voting rights. The board verifies that the technical and administrative process associated with physical or other changes to the arrangement, maintenance, and operation of facilities, systems, equipment, hardware, and revenue vehicles.
- **Configuration Control Management:** The management process used for verifying that a facility and its associated systems and subsystems are designed, constructed, and perform as intended; that the facility, system or subsystem is documented in sufficient detail to support operations, maintenance, and warranty management.
- **Configuration Items (CI):** A collection of documents and or software within a system which can be uniquely identified at a given reference point. A CI is an entity designated for configuration.

- **Continuity of Operations Plan (COOP):** COOP capability identifies essential functions and consists of plans and procedures, alternate facilities, alternate communications and data support systems, reinforced by comprehensive training, orientation, and exercise programs.
- **Corrective and Preventive Action (iCAPA):** A formal written strategic plan to address issues of concern, required actions and recommendation resulting from internal reviews or quality assessments.
- **Design Control Board (DCB):** Board consisting of four persons and a chairperson established to provide a process for adopting new standards, approving changes and/or deviations to the existing standards.
- **Design Criteria**: Metro's design criteria include description of elements governing the design of Metro facilities and systems. These criteria establish the design parameters that are to be satisfied to allow any element of the facility or system to consistently perform at the desired levels of service, reliability, and to facilitate its safe and efficient maintenance and operation.
- **Design Drawings**: The final drawings produced for the purpose of modifying a Metro Facility. Design drawings provided by Metro to designers are to be used as guides in developing contract (design) drawings.
- **Engineering Modification Instruction (EMI):** A document that describes an intended change to be performed by Metro personnel to the system with detailed instructions on how it is to be performed, materials, and methods to be used and a summary of the potential impacts of the intended change to the overall system.
- **Fatigue Risk Management:** Data driven means of continuously monitoring and maintaining fatigue related safety risk that aims to ensure relevant personnel are performing at adequate levels of alertness.
- **Hazard:** 49 C.F.R. Part 673 defines a hazard as any real or potential condition that can cause injury, illness, or death; damage to or loss of the facilities, equipment, rolling stock, or infrastructure of a public transportation system; or damage to the environment.
- **Hazard Management Module:** A role-based application designed to provide a central location for all internal and external reports as well as recommendations regarding system safety.
- **Incident:** An event or occurrence notable enough to be recorded in Maximo.
- **Key Performance Indicators (KPIs):** A quantifiable measure used to evaluate the success of an organization, employee, etc. in meeting objectives for performance.
- **Local Safety Committee (LSC):** Establishes and fosters a close working relationship with front-line employees, unions, safety, contracted operators (if applicable), and middle management regarding safety issues.
- **Maximo:** WMATA's Enterprise Asset Management (EAM) system used for work order, incident and defect tracking. Maximo Work Orders (WO) specify a particular task and the labor, materials, services and tools required to complete the task.
- **NICE:** A recording system on a scalable and secure platform, making it easy to record and manage interaction data from multiple channels and data sources in a single place.
- **On-the-job Training (OJT):** Employee training at the place of work while he or she is doing the actual job.
- **Operation and Maintenance Manual (O&M Manual**): An owner's manual that contains the information required for the operation and maintenance, along with manufacturers literature, As-built drawings, and signed test and commissioning sheets.
- **Policy/Instruction:** A set of principles, rules, and guidelines formulated or adopted by an organization to reach its long-term goals and typically published in a booklet or other form that is widely accessible. They are usually designed to influence and determine all major decisions and actions, and all activities take place within the boundaries set by them.
- **Preventive Maintenance Instruction (PMI):** Instructions detailing how to maintain equipment and facilities in a satisfactory operating condition by providing for systematic inspection, detection, and correction of incipient failures either before they occur or before they develop into major defects. Maintenance includes tests, measurements, adjustments, and parts replacements that are performed specifically to prevent faults from occurring.

- **Quality Control Plan (QCP):** Ensures that an organization, product or service is consistent. It has four main components: quality planning, quality assurance, quality control and quality improvement. Quality control is focused not only on product and service quality, but also on the means of achieving quality.
- **Safety and Security Certification Review Committee (SCRC):** Provides guidance for the safety and security certification of major construction and rehabilitation projects and vehicle procurement.
- **Safety Bulletin:** A notice issued to bring awareness to a common safety related problem.
- **Safety Hotline**: A web-based application which provides a way to record the relevant details of a safety-related communication between a person with a safety concern and a WMATA representative.
- **Shunt:** A low-resistance wire apparatus, which, when clamped to the parallel tracks, will create a short-circuit between them. This is done to mimic the conditions present when a locomotive or rail car is shorting a section of powered rail.
- **Specifications – Metro Standard Specifications:** These are specifications unique to Metro facilities and systems that produce the desired levels of quality control, performance, safety and similar qualities.
- **Standard Drawings:** Drawings approved by the Design Control Board as a standard and provided to designers. These drawings are intended to establish and maintain a consistent standard on all contracts in which they are used.
- **Standard Operating Procedure (SOP):** A document which delineates responsibilities and procedures for performing certain department functions.
- **System Configuration Management Plan (SCMP):** This is the document review and revision procedure described in the ATC-4000 manual. The SCMP describes the configuration management procedures and processes required to manage, evaluate and approve, and track the status of ATC system changes to maintain accurate records of all supporting drawings, specifications, standards and technical documents which support WMATA's ATC system. It is imperative that all WMATA employees and outside contractors engaged in the development, design, review, approval, implementation and testing of the ATC system adhere to the SCMP instructions in this manual.
- **System Safety Program Plan (SSPP):** The Washington Metropolitan Area Transit Authority SSPP consists of a series of required activities that must be undertaken to verify the safety of its customers, employees, emergency responders, and the public. It includes the application of management structure, safety analysis techniques, accident/incident investigation, internal safety auditing, hazard management, safety and security certification, emergency management, fire protection, and fire suppression requirements.
- **Temporary Change Plan (TCP):** A document that describes a temporary change to be performed by Metro personnel to the system with detailed instruction on how it is to be performed, materials, and methods to be used.
- **Virtual EOC:** A software program used to allow ELES technicians to give details and updated asset information to EOC and management.