



Washington Metropolitan Area Transit Authority

ANNUAL INTERNAL REVIEW 2017

Rail Operations Controllers Activities

QICO Internal Review

July 13, 2017



Quality Assurance, Internal Compliance & Oversight (QICO)

"Quality Trumps Quantity"



QICO INTERNAL REVIEW

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Internal Review Summary

Why QICO Performed This Review:

- This internal review is intended to provide Metro senior management with an assessment of the Rail Operations Control Center (ROCC) Supervisors (Controllers) performance of assigned duties and promote the actions needed to address areas of concern.
- QICO is independent from the functions it oversees, authorized by the Metro General Manager to conduct objective reviews with unrestricted access to all functions, records, assets and employees under its purview.

QICO's Methodology:

- QICO developed relevant review activities based on the Federal Transit Administration (FTA) Corrective Action Plans (CAPs), as well as the requirements in Permanent Orders T-6-10 Radio Protocols and R-17-02 Granting Foul Time, Standard Operating Procedures (SOPs) and ROCC Procedures Manual.
- QICO observed the controllers while on duty, assessed their conformance to requirements, reviewed records and key documents, listened to recordings of radio communication, interviewed key personnel and observed an Emergency Drill.
- Review findings and required actions are rated based on severity of risk, which ranges from 'Insignificant' to 'High' scale.

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

July 2017

Rail Operations Controllers Activities

QICO's Internal Review Results:

Refining ROCC processes and ensuring compliance will improve system safety and operational efficiency.

QICO's review identified and noted several **Wins** and **Areas for Improvement**:

- ✓ Sampled Rail Operations Control Center (ROCC) Controller training certifications are current.
- ✓ Observed consistent use of Foul-Time Checklists by ROCC Controllers.
- ✓ Previous lessons learned from incidents have been effectively implemented.
- Actions resulting from ROCC quality control checks are not consistently monitored or completed.
- Although specific areas for foul-time are communicated and acknowledged correctly, practices for blanket speed restriction announcements and response are inconsistent with requirements specified in the Permanent Order.
- ROCC management does not consistently log key personnel during incidents as required by the standard operating procedure (SOP).
- Despite being trained on updated radio protocols, ROCC Controllers are not consistently practicing all requirements outlined in the Permanent Order.

Required Actions:

- **QICO-ROC-17-01:** Introduce a process to continuously follow-up on the corrective actions driven by ROCC Quality Control Checklists to ensure ROCC controller performance is maintained and remedial actions are undertaken, including steps to ensure 100% compliance with Permanent Order T-16-10.
(Risk Rating: Low)
- **QICO-ROC-17-02:** Evaluate the practicality of Permanent Order T-16-10 as currently written, with regards to acknowledgement of blanket announcements for speed restrictions, and implement a solution that is effective and sustainable.
(Risk Rating: Moderate)
- **QICO-ROC-17-03:** ROCC establish methods to adhere to SOP #1A, 1A.5.1.3.5, during roadway incidents. This should include any interdepartmental coordination that may be required to ensure accurate accounting of personnel during incidents.
(Risk Rating: Elevated)

1 FUNCTION OVERVIEW

Rail Operations Control Center (ROCC)

The Rail Operations Control Center (ROCC) for WMATA’s Metrorail system is responsible for ensuring safe and reliable Metrorail service to the Washington metropolitan area. Rail Operations Control Center Supervisors, referred to as ROCC Controllers help, accomplish this mission by:

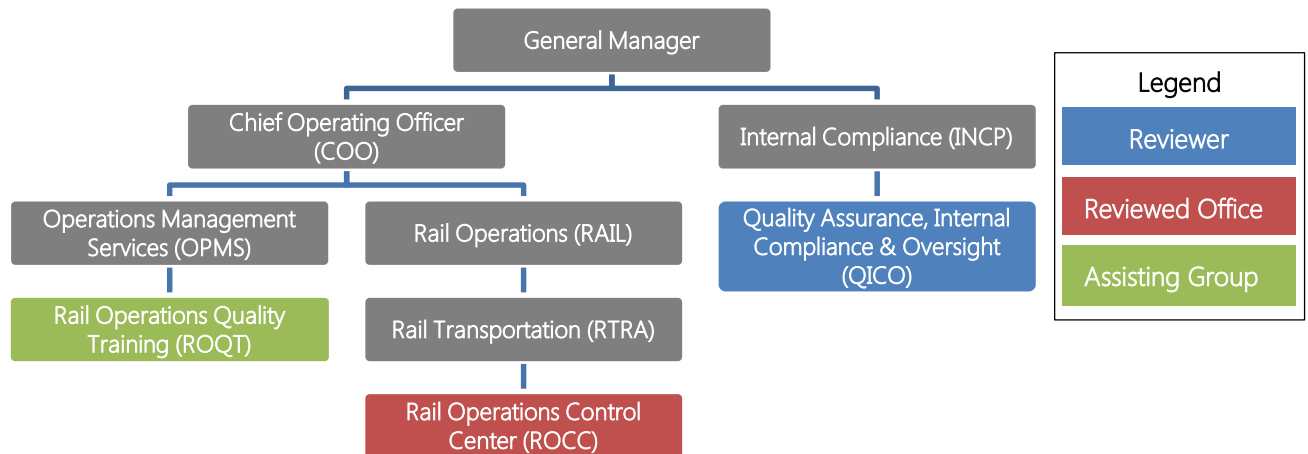
1. Controlling train movements through radio communication with train operators, changes to switch alignments at interlockings, and adjustments of train schedules using the Automatic Train Supervision (ATS) subsystem.
2. Managing emergency situations by contacting fire, police, and medical services as required, recording details of incidents on the roadway, and implementing speed restrictions until emergency corrective maintenance is dispatched.
3. Monitoring and controlling other Metrorail system components (traction power, tunnel ventilation, automatic fare collection, drainage pumps, chiller plants, and station sub-systems).

The [ROCC](#) (located at Carmen Turner Facility in Hyattsville, MD) monitors and controls train movements through three consoles, dividing the Metrorail system geographically ([REDACTED]). Each console is normally staffed by two controllers—a radio console supervisor and a train control supervisor. The radio console supervisor handles radio communication with field personnel (e.g. train operators) and the train control supervisor provides control over systems components (signals/interlocking, third rail breakers and ventilation fans). ROCC provides 24-hour coverage of each console through three 8-hour shifts. Voice communications between ROCC and field personnel are provided through a three-channel radio system corresponding to each console’s geographic area (Red, Blue/Orange/Silver, and Green/Yellow) and an in-house wayside telephone system.

2 REVIEW METHODOLOGY

Internal Review Stakeholders

The Rolling Stock Assurance branch of the **Office of Quality Assurance, Internal Compliance and Oversight (QICO)** conducted an internal review of ROCC, which resides within Rail Transportation (RTRA), within the Department of Rail Services (RAIL), under the Chief Operating Officer (COO). As shown below, QICO is independent of the function under review, reporting to the General Manager through Internal Compliance (INCP). QICO provides objective quality assurance and compliance services in order to improve the quality of Metrorail operations, processes and compliance to regulatory requirements.



QICO observed radio console and train control supervisors performing their roles in the Rail Operations Control Center (ROCC), interviewed ROCC employees (including management), reviewed ROCC records (including audio recordings) and governing procedures, and observed an emergency drill while being performed. This internal review notes both positive findings ([What Worked Well](#)) and negative findings ([Areas for Improvement](#)). The findings are rated based on severity of risk, which ranges from ‘Insignificant’ to ‘High.’ Recommendations are combined into several **Required Actions**, which summarize the steps actions owners must take to address deficiencies.

2.1 REVIEW SCOPE

Category	Description
On-Job Observation of Controllers in the ROCC	<ul style="list-style-type: none"> - QICO observed ROCC controllers performing their duties for the three consoles in the ROCC. Adherence to Permanent Order T-16-10 (Radio Protocols) was assessed as well as the use of procedural forms and checklists, incident data recording and reporting, and work environment conditions (workload and noise levels).
Interviews of Key Personnel	<ul style="list-style-type: none"> - ROCC Director (██████████) - ROCC Coordinator (██████████) - ROCC Superintendent (██████████) - ROCC Assistant Superintendent (██████████) - ROCC Controllers (██) - ROQT Director (██████████)
Review of Documentation and Records	<ul style="list-style-type: none"> - Permanent Order T-16-10 Radio Protocols - Permanent Order R-17-02 Granting Foul Time - Standard Operating Procedures (SOPs) - FTA Corrective Action Plan Status Report - ROCC Procedures Manual - Training Records - Incident Reports - Procedural forms and checklists - Noise Reduction Engineering Assessment - Backup ROCC facility testing records - Quality Control Checklists - ROCC Radio Recordings

2.2 REVIEW CRITERIA

Quality Measures		Definition
Quality of Work	Workmanship	Qualitative or quantitative measurement of material characteristics of work performed.
	Performance of Work	Qualitative or quantitative measurement of actions taken to complete work.
	Housekeeping	Assessment of site conditions; i.e. work zone organization and cleanliness.
	Quality Control Measures	Internal management controls that ensure the consistency and reliability of work performed.
	Materials and Tooling	Measurable properties of parts and tools used to perform work.
Records Management	Work Order Management	Protocols established to control maintenance scheduling, documentation, and tracking.
	Processes	Documented requirements for departmental activities.
	Records Storage and Retention	Documented requirements for the maintenance of records and documentation.
Safety	Roadway Worker Protection (RWP)	Documented requirements for work zone setup and personal protective equipment.
	Applicable Job Safety Requirements	Any documented safety requirements that apply to specific work performed.
Compliance with Standards	Technical Specifications	Engineering requirements that outline the minimum requirements for material and workmanship standards.
	Business Practices	Formal documented standards governing business practices; i.e. P/T's, departmental policies, etc.
	Procedural Requirements	Formal documented standards that identify specific actions to be taken; i.e. who, what, when, where, how?
	Regulatory Findings	Findings issued by outside regulatory entities (FTA, NTSB, GAO) that generate recommendations or required actions.
	Internal Findings	Findings issued by internal oversight entities (OIG, QICO, SAFE) that generate recommendations or required actions.

2.3 RISK ASSESSMENT

Note: Required actions are rated based on severity of risk, which ranges from 'Insignificant' to 'High' scale. Refer to [Appendix A](#) (Risk Assessment) for details.

Definitions

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

3 WHAT WORKED WELL?

Measure	Finding	Description
Compliance with Standards	Sampled ROCC Controller training certifications were current and complete.	<ul style="list-style-type: none"> - Training records from Rail Operations Quality Training (ROQT) of three random controllers were sampled for compliance. Records indicated that the three controllers were trained on-time and their annual certification status is current as required for both the overhauled training curriculum (including operational certification as well as Roadway Worker Protection (RWP) Level 4).
Compliance with Standards	Consistent use of foul time checklists by ROCC Controllers was observed.	<ul style="list-style-type: none"> - ROCC Controllers utilized foul time checklists in coordination with updated roadway access sheets to ensure requests were addressed appropriately.
Records Management	"Lessons Learned" documents reinforce organizational learning.	<ul style="list-style-type: none"> - The Lessons Learned document is frequently used and updated across the ROCC to share knowledge related to specific incidents and near misses to make sure that mistakes are not repeated and best practices are used in similar occurrences.

4 AREAS FOR IMPROVEMENT

Note: Findings are rated based on the associated risk to the Authority's objectives, and is provided as *Type of Risk* followed by a color coded *Risk Severity* (Impact rating, Probability rating).

Refer to [Appendix A: Risk Assessment](#) for further details

Measure	Finding	Description
Quality of Work	<p>F-ROC-17-01:</p> <p>Corrective actions taken as a result of ROCC quality control checks are not consistently monitored or completed.</p> <p><u>Process Risk</u> <u>Low (2,3)</u> ■</p>	<ul style="list-style-type: none"> - QICO's review of ROCC Quality Control Checklists indicated instances of re-training requirements when Controllers fail to follow procedures. However, after additional review, QICO found that re-training for at least one Controller had been scheduled, but never occurred. - QICO contacted Rail Operations Quality Training (ROQT) for follow-up and the office confirmed that the controller was never scheduled for re-training; ROCC Management Team responded immediately to the finding and re-training for the controller was scheduled following QICO's notification. <p>Recommendation: Introduce a process to continuously follow-up on the corrective actions driven by ROCC Quality Control Checklists to ensure ROCC controller performance is maintained and remedial actions are undertaken.</p>

4 AREAS FOR IMPROVEMENT

Note: Findings are rated based on the associated risk to the Authority's objectives, and is provided as *Type of Risk* followed by a color coded *Risk Severity* (Impact rating, Probability rating).

Refer to [Appendix A: Risk Assessment](#) for further details

Measure	Finding	Description
Compliance with Standards	<p>F-ROC-17-02:</p> <p>Although blanket speed restrictions for trains are being communicated via radio, Train Operators do not provide positive acknowledgment of these restrictions.</p> <p><i>Process Risk</i> <i>Moderate (3, 3)</i> ■</p>	<ul style="list-style-type: none"> - During QICO's observation of radio console supervisors (controllers) at ROCC, it was noted that blanket speed restriction messages were not acknowledged by train operators as required in Permanent Order T-16-10. - ROCC management has indicated that alternative methods for communicating blanket speed restrictions may be more effective in radio communications through all observations the requirement for repeat of blanket speed restrictions was not complied with in any circumstance. - QICO noted that communication for foul-time and area-specific speed restrictions were necessary, communication between ROCC Controllers and Train Operators included verbatim acknowledgment to confirm instructions. <p>Recommendation: Evaluate the practicality of the Permanent Order as currently written, with regards to acknowledgement of blanket announcements for speed restrictions, and implement a solution that is effective and sustainable.</p>
Compliance with Standards	<p>F-ROC-17-03:</p> <p>Although Rail Incident reports include a list of personnel on-site after the fact, ROCC does not maintain a log sheet to account for each individual during each incident, as required in SOP #1A.</p> <p><i>Process Risk</i> <i>Elevated (3, 5)</i> ■</p>	<ul style="list-style-type: none"> - Upon review of Incident ID [REDACTED] and its associated audio recording, QICO noted there was no incident log. This includes denoting individuals assigned as the Incident Commander (IC), On Scene Commander (OSC), and ROCC-assigned liaison. SOP #1A indicates that the Assistant Superintendent shall maintain such a log during incidents. - Upon QICO inquiring about the log, the ROCC Management responded with the following: "Notes are kept during the incident regarding SOP 1A 5.1.3.5, necessary information is then captured in the incident report for the aforementioned incident." <p>Recommendation: ROCC establish methods to adhere to SOP #1A, 1A.5.1.3.5, during roadway incidents. This should include any interdepartmental coordination that may be required to ensure accurate accounting of personnel during incidents.</p>

4 AREAS FOR IMPROVEMENT

Note: Findings are rated based on the associated risk to the Authority's objectives, and is provided as *Type of Risk* followed by a color coded *Risk Severity* (Impact rating, Probability rating).

Refer to [Appendix A: Risk Assessment](#) for further details

Measure	Finding	Description
Compliance with Standards	<p>F-ROC-17-04: Despite training and monitoring efforts, ROCC Controllers are not consistently adhering to WMATA's radio protocol as outlined in Permanent Order T-16-10.</p> <p><i>Process Risk</i> <i>Elevated (3, 5)</i> ■</p>	<ul style="list-style-type: none"> - While observing radio protocol in real time, Controllers are fully compliant with Permanent Order T-16-10, however in listening to recordings compliance is under 50% for some requirements including closing out of conversation by stating "Central Out", and requiring "100% repeat of all instructions". - Current training and certification requirements for Controllers includes updated radio protocols outlined in the Permanent Order. - ROCC Quality Control checklists indicate compliance with radio protocols when being observed by supervisory personnel. <p>Recommendation: Assess current Quality Control processes to ensure 100% compliance with Permanent Order T-16-10.</p>

5 OTHER OBSERVATIONS

Measure	Observation	Description
Quality of Work	<p>O-ROC-17-01: The ROCC Controllers team remains understaffed and faces challenges due to employee turnover.</p>	<ul style="list-style-type: none"> - In interviews conducted with ROCC controllers, it was noted that high workload was an issue due to the lack of complete staff. Without redundancy, controllers cannot effectively take breaks, as this would leave the burden of both functions at the console (radio communication and train control supervision) to a single controller. This issue is exacerbated by roadway incidents, during which controllers must also record incident events while taking orders from management. - Understaffing was also confirmed by the ROCC Management Team. They mentioned that there are plans to close the staffing gap with nine (9) potential recruits in training and additional recruiting activities scheduled (interviews and a public hiring day). - Understaffing is linked to a high rate of employee turnover within the ROCC. This was confirmed by the Management Team, plans are in place to improve the retention of the employees as per the Customer Service, Operations and Security Committee, Information Item III-B, dated June 8, 2017. - As per the Position Management Report, extracted at July 11, 2017, a total of 44 positions are available, 39 are filled, which leaves 5 open positions.

5 OTHER OBSERVATIONS

Measure	Observation	Description
Compliance with Standards	<p>O-ROC-17-02: While initial territory familiarization took place, follow-up training has been delayed due to staffing challenges.</p>	<ul style="list-style-type: none"> - Territory Familiarization training provides ROCC controllers experience in the Metrorail roadway for the territories they will oversee from their ROCC console. - In interviews conducted with controllers, it was noted that the Territory Familiarization training is not mandatory. Whereas employees with previous rail operations experience within WMATA may already be familiar with the territories they are overseeing, it is important for new employees from outside WMATA to attend the training. - The ROCC Management Team noted that Territory Familiarization training is being conducted during the initial certification for ROCC controllers; however, during re-certification training, it is difficult for controllers to attend due to the understaffing issue. - The ROCC Management Team noted that a video developed by ROQT of the roadway taken from a train mounted camera is being circulated to help with the territory familiarization. - As per Customer Service, Operations and Security Committee, Information Item III-B, dated June 8, 2017, a computer based training program is being finalized that will use video to increase situational awareness for operators of both Class I and Class II vehicles and to provide system familiarization for ROCC controllers.
Quality of Work	<p>O-ROC-17-03: Ventilation Control testing is still being conducted by Central Control Supervisors.</p>	<ul style="list-style-type: none"> - In interviews conducted with controllers, it was noted that they receive requests to operate the ventilation system (fans) for the purpose of testing, which impose additional workload outside of train operations.
Quality of Work	<p>O-ROC-17-04: Noise Reduction engineering assessment recommended actions have not been implemented yet.</p>	<ul style="list-style-type: none"> - Short term noise reduction solutions suggested by the Noise Assessment conducted by BRT Services dated November 24, 2015 have not been implemented yet. - As per Customer Service, Operations and Security Committee, Information Item III-B, dated June 8, 2017, a scope of work is being developed to implement contractor recommended measures to reduce noise. Options include wrapping pillars with noise reducing materials, applying sound absorbing floor mats, and installing a glass apron for a situational area within ROCC.

6 SUMMARY OF REQUIRED ACTIONS

Note: Findings are rated based on the associated risk to organization's objectives, provided as *Type of Risk* followed by Risk Severity (Impact rating, Probability rating) Color Coding.

Refer to [Appendix A: Risk Assessment](#) for further details

Required Action	Finding	Owner
QICO-ROC-17-01: Introduce a process to continuously follow-up on the corrective actions driven by ROCC Quality Control Checklists to ensure ROCC controller performance is maintained and remedial actions are undertaken, including steps to ensure 100% compliance with Permanent Order T-16-10. Elevated ■■■	F-ROCC-17-01 ■■■ Corrective actions taken as a result of ROCC quality control checks are not consistently monitored or completed.	ROCC
	F-ROCC-17-04 ■■■ Despite training and monitoring efforts, ROCC Controllers are not consistently adhering to WMATA's radio protocol as outlined in Permanent Order T-16-10.	ROCC
QICO-ROC-17-02 Evaluate the practicality of Permanent Order T-16-10 as currently written, with regards to acknowledgement of blanket announcements for speed restrictions, and implement a solution that is effective and sustainable. Moderate ■■■	F-ROCC-17-02 ■■■ Although blanket speed restrictions for trains are being communicated via radio, Train Operators do not provide positive acknowledgment of these restrictions.	ROCC
QICO-ROC-17-03: ROCC establish methods to adhere to SOP #1A, 1A.5.1.3.5, during roadway incidents. This should include any interdepartmental coordination that may be required to ensure accurate accounting of personnel during incidents. Elevated ■■■	F-ROCC-17-03 ■■■ Although Rail Incident reports include a list of personnel on-site after the fact, ROCC does not maintain a log sheet to account for each individual during each incident, as required in SOP #1A.	ROCC

7 CORRECTIVE ACTION PLANS




INTERNAL REVIEW

Rail Operations Control Center Communications

In response to the internal review report for Metro's Rail Operations Control Center (ROCC) Rail Traffic Controller (RTC) responsibilities dated July 13, 2017, the office of Quality Assurance, Internal Compliance & Oversight (QICO) has coordinated with the Operations department to develop three comprehensive CAPs. Each CAP outlines the findings, recommendations and requirements to be addressed, ad a detailed action plan outlining responsible parties and specific actionable items.

EXECUTIVE LEADERSHIP OF RESPONSIBLE PARTIES

Corrective Action Plan Commitment



Joseph Leader
Chief Operating Officer (COO)

8/9/17
Date

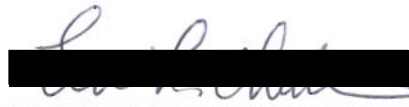
WMATA INTERNAL OVERSIGHT

Corrective Action Plan Acknowledgement



Angel Peña
Managing Director, Quality Assurance, Internal Compliance & Oversight (QICO)

08/09/17
Date



Eric Christensen
Chief, Internal Compliance (INCP)

8/10/17
Date



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

8/10/17
Date



CORRECTIVE ACTION PLAN

Purpose and Scope

On July 13, 2017 QICO issued a comprehensive Report from an internal review into Rail Operations Control Center (ROCC) Communications- Rail Traffic Controller (RTC) Responsibilities. This Corrective Action Plan (CAP) has been developed to address the finding and required actions per QICO-ROC-17-01.

QICO Findings

QICO Recommendations

F-ROC-17-01: Corrective actions taken as a result of ROCC quality control checks are not consistently monitored or completed.

Introduce a process to continuously follow-up on the corrective actions driven by ROCC Quality Control Checklists to ensure ROCC controller performance is maintained and remedial actions are undertaken.

F-ROC-17-04: Despite training and monitoring efforts, ROCC Controllers are not consistently adhering to WMATA’s radio protocol, as outlined in Permanent Order T- 16-10.

Assess current Quality Control processes to ensure 100% compliance with Permanent Order T-16-10.

Required Actions

QICO-ROC-17-01: Introduce a process to continuously follow-up on the corrective actions driven by ROCC Quality Control Checklists to ensure ROCC controller performance is maintained and remedial actions are undertaken, including steps to ensure 100% compliance with Permanent Order T-16-10.

Risk Rating: Elevated

Plan Description

ROCC will establish a rules compliance process, including written instructions for remedial actions when nonconformance is identified. This process will monitor performance of ROCC Controllers while providing methods for training and lessons learned.

Business Impact – Budget/Cost Estimate

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

PLAN SCHEDULE

Actionable items		Description	Responsible Party*	Estimated Start	Estimated Completion
1	Rules Compliance Program	ROCC Rules Compliance Program process will monitor ROCC Controller performance, issue remedial actions and track progress through closure.	Deltrin Harris (ROCC)	08/15/17	11/20/17
2	Remedial Action Log	Tracking mechanism for documenting nonconformance and subsequent remedial actions, showing status of actions through closure.	Deltrin Harris (ROCC)	11/20/17	12/20/17
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	12/20/17	01/17/18

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



COMPLETION DOCUMENTATION

Performance Measures

- Evidence of ROCC Rules Compliance Program implementation, as described in actionable item #1.
- Evidence of effective tracking of remedial actions, including closeout of completed items, as described in actionable item #2.

RESPONSIBLE PARTIES

ROCC	Deltrin Harris	Deltrin Harris
RTRA	Lisa Woodruff	Lisa Woodruff

SECOND LEVEL RESPONSIBILITY

AGM RAIL	Andrew Off	Andrew Off
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CORRECTIVE ACTION PLAN

Purpose and Scope

On July 13, 2017 QICO issued a comprehensive Report from an internal review into Rail Operations Control Center (ROCC) Communications- Rail Traffic Controller (RTC) Responsibilities. This Corrective Action Plan (CAP) has been developed to address the finding and required action per QICO-ROC-17-02.

QICO Finding

QICO Recommendation

F-ROC-17-02: Although blanket speed restrictions for trains are being communicated via radio, Train Operators do not provide positive acknowledgment of these restrictions.

Evaluate the practicality of Permanent Order T-16-10 as currently written, with regards to acknowledgement of blanket announcements for speed restrictions, and implement a solution that is effective and sustainable.

Required Action

QICO-ROC-17-02: Evaluate the practicality of Permanent Order T-16-10 as currently written, with regards to acknowledgement of blanket announcements for speed restrictions, and implement a solution that is effective and sustainable.

Risk Rating: Moderate

Plan Description

ROCC will evaluate the current practices dictated in Permanent Order T-16-10, regarding train operator acknowledgement of blanket speed restrictions. This evaluation will take into account communication strategies and necessary roadway safety concerns.

Business Impact – Budget/Cost Estimate

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

PLAN SCHEDULE

Actionable items		Description	Responsible Party*	Estimated Start	Estimated Completion
1	T-16-10 Review	Review of required action for repeat backs for blanket announcements for train operators.	Deltrin Harris (ROCC), Lisa Woodruff (RTRA),	08/15/17	11/17/17
2	Implementation of Review	Implement actions required after multi-departmental review of Permanent Order T-16-10, issuing clarification or updated Permanent Order as determined in the review.	Lisa Woodruff (RTRA), Deltrin Harris (ROCC)	11/17/17	12/18/17
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	12/18/17	01/17/18

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



COMPLETION DOCUMENTATION

Performance Measures

- Evidence of Permanent Order review, as outlined in actionable item #1. This could include meeting minutes and/or discussion notes from coordination meetings.
- 100% measured compliance with clarified or updated rules as determined in actionable item #2.

RESPONSIBLE PARTIES

ROCC	Deltrin Harris	Deltrin Harris
RTRA	Lisa Woodruff	Lisa Woodruff

SECOND LEVEL RESPONSIBILITY

AGM RAIL	Andrew Off	Andrew Off
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CORRECTIVE ACTION PLAN

Purpose and Scope

On July 13, 2017 QICO issued a comprehensive Report from an internal review into Rail Operations Control Center (ROCC) Communications- Rail Traffic Controller (RTC) Responsibilities. This Corrective Action Plan (CAP) has been developed to address the finding and required action per QICO-ROC-17-03.

QICO Finding

F-ROC-17-03: Although Rail Incident reports include a list of personnel on-site after the fact, ROCC does not maintain a log sheet to account for each individual during each incident, as required in SOP #1A.

QICO Recommendation

ROCC establish methods to adhere to SOP #1A, 1A.5.1.3.5, during roadway incidents. This should include any interdepartmental coordination that may be required to ensure accurate accounting of personnel during incidents.

Required Action

QICO-ROC-17-03: ROCC establish methods to adhere to SOP #1A, 1A.5.1.3.5, during roadway incidents. This should include any interdepartmental coordination that may be required to ensure accurate accounting of personnel during incidents.

Risk Rating: Elevated ■

Plan Description

ROCC will evaluate current practices used to account for key personnel in the field during incidents and make necessary adjustments to ensure compliance with requirements outlined in SOP #1A.

Business Impact – Budget/Cost Estimate

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

PLAN SCHEDULE

Actionable items		Description	Responsible Party*	Estimated Start	Estimated Completion
1	Operational Evaluation	Evaluation of ROCC practices during incidents, regarding the tracking/logging of key personnel in the field.	Deltrin Harris (ROCC)	08/15/17	09/18/17
2	Implementation Strategy	Written instructions for use in ROCC, outlining duties and responsibilities relating to logging personnel during incidents.	Deltrin Harris (ROCC)	09/18/17	10/25/17
3	Incident Logs	ROCC logs of individuals assigned to IC, OSC, Liaison positions and the location of command post during incidents.	Deltrin Harris (ROCC)	10/25/17	11/27/17
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	11/27/17	12/27/17

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



COMPLETION DOCUMENTATION

Performance Measures

- 100% measured compliance with SOP #1A, with regards to logging of key personnel, as outlined in actionable items #2 and #3.

RESPONSIBLE PARTIES

ROCC	Deltrin Harris	Deltrin Harris
RTRA	Lisa Woodruff	Lisa Woodruff

SECOND LEVEL RESPONSIBILITY

AGM RAIL	Andrew Off	Andrew Off
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8 SUPPLEMENTAL MATERIAL

8.1 APPENDIX A: RISK ASSESSMENT

APPENDIX A: RISK ASSESSMENT

Risk Assessment Methodology

What is Risk?

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

- *Safety* – Risk associated with harm to customers and employees and critical equipment or asset safety
- *Governance* – Risks associated with internal controls and compliance
- *Operational* – Risk related to inefficient and ineffective business processes, disruption to normal business operations, non-compliance, negative public relations, breach to physical security, etc.
- *External* – Risks related to changing regulations, unfavourable economic conditions, industry or customer needs change, litigation and damage/loss to company assets
- *Financial* – Risks associated with uncollectable receivables, incorrect financial models or analysis, fluctuation in capital levels and adverse movement of interest rates

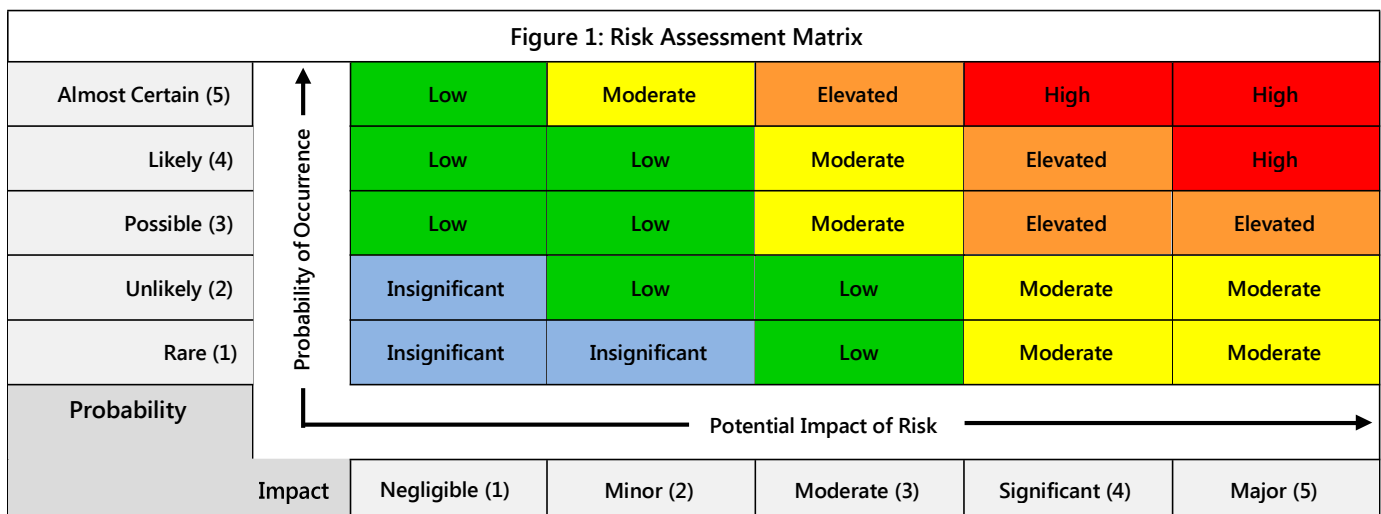
- *Technological* – Risk associated with unauthorized access to information, unavailable or unreliable information, technology not meeting business needs and compromised information security

Risk Assessment

The following risk matrix (Figure 1) was 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 probability of occurrence (see vertical axis in Figure 1) and the significance of their impact (see horizontal 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 A: RISK ASSESSMENT

Risk Assessment Methodology

Probability of Occurrence of Risk Events Defined

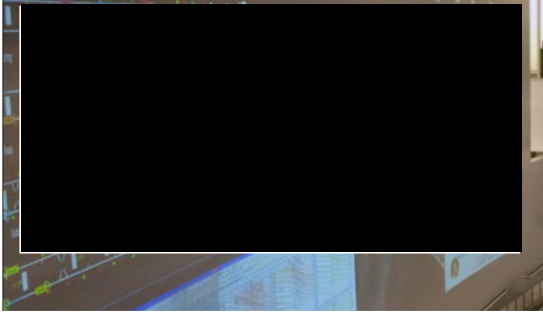
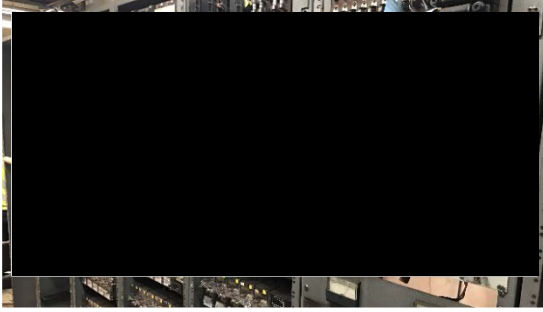
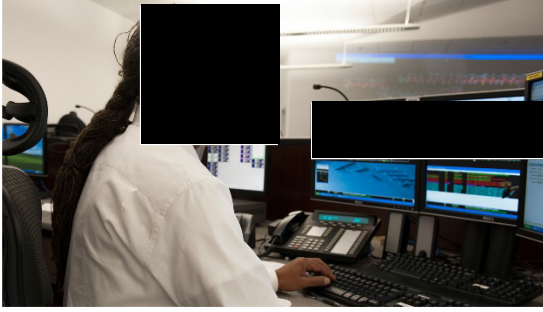

Rare | 1 – Reasonable assumption that this risk will not occur
Unlikely | 2 – Reasonable assumption that this risk will likely not occur
Possible | 3 – Reasonable assumption that this risk may occur
Likely | 4 – Reasonable assumption that this risk will likely occur
Almost Certain | 5 – Reasonable assumption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

Potential Impact of Risk Events Defined

Negligible | 1 – Unlikely to cause the activity to fail to meet part of its objectives.
Minor | 2 – 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.
Moderate | 3 – 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 significant financial losses, reductions to or ineffectiveness of operations, non-compliance with laws and regulations, sizable waste of resources, etc.
Significant | 4 – 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.
Major | 5 – 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.

8.2 APPENDIX B: DEFINITIONS

APPENDIX B: Definitions

Definitions	Photos
<p>Advanced Information Management (AIM)</p> <p>The Advanced Information Management (AIM) system serves as the nerve center of the entire rail operations network. Critical activities operated through the AIM include: control of trains, power, station ventilation, voice and data communications, and monitoring of gas and fire sensors.</p>	
<p>Automatic Train Control (ATC)</p> <p>Automatic Train Control (ATC) is a general class of train protection systems for railways that involves a speed control mechanism in response to external inputs. At WMATA, ATC is comprised of three subsystems: Automatic Train Protection (ATP), Automatic Train Operation (ATO), and Automatic Train Supervision (ATS).</p>	
<p>Central Control Supervisor</p> <p>The Central Control Supervisor, referred to as ROCC Controller, is primarily responsible for supervising and coordinating all mainline activities, to include train operations and maintenance activities. There are two Central Control Supervisors per console. A Radio Console Supervisor which mainly handles radio communication related tasks and a Train Control Supervisor which mainly handles console related tasks such as operating signals/interlocking, third rail breakers and ventilation fans.</p>	
<p>Foul Time (FT)</p> <p>A method of roadway protection in which the Roadway Worker In Charge (RWIC) requests ROCC to stop all trains and track equipment until all personnel are clear of track. This is used only for short periods in specific track segments, such as work areas, blind spots and no clearance zones.</p>	

APPENDIX B: Definitions

Definitions

Lessons Learned

A tool that provides a powerful method for improving work processes, facility or equipment design, operations, quality and safety. Sharing lessons learned from an adverse work practice or experience can help reduce or avoid future incidents.

Photos



Permissive Block

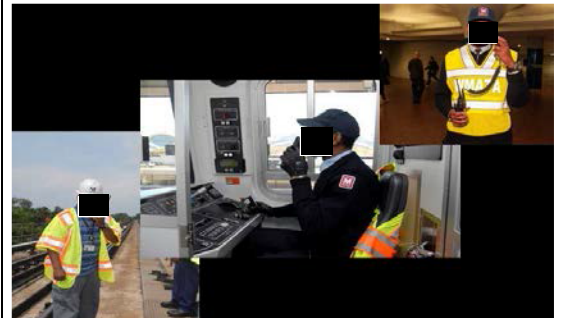
A permissive block is a section of a clear track ahead of a train in the established direction of traffic up to a specific point (limit) into no other train, vehicle or track obstruction is permitted.



Radio Protocols

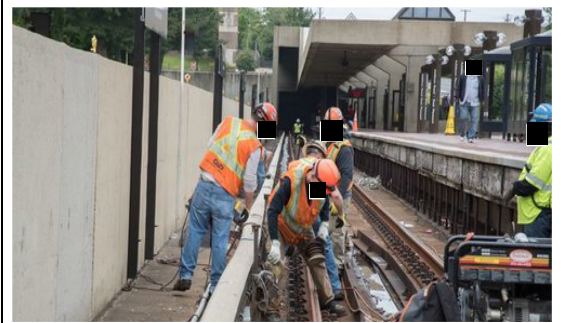
Formal authorized standard verbiage to be used in communicating certain terms and acknowledgments through radio communication.

The WMATA radio communications system permits digital two-way communication between Train Operators, Rail Operations Control Center (ROCC), Rail Operations Information Center (ROIC), Station Managers, Work Crews, Line Supervisors and Rail Supervisors at key points, terminals and yards.


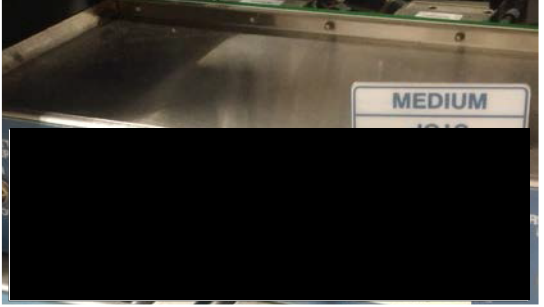


Roadway Worker Protection (RWP)

Roadway Worker Protection (RWP) is a means of providing a safe work zone for employees and minimizing the dangers on the roadway. These include the risk of getting stuck by moving vehicles or being exposed to the third rail.



APPENDIX B: Definitions

Definitions	Photos
<p>ROCC</p> <p>Rail Operations Control Center. The ROCC is responsible for providing effective control over train mainline and yard movements, station activities, mainline systems (Power, Automatic Train Control (ATC), and Automatic Fare Collections (AFC)) and communications to ensure safe, secure and efficient passenger movement in accordance with the Authority's Mission Statement and Espoused Values.</p>	
<p>Speed Restriction</p> <p>A given speed less than the normal operating speed for a section for track or rail vehicle/equipment. This speed is imposed by verbal instructions, written notices (i.e. RSA's or general orders), flagging procedures and/or speed commands issued by ROCC to mitigate special situations.</p>	

8.3 APPENDIX C: APPLICATION OF REGULATORY CAPs

APPENDIX C: APPLICATION OF REGULATORY CAPs

Measure	Required Actions	QICO Review During Review
<p>Regulatory Findings – FTA</p>	<p>CAP R-1-1-a</p> <p>WMATA must fully staff the Rail Operations Control Center (ROCC).</p> <p>Status as of 8/8/2017: Open/Past Due</p>	<ul style="list-style-type: none"> ✓ ROCC Management confirmed that there are plans to close the staffing gap. Several controllers are in training to join the ROCC team, and a hiring day event is held on the July 29 2017, which was open to the public. ✗ ROCC is currently understaffed, as observed and then confirmed by Train Controllers, Assistant Superintendent and the ROCC Director.
<p>Regulatory Findings – FTA</p>	<p>CAP R-1-2-a</p> <p>WMATA must complete and maintain required annual re-certification for Rail Traffic Controllers.</p> <p>Status as of 8/8/2017: Open/Past Due</p>	<ul style="list-style-type: none"> ✓ Three random ROCC Controllers were sampled and their training records were checked with the Rail Operation Quality Training Department (ROQT). They were confirmed to be in compliance.
<p>Regulatory Findings – FTA</p>	<p>CAP R-1-3-a</p> <p>WMATA must establish a program to provide each Rail Traffic Controller (RTC) with mandatory road days for territory familiarization.</p> <p>Status as of 8/8/2017: Open/Past Due</p>	<ul style="list-style-type: none"> ✓ Initial certification road familiarization requirements were met; however, re-certification road familiarization requirements were not met due to lack of staffing as confirmed by ROCC Management. ✓ A video developed by ROQT of the roadway taken from a train mounted camera is being circulated to help with the road familiarization. ✓ The territory familiarization training program will resume upon the complete staffing of the ROCC as confirmed by the ROCC Management.
<p>Regulatory Findings – FTA</p>	<p>CAP R-1-3-b</p> <p>WMATA must require all Rail Traffic Controllers to obtain and maintain Level 4 RWP training and certification.</p> <p>Status as of 8/8/2017: Open/Past Due</p>	<ul style="list-style-type: none"> ✓ Three (3) random ROCC Controllers were sampled. Their RWP level 4 training records were checked with ROQT and confirmed to be compliant.

APPENDIX C: APPLICATION OF REGULATORY CAPs

Measure	Required Actions	QICO Review During Review
<p>Regulatory Findings – FTA</p>	<p>CAP R-1-4-a</p> <p>WMATA must complete its assessment regarding identification of critical versus non-critical notifications and alarms in the ROCC.</p> <p>Status as of 8/8/2017: Closed</p>	<p>✓ As per the interview with the Assistant Superintendent and as per ROCC Procedures Manual 11.1, page 53, incidents occurring on the Metrorail System requiring assistance of other departments or having the potential of causing delays to customers shall be reported to the Assistant Superintendent within two (2) minutes.</p>
<p>Regulatory Findings – FTA</p>	<p>CAP R-1-4-b</p> <p>WMATA must conduct an engineering assessment, and implement the results, regarding options to reduce noise in the ROCC.</p> <p>Status as of 8/8/2017: Under FTA Review</p>	<p>✗ According to ROCC Management, the review has been completed by the engineering team and they are in process of introducing a plan that involves sound damping wall panels and noise reducing floor rugs. Reviews completed by BRT services (third party service provider) dated November 24, 2015 were checked by QICO - short term solutions such as noise absorbing tiles and noise absorbing panels on columns have not been implemented.</p>
<p>Regulatory Findings – FTA</p>	<p>CAP R-1-4-C</p> <p>Until such time as electronic records of train movement are readily available to on-duty Rail Traffic Controllers, a paper-based record of all movements shall be maintained.</p> <p>Status as of 8/8/2017: Closed</p>	<p>✓ A document called “Headway” is available for Train Controllers containing the scheduled movements of trains, and deviation from schedule is recorded manually by the controllers in the Daily Summary of Train Operations sheet.</p>
<p>Regulatory Findings – FTA</p>	<p>CAP R-1-5-a</p> <p>WMATA must ensure the Rail Traffic Controller workload and distraction do not interfere with the safe and efficient movement of trains.</p> <p>Status as of 8/8/2017: Addressing FTA Comments</p>	<p>✗ The two (2) interviewed Rail Traffic Controllers both confirmed that during incidents some things might be missed; they have to manage radio communication, take and implement orders and record in detail all events that occur at the same time. Both controllers clearly mentioned that additional support is needed.</p>

APPENDIX C: APPLICATION OF REGULATORY CAPs

Measure	Required Actions	QICO Review During Review
<p>Regulatory Findings – FTA</p>	<p>CAP R-1-6-a</p> <p>WMATA must establish and enforce a proper protocol for language and terminology that is used over the radio – to include safety related instructions.</p> <p>Status as of 6/16/2017: Closed</p>	<p>✓ QICO’s in-person observation of ROCC Radio controllers on three (3) consoles on June 26 2017 found that all personnel were compliant with this requirement.</p>
<p>Regulatory Findings – FTA</p>	<p>CAP R-1-6-b</p> <p>As part of the radio protocol required in R-1-6-a, WMATA must establish an approach for communicating and managing all speed restrictions.</p> <p>Status as of 8/8/2017: Closed</p>	<p>✓ As per Permanent Order T-16-10, 1.79, page 1, speed restrictions must always be acknowledged by each Train Operator, even when a blanket message is broadcast from Central Control. However, ROCC has indicated that this methodology is not manageable for open radio communications and is examining potential alternatives.</p>
<p>Regulatory Findings – FTA</p>	<p>CAP R-1-7-a</p> <p>WMATA must establish procedural checklists for ROCC staff to implement the Standard Operating Procedures attached to the Metrorail Handbook.</p> <p>Status as of 8/8/2017: Addressing FTA Comments</p>	<p>✓ As per ROCC Procedures Manual section 15.0 Major Incident Checklist</p>

APPENDIX C: APPLICATION OF REGULATORY CAPs

Measure	Required Actions	QICO Review During Review
<p>Regulatory Findings – FTA</p>	<p>CAP R-1-8-a</p> <p>WMATA must establish a clear policy that prohibits distractions from the use of cellphones and other electronic devices in the ROCC.</p> <p>Status as of 8/8/2017: Closed</p>	<ul style="list-style-type: none"> ✓ A policy is in place as per POLICY/INSTRUCTION: 10.3/4, 5.0.4. ✓ Awareness of the policy is evident through the interviews done with the Train Controllers and the observation of the controllers inside the ROCC facility. ✓ Visual signage was noted at the door leading to the Rail ROCC facility, stating that cell phones are not permitted beyond this point. ✓ It was noted that some members of the ROCC Management were occasionally using a cell phone. This is corroborated by interviewed Controllers as in compliance with policy, as it is a WMATA-issued cell phone.
<p>Regulatory Findings – FTA</p>	<p>CAP R-1-9-a</p> <p>Until such time as electronic transfer records are implemented, WMATA must ensure that its Rail Traffic Controller use paper-based logs.</p> <p>Status as of 8/8/2017: Addressing FTA Comments</p>	<ul style="list-style-type: none"> ✓ As per in-person observations of ROCC, interviews with Train Controllers and ROCC Procedures Manual, the “Daily Summary of Train Operations” sheets are manually completed by Controllers. It was also mentioned during the interviews that they started to enter the data electronically by personnel other than the on-duty Controllers.
<p>Regulatory Findings – FTA</p>	<p>CAP R-1-10-a</p> <p>WMATA must establish an on-going “efficiency” testing program for Rail Traffic Controllers to evaluate their in-service performance and competency.</p> <p>Status as of 8/8/2017: Under FTA Review</p>	<ul style="list-style-type: none"> ✓ ROCC provided samples of performance evaluation audits performed to assess the Train Controllers as following: <ul style="list-style-type: none"> - ROCC Weekly Compliance Form, Date 05/10/17. - ROCC Incident Management and Communication Quality Control Checklist, Date 04/14/2017. - ROCC Incident Management and Communication Quality Control Checklist, Date 04/27/2017. - ROCC Incident Management and Communication Quality Control Checklist, Date 05/10/2017. - ROCC Incident Management and Communication Quality Control Checklist, Date 05/11/2017. ✗ Upon further review of the Quality Control Checklist dated 04/27/2017, a Radio Controller was required to attend additional training. Upon checking the training records with the ROQT department it was evident that scheduled training was cancelled and was not rescheduled. NOTE: <i>Upon reporting the finding to ROCC Management Team, the training was quickly re-scheduled and implemented at 7/6/2017 as per the communicated training record.</i>

APPENDIX C: APPLICATION OF REGULATORY CAPs

Measure	Required Actions	QICO Review During Review
<p>Regulatory Findings – FTA</p>	<p>CAP R-1-11-a</p> <p>WMATA must establish an independent committee to evaluate and monitor the recruitment of Rail Traffic Controllers trainees.</p> <p>Status as of 8/8/2017: Closed</p>	<p>✓ As per the interviews with ROCC Management, a member of Labor Relations and/or Humans Resources are present in the interviews.</p>
<p>Regulatory Findings – FTA</p>	<p>CAP R-1-12-a</p> <p>WMATA must overhaul, correct, revise and improve its training program for Rail Traffic Controllers.</p> <p>Status as of 8/8/2017: Closed</p>	<p>✓ As per the interviews with the Train Controllers, ROCC Management and ROQT Director, the training material has been overhauled through a third party subject matter expert from Canada, and the updated curriculum is provided. Frequent reviews and updates are being completed on the curriculum as new practices are being introduced.</p>
<p>Regulatory Findings – FTA</p>	<p>CAP R-1-13-a</p> <p>WMATA must expand the focus of its accidents investigation process to include an active review of the actions of the ROCC.</p> <p>Status as of 8/8/2017: Closed</p>	<p>✓ Incident ID: 2017177RED13 was randomly chosen and reviewed, incident report indicates that actions are well documented.</p> <p>✓ Incidents IDs: 2016187RED29, 2016245ORANGE1, 2016258GREEN1, 201709GREEN4, 2017138YELLOW8 were provided by ROCC. Upon review they also indicated that actions are well documented.</p>
<p>Regulatory Findings – FTA</p>	<p>CAP R-2-17-e</p> <p>WMATA must test its backup Rail Operations Control Center on a quarterly basis and demonstrate the ability to safely control train traffic.</p> <p>Status as of 8/8/2017: Closed</p>	<p>✓ The latest Testing Records dated 6/24/2017 were provided and reviewed. As per the report the overall test was successful covering both the CTF ROCC facility as well as the backup JGB facility.</p>

APPENDIX C: APPLICATION OF REGULATORY CAPs

Measure	Required Actions	QICO Review During Review
<p>Regulatory Findings – FTA</p>	<p>CAP R-4-29-a</p> <p>WMATA must ensure that ROCC reports all signal alarms and notifications to ATC.</p> <p>Status as of 8/8/2017: Addressing FTA Comments</p>	<p>✓ As per the observation and interviews, signal alarms are reported to the Assistant Superintendent on duty and to the responding department.</p>
<p>Regulatory Findings – FTA</p>	<p>CAP R-7-41-b</p> <p>The IT Department must coordinate with Rail Operations Quality Training to ensure the availability of additional training for the ROCC staff on AIMS.</p> <p>Status as of 8/8/2017: Closed</p>	<p>✓ AIM (Advanced Information Management) training is conducted as part of the Certification/Re-certification training. The curriculum was reviewed by QICO. The AIM system navigation is included under Controller Entry Skills and Tasks section of the curriculum.</p>

8.4 APPENDIX D: RADIO PROTOCOL ASSESSMENT CHECKLISTS



Quality Assurance, Internal Compliance & Oversight (QICO) Audit Checklist

DATE: 6/26/2017

AUDITEE/S: RAIL OPERATIONS CONTROL CENTER (ROCC) – RADIO PROTOCOLS BASED ON PERMANENT ORDER T-16-10

INTERVIEWEE/S: N/A, ASSESSMENT DONE BASED ON DIRECT OBSERVATION AND AUDIO RECORDINGS.

Serial	Question /Observation	Reference	Objective Evidence / Non-Conformity	Conformity	
				✓	X
1	<u>Observation:</u> Did the employee make sure that the transmission/reception were fully heard, understood and acknowledged?	Permanent Order T-16-10, Modifications made to general rule 1.79, page 1	Observtion of ROCC Radio Controllers on three (3) consoles covering the Yellow, Green, Silver, Orange and Red lines on the 26 th of June 2017 were carried out by three (3) QICO personnel, all were confirmed to be compliant with the requirement through "repeat backs" from the receivers of the transmission.	✓	
2	<u>Observation:</u> Were individual radio transmissions repeated by the receiver at <u>all times</u> so the transmitter can confirm the message was received completetly and by the intended receiver?	Permanent Order T-16-10, Modifications made to general rule 1.79, page 1	Observtion of ROCC Radio Controllers on three (3) consoles covering the Yellow, Green, Silver, Orange and Red lines on the 26 th of June 2017 were carried out by three (3) QICO personnel, all were confirmed to be compliant with the requirement through "repeat backs" from the receivers of the transmission at <u>all times</u> .	✓	
3	<u>Observation:</u> Did the transmitter ended their communication with the word " <u>Over</u> " when he/she completed their transmission and is turning the air time over to the receiving party for acknowledgment or reply?	Permanent Order T-16-10, Modifications made to general rule 1.79, page 1	ROCC Radio Controllers complied 100% with the requirement. "Over" was used when transmission is completed turning the air time to the receiver. Notes: 1- It was noted that Train Operators <u>did not</u> comply 100% with the "Over" requirements, however the Automatic Train Control(ATC) team did 100% comply.	✓	
4	<u>Observation:</u> Were speed restrictions acknowledged by each train operator, even when a blanket message is sent out from Central Control or the tower.	Permanent Order T-16-10, Modifications made to general rule 1.79, page 1	Train Operators responded to individual speed restriction messages, however blanket messages were not responded to by the Train Operators, and the Controllers had to individually contact the trains approaching areas with speed restrictions, Example: 10 mph speed restriction due to ATC work on track.		X

Serial	Question /Observation	Reference	Objective Evidence / Non-Conformity	Conformity	
				✓	X
5	<u>Observation:</u> Was "positive identification" established prior to transmitting a message (transmitter stating their train/equipment number or unit ID number, location and track number at the beginning of a transmission and the receiver repeating back the train/equipment number or unit ID number, location and track number when acknowledging the radio call)	Permanent Order T-16-10, Modifications made to general rule 1.79, page 1,2	Observation of ROCC Radio Controllers on three (3) consoles covering the Yellow, Green, Silver, Orange and Red lines on the 26 th of June 2017 were carried out by three (3) QICO personnel, all were confirmed to be compliant with the requirement. Notes: Train Operators did not state their location and track number as it is already displayed on the Advanced Information Management System (AIMS) displays.	✓	
6	<u>Observation:</u> Did employees identify the train ID or unit ID by the complete number series when communicating with class I and Class II? Examples: Train ID 404, four zero four. Train ID 414, four fourteen. Train 932, nine thirty two. PM-32, PM thirty two.	Permanent Order T-16-10, Modifications made to general rule 1.79, page 2	The ROCC Radio Controllers complied on the most part, except for instances where zero was pronounced as letter "O" instead.		X
7	<u>Observation:</u> Did the employees use the International Civil Aviation Organization standard when communicating location information related to power rooms only (TPSS or TBS) that is alpha numeric? Example: C-07, C-Charlie-Zero Seven	Permanent Order T-16-10, Modifications made to general rule 1.79, page 2	Both ROCC Radio Controllers and ATC team on the field complied with the requirement specially when specifying locations using chain markers.	✓	
8	<u>Observation:</u> Did employees use the list of authorized terms and responses when communicating?	Permanent Order T-16-10, Modifications made to general rule 1.79, page 3	Observation of ROCC Radio Controllers on three (3) consoles covering the Yellow, Green, Silver, Orange and Red lines on the 26 th of June 2017 were carried out by three (3) QICO personnel, all were confirmed to be compliant with the requirement.	✓	
9	<u>Observation:</u> Did central employees close out a communication loop by saying "central, out" as a means of ensuring that messages are not interrupted on the different talk group radio channels ([REDACTED])	Permanent Order T-16-10, Modifications made to general rule 1.79, page 4	Observation of ROCC Radio Controllers on three (3) consoles covering the Yellow, Green, Silver, Orange and Red lines on the 26 th of June 2017 were carried out by three (3) QICO personnel, all were confirmed to be compliant with the requirement.	✓	

International Civil Aviation Organization standard

Letter	Word	Pronunciation
A	ALFA	AL FAH
B	BRAVO	BRAH VOH
C	CHARLIE	CHAR LEE (or) SHAR LEE
D	DELTA	DELL TAH
E	ECHO	ECK OH
F	FOXTROT	FOKS TROT
G	GOLF	GOLF
H	HOTEL	HOH TELL
I	INDIA	IN DEE AH
J	JULIETT	JEW LEE ETT
K	KILO	KEY LOW
L	LIMA	LEE MAH
M	MIKE	MIKE
N	NOVEMBER	NO VEM BER
O	OSCAR	OSS CAH
P	PAPA	PAH PAH
Q	QUEBEC	KEH BECK
R	ROMEO	ROW ME OH
S	SIERRA	SEE AIR RAH
T	TANGO	TANG GO
U	UNIFORM	YOU NEE FORM (or) OO NEE FORM
V	VICTOR	VIK TAH
W	WHISKEY	WISS KEY
X	XRAY	ECKS RAY
Y	YANKEE	YANG KEY
Z	ZULU	ZOO LOO

List of Authorized Terms and Responses

<u>TERM</u>	<u>DESCRIPTION</u>
<u>Central</u>	<u>Rail Operations Control Center (ROCC)</u>
<u>Copy</u>	<u>The transmission was heard and understood</u>
<u>Disregard</u>	<u>Canceling previous instructions</u>
<u>Hold</u>	<u>Hold your position – DO NOT MOVE until so instructed</u>
<u>Affirmative</u>	<u>Yes</u>
<u>Landline</u>	<u>Call by telephone, specified number or person</u>
<u>Out</u>	<u>Used by Central Control (ROCC). End of transmission, no reply is needed</u>
<u>Over</u>	<u>I am finished with my transmission and I am turning control of the air time over to you and I am awaiting your response</u>
<u>Proceed</u>	<u>Permission to move train</u>
<u>Negative</u>	<u>No</u>
<u>Repeat</u>	<u>Repeat all of your last transmission</u>
<u>Single Tracking</u>	<u>Controlled changes in the direction of traffic, on a single main line track segment, between selected interlockings.</u>
<u>Urgent (to be used in emergencies)</u>	<u>Repeated three times consecutively (Urgent, Urgent, Urgent) to notify parties of a hazardous condition which could result in death or injury, damage to property, or cause a serious disruption in operations.</u>
<u>Standby</u>	<u>STOP TRANSMITTING (Calling station should honor “standby” without question unless the calling station has an URGENT call to report) Wait for further instruction</u>



Rolling Stock and Passenger Service Assurance Program

Radio Communication Assessment

DATE	May 8 th 2017 – June 3 rd 2017	LOCATION	Locations covered by Operational Channels 1, 2, & 3
AUDITEE	Rail Operations Control Center (ROCC)	ACTIVITY	Indirect Observation of Rail Traffic Controller radio communication
QICO FIELD TEAM	[REDACTED]		

EXECUTIVE SUMMARY

PURPOSE

The rolling stock and passenger service assurance team for **Quality Assurance, Internal Compliance and Oversight (QICO)** listened to 25 hours of radio communication on Operational Channels 1, 2, and 3 between the dates of May 8th and June 3rd to determine compliance with Radio Communication Protocol as required by **Permanent Order T-16-10 Radio Protocol** dated 7/19/16. This was conducted as part of an audit of Rail Traffic Controllers within the Rail Operations Control Center, which is in turn part of the **2017 QICO Rail Traffic Controller Internal Review**. Performing these internal reviews safeguards the mission success of the Authority by providing effective internal oversight of WMATA’s operational processes and assets.

SCOPE

QICO requested at random 2 and 3 hour segments of ROCC radio communication sampled from various time frames, across all three operation channels on various days of the week. All records were evaluated based on a call by call basis to determine compliance with current protocol. Compliance was measured as compliant (yes), non-compliant (no), or not applicable to the specific conversation (N/A). The following channels were listened to at the dates and times noted:

Channel	Dates and times reviewed
[REDACTED] (Red Line)	[REDACTED]
[REDACTED] (Blue ,Orange, Silver Lines)	[REDACTED]
[REDACTED] (Green, Yellow Lines)	[REDACTED]

RESULTS

In the 25 hours of transmissions QICO observed over 600 individual conversations, the following was noted:

- ✓ Operators and units were appropriately identifying themselves a majority of the time (over 85% for all applicable transmissions).
- ✓ Foul Time requests were repeated back consistently, much better compared to other types of communications.
- ✗ Only 47% of all applicable conversations had appropriate repeating of instructions.
- ✗ Central Control only closed out 10% of all applicable conversations by stating “central out”.
- ✗ Speed Restriction in Work area announcement is 10% of all opportunities.
- ✗ Train Operators are NOT repeating back confirmation of speed restrictions when blanket messages are transmitted.
- ✗ New radio protocol requirements such as utilizing International Civil Aviation Organization (IACO) alphabet and approved terminology is being properly followed in less than 50% of all applicable observed recordings.

Findings

Item Number	Finding
1	In 90% of observed applicable conversations Central control did not close out communication by stating "Central out". Example: 5/08/17 non-compliance was at 97% on [REDACTED]
2	Proper repeating of messages was not observed in 53% of applicable conversations. Example: 5/16/17 at 68% within non-compliance on [REDACTED]
3	When speed restrictions are announced due to personnel on the right of way, no operators were repeating back or acknowledging this, as required by Permanent Order No. T-16-10 Radio Protocols.
4	Controllers as well as other radio users are utilizing improper protocol over 50% of the time this includes not utilizing proper terminology (i.e. acknowledging instructions using the term "roger", failing to utilize the ICAO alphabet)

Recommendations

Item #	Recommendation
1	Increase Quality Control activities that are performed by ROCC supervision, specifically non-direct observation through recordings as a method to increase accountability for controllers.
2	Retrain operators on SOP # 30 (Establishment and Removal of Speed Restriction for the Mainline) for the requirement to acknowledge speed restrictions at all times.
3	Develop a feedback process to address communication issues between ROCC and other departments who utilize radio communication protocol.

Attachments

#	Title
1	Radio Protocol FTA Checklist

PREPARED BY:	QICO OFFICER	[REDACTED]
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APPROVED BY:	QICO MANAGER	[REDACTED]
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Metro Rolling Stock Assurance Program

Radio Protocol Assessment

Radio Protocol Checklist

QICO Representative(s):	[REDACTED]	Date (or Date Range):	5/8/17-6/3/17
Location(s):	Carmen Turner Facility (CTF)	Total # of Observations:	28 Audio Recordings

Instructions: This checklist is a tool to assess compliance with Permanent Order T-16-10 Radio Protocols. For each question below, determine whether or not the criteria has been met based upon your observations. Check "Yes" to indicate compliance with the criteria, "No" to indicate non-compliance and "N/O" to indicate that a particular check item was not observed. Provide comments for each "Yes" and "No" check item that summarizes the results of your observations. *Note: Observations may consist of monitoring: live radio communications in ROCC or via a handheld radio; and listening to prior recorded ROCC audio files.*

No	Evaluation Criteria	Comments	Yes	No	N/O
1.	Do Employees refrain from taking action until they are positive that all radio transmissions or receptions are heard, fully understood and acknowledged?	Yes, for example: The controller instructed the Train operator identified as Unit 407 to hold the Train at Potomac Ave Station. The unit 407 complied and held the Train until the controller gave to the unit the permission to close the doors and to go. This happened on [REDACTED] between [REDACTED] on [REDACTED]	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.	Are Radio Protocols available and easily accessible to Rail Traffic Controllers (RTCs) and other employees?	The permanent Order is available to the Rail Traffic Controller. It was verified during the observation at ROCC facility (CTF).	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.	Are transmissions repeated at all times by the receiver so the transmitter can confirm the message was received completely and by the intended receiver?	Only 47% of all applicable conversations had appropriate repeating of instructions.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
4.	Do employees follow the International Civil Aviation Organization (ICAO) Standard when communicating?	New radio protocol requirements such as utilizing International Civil Aviation Organization (ICAO) alphabet and approved terminology is being properly followed in less than 50% of all applicable observed recordings.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

No	Evaluation Criteria	Comments	Yes	No	N/O
5.	Traffic Controllers initiate Radio contact to Train/Equipment Operators by identifying the call signs of the person they aim to reach and themselves?	Traffic controllers initiate Radio contact to Train/equipment Operators by identifying call signs of the person. However, the identification is not always 100% positive.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.	Do employees end each transmission by saying the Procedure word "OVER," and does Controllers end radio contact by using "OUT"?	RTCs and Operators are not using the word "Over" all the time as required by the permanent Order NO. T-16-10 Radio Protocols. For example: A controller on [REDACTED] [REDACTED] between [REDACTED] audio recording failed to use "OVER" while communicating with the Track unit and also failed to close out the communication with "Central Out" Central Control only closed out 10% of all applicable conversations by stating "central out".	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
7.	Do employees acknowledge receipt of message by using authorized terms?	No. Some Controllers and Operators use "Roger" a word that it's not recognized by the Permanent Order. This was observed on [REDACTED] between [REDACTED] [REDACTED] recording, the controller used "Roger" in two separate communications.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
8.	To ensure that messages are not interrupted on the different talk group radio channels ([REDACTED]), when an employee is communicating with Central Control, does the Controller close out a communication loop by saying "Central, Out"?	Central Control only closed out 10% of all applicable conversations by stating "central out". For example: On [REDACTED] on [REDACTED] during [REDACTED] recording, the controller failed to close the communication with using "Central out".	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
9.	Do Controllers use the method of positive identification such as identifying the train ID or unit ID by the complete number series, when communicating with Class I and Class II vehicles?	Controllers are using positive identification. However, they still have a problem with the use of the letter "O" in place of number "0". As example, on [REDACTED] [REDACTED] during [REDACTED] recording, the controller called unit [REDACTED] with letter "o" instead of number "0".	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10.	Have employees (the employees observed/monitored as part of this assessment) been trained on the current radio protocol?	All Controllers and Train/ Equipment Operators have completed the initial training.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

No	Evaluation Criteria	Comments	Yes	No	N/O
11.	Are speeds restrictions always acknowledged by train operators?	When speed restrictions are announced due to personnel on the right of way, no operators were repeating back or acknowledging this, as required by Permanent Order No. T-16-10 Radio Protocols. As an exceptional example, the train operator did acknowledge the speed restriction. This took place on [REDACTED] between [REDACTED] recording on [REDACTED]	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
12.	Prior to transmitting a message, is a positive identification established by employees?	A positive identification is not always established prior to transmission. Train/ Equipment use letter "o" instead of number '0'.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

QICO REPRESENTATIVE: [REDACTED] | DATE: 7/20/2017

QICO MANAGER: [REDACTED] | DATE: 7/20/2017

8.5 APPENDIX E: FTA CAP ASSESSMENT CHECKLIST



Quality Assurance, Internal Compliance & Oversight (QICO) Audit Checklist

DATE: 6/26/2017 & 6/27/2017

AUDITEE/S: RAIL OPERATIONS CONTROL CENTER (ROCC) – FEDERAL TRANSIT ADMINISTRATION (FTA) CORRECTIVE ACTION PLAN (CAP)

INTERVIEWEE/S: ROCC CONTROLLERS ([REDACTED]) / ROCC ASSISTANT SUPERINTENDENT ([REDACTED]) / ROCC SUPERINTENDENT ([REDACTED]) / ROCC COORDINATOR ([REDACTED]) / ROCC DIRECTOR ([REDACTED]) / ROQT DIRECTOR ([REDACTED])

Serial	Question /Observation	Reference	Objective Evidence/Non-Conformity	Conformity	
				✓	X
1	<p><u>Question:</u> Is the ROCC fully staffed and there are no open positions?</p> <p><u>Observation:</u> Are the human resources available sufficient to operate effectively and efficiently?</p>	<p>CAP R-1-1-a FTA CAP Status: O/PD as of 6/16/2017</p>	<p>- ROCC is understaffed as observed and then confirmed by Train Controllers, Assistant Superintendent and Director. Currently 33 Controllers are on duty VS a FTA requirement of 43 (90% of required staff). -High staff turnover was also observed and confirmed by ROCC Management, actions needs to be in place to tackle the root cause of the high rate of the staff turnover.</p> <p>Notes: 1- ROCC Management confirmed that there are plans to close the staffing gap, currently 10 controllers are in the pipeline to join the ROCC team, a hiring day event is scheduled on the 29th of July 2017 which will be open to the public, as well as interviews scheduled on 3rd of July 2017. 2- ROCC Management confirmed that they have plans in place to tackle the high rate of staff turnover by making ROCC a more enjoyable place to work in.</p>		X
2	<p><u>Question:</u> Are the annual re-certifications for the Rail Traffic Controllers completed and maintained?</p>	<p>CAP R-1-2-a FTA CAP Status: O as of 6/16/2017</p>	<p>Three random ROCC Controllers were picked, their training records were checked with the Rail Operation Quality Training Department (ROQT) and confirmed to be compliant.</p>	✓	

Serial	Question /Observation	Reference	Objective Evidence/Non-Conformity	Conformity	
				✓	✗
3	<u>Question:</u> Is a program available to provide each Rail Traffic Controller with mandatory road days for territory familiarization?	CAP R-1-3-a FTA CAP Status: O/PD as of 6/16/2017	Initial certification road familiarization requirements were met, however re-certification road familiarization requirements were not met due to lack of staffing as confirmed by ROCC Management. Notes: 1- A video developed by ROQT of the road way taken from a train mounted camera is being circulated to help with the road familiarization. 2- Territory familiarization training program will resume upon the complete staffing of the ROCC as confirmed by the ROCC Management.		✗
4	<u>Question:</u> Does all Rail Traffic Controllers maintain RWP level 4 training and certification.	CAP R-1-3-b FTA CAP Status: O/PD as of 6/16/2017	Three (3) random ROCC Controllers were picked, their RWP level 4 training records were checked with ROQT and confirmed to be compliant.	✓	
5	<u>Question:</u> Was an assesment completed regarding the identification of critical vs non-critical notifications an alarms in ROCC?	CAP R-1-4-a FTA CAP Status: C as of 6/16/2017	As per the interview with the Assistant Superintendent and as per ROCC Procedures Manual 11.1, page 53, incidents occurring on the Metro Rail System requiring assistance of other departments or having the potential of causing delays to customers shall be reported to the Assistant Superintendent within two (2) minutes.	✓	
6	<u>Question:</u> Was an engineering assesment conducted regarding the options to reduce noise in the ROCC and were solutions implemented?	CAP R-1-4-b FTA CAP Status: UR as of 6/16/2017	According to ROCC Management, review has been completed by the Engineering Team and they are in process of introducing a plan that involves sound damping wall panels and noise reducing floor rugs, Review done by BRT services date November 24 th , 2015 was checked.	✓	

Serial	Question /Observation	Reference	Objective Evidence/Non-Conformity	Conformity	
				✓	✗
7	<u>Question:</u> Are electronic records of train movements readily available to on duty Train Controllers, and if not are paper-based records of all movements available?	CAP R-1-4-C FTA CAP Status: C as of 6/16/2017	A document called "Headway" is available for Train Controllers containing the scheduled movements of trains.	✓	
8	<u>Observation:</u> Does the Rail Traffic Controller workload and distraction interfere with the safe and efficient movement of trains?	CAP R-1-5-a FTA CAP Status: AC as of 6/16/2017	The two (2) interviewed Train Controllers both confirmed that during incidents some things might be missed because they have to handle the radio, take orders and implement it and record everything that happens at the same time, both clearly mentioned that a third person per console is needed.		✗
9	<u>Observation:</u> Does the ROCC employees comply with Permanent Order T-16-10 governing the protocol for language and terminology over the radio.	CAP R-1-6-a FTA CAP Status: C as of 6/16/2017	Observation of ROCC Radio Controllers on three (3) consoles covering the Yellow, Green, Silver, Orange and Red lines on the 26th of June 2017 were carried out by three (3) QICO personnel, all were compliant with the requirement.	✓	
10	<u>Question/Observation:</u> Is an approach for communicating and managing all speed restrictions established as part of the radio protocol?	CAP R-1-6-b FTA CAP Status: UR as of 6/16/2017	As per Permanent Order T-16-10, 1.79, page 1, speed restrictions must always be acknowledged by each Train Operator, even when a blanket message is sent out from Central Control, through 100 percent word for word repeat back from the Operators to Central Control or the Tower.	✓	

Serial	Question /Observation	Reference	Objective Evidence/Non-Conformity	Conformity	
				✓	✗
11	<p><u>Question:</u> Does procedural checklists exists for ROCC staff to implement the standard operating procedures attached to the metro rail handbook?</p> <p>Request records of samples all types of checklists with random dates, ensure conformance, observe the use of the checklists during the normal operation.</p>	<p>CAP R-1-7-a FTA CAP Status: AC as of 6/16/2017</p>	<p>As per ROCC Procedures Manual, check lists exists as following: 15.0 ROCC MAJOR INCIDENT CHECK LIST. 15.1 Customer Evacuation from Train: SOP #4 15.2 Sick Customer on a Train: SOP #24 15.3 Customer Self-Evacuation from Trains: SOP #4A 15.4 Person Falling Into Track: SOP #25 15.5 Person Hit by Train: SOP #26 15.6 Hazardous Material (HAZMAT) Incident: SOP #37 15.7 Unknown Substance Response Procedure –SOP #38 15.8 Floods - SOP #10 15.9 Fire and Smoke on Roadway: SOP #6/ Fire and Smoke in Station/SOP #8 Roadway - Fire/Heavy Smoke 15.10 Fire and Smoke on Cars: SOP #7 15.11 Bomb Threats – SOP #14 15.12 Flammable Vapor Warning / Alarm: SOP #27 15.13 Train Derailment Mainline/Yard: SOP #9 15.14 Train Collision Mainline/Yard: SOP#11 15.15 Coordination of an Emergency in a Common Corridor: SOP #31 15.16 Undesired Uncoupling or Pull Apart of Cars in a Train: SOP #13 15.17 Command, Control and Coordination of Emergencies on the Rail System: SOP# 1A 15.18 Traction Power Faults: SOP #3</p>	✓	

Serial	Question /Observation	Reference	Objective Evidence/Non-Conformity	Conformity	
				✓	✗
12	<u>Question/Observation:</u> Is a clear policy in place that prohibits distractions from the use of cell phones and other electronics devices?	CAP R-1-8-a FTA CAP Status: C as of 6/16/2017	<ul style="list-style-type: none"> - Awareness of the policy is evident through the interviews done with the Train Controllers and the observation of the controllers inside the ROCC facility. - Visual signage was noted at the door leading to the Rail ROCC facility, stating that cell phones are not permitted beyond this point. - It was noted that some members of the the ROCC Management were occasionally using a cell phone, observation was confirmed by the interviewed Controllers, which is in compliance with the policy as it is a WMATA cell phone. 	✓	
13	<u>Question:</u> Are electronic transfer records implemented, and if not are paper based logs used by the Rail Traffic Controllers?	CAP R-1-9-a FTA CAP Status: AC as of 6/16/2017	As per the observation, interviews with Train Controllers and ROCC Procedures Manual, Daily Summary of Train Operations sheet are manually filled by the Controllers, it was also mentioned during the interviews that they started to enter the data electronically by personnel other than the on duty Controllers.	✓	

Serial	Question /Observation	Reference	Objective Evidence/Non-Conformity	Conformity	
				✓	✗
14	<u>Question:</u> Does the ROCC have an ongoing "efficiency" testing program for Rail Traffic Controllers to evaluate their in-service performance and competency?	CAP R-1-10-a FTA CAP Status: UR as of 6/16/2017	<p>ROCC provided samples of performance evaluation audits performed to assess the Train Controllers as following:</p> <ul style="list-style-type: none"> - ROCC Weekly Compliance Form, Date [REDACTED]. - ROCC Incident Management and Communication Quality Control Checklist, Date [REDACTED]. - ROCC Incident Management and Communication Quality Control Checklist, Date [REDACTED]. - ROCC Incident Management and Communication Quality Control Checklist, Date [REDACTED]. - ROCC Incident Management and Communication Quality Control Checklist, Date [REDACTED]. - ROCC Incident Management and Communication Quality Control Checklist, Date [REDACTED]. <p>Upon further review of the Quality Control Checklist dated [REDACTED], the Radio Controller were required to attend additional training, upon checking the training records with the ROQT department it was evident that scheduled training was cancelled and was not rescheduled .</p>		✗
15	<u>Question:</u> Is an independent committee established to evaluate and monitor the recruitment of Rail Traffic Controller trainees?	CAP R-1-11-a FTA CAP Status: C as of 6/16/2017	As per the interviews with ROCC Management, a member of Labor Relations and/or Humans Resources are present in the interviews.	✓	
16	<u>Question:</u> Was the training program for Rail Traffic Controllers overhauled, corrected, revised and improved?	CAP R-1-12-a FTA CAP Status: C as of 6/16/2017	As per the interviews with the Train Controllers, ROCC Management and ROQT Director, the training material has been overhauled through a third party subject matter expert from Canada, updated curriculum was provided.	✓	

Serial	Question /Observation	Reference	Objective Evidence/Non-Conformity	Conformity	
				✓	✗
17	<p><u>Question:</u> Are ROCC actions well documented to allow for detailed review during accident investigation?</p> <p>Request records of actions that took place during the most recent few accidents.</p>	<p>CAP R-1-13-a FTA CAP Status: UR as of 6/16/2017</p>	<p>- Incident ID: [REDACTED] was randomly chosen and reviewed, incident report indicates that actions are well documented.</p> <p>- Incidents IDs: [REDACTED] were provided by ROCC, upon review they also indicated that actions are well documented.</p>	✓	
18	<p><u>Question:</u> Was the backup ROCC tested on quarterly basis to demonstrate the ability to safely control train traffic.</p>	<p>CAP R-2-17-e FTA CAP Status: C as of 6/16/2017</p>	<p>Backup ROCC testing record provided.</p>	✓	
19	<p><u>Question:</u> Are all signal alarms and notifications reported to Automatic Train Control (ATC)?</p>	<p>CAP R-4-29-a FTA CAP Status: UR as of 6/16/2017</p>	<p>Based on interviews with Train Controllers and Assistant Superintendent.</p>	✓	
20	<p><u>Question:</u> Were additional training on AIMS conducted for the ROCC Staff?</p>	<p>CAP R-7-41-b FTA CAP Status: C as of 6/16/2017</p>	<p>As part of the Certification/Re-certification training.</p>	✓	

TOC Status Index			
O	Open	AI	Awaiting FTA's Inspection
O/PD	Open / Past Due	AC	Addressing FTA Comments
UR	Under FTA Review	C	Closed

8.6 APPENDIX F: ROCC PROCEDURES MANUAL ASSESSMENT CHECKLIST



Quality Assurance, Internal Compliance & Oversight (QICO) Audit Checklist

DATE: 6/26/2017 & 6/27/2017

AUDITEE/S: RAIL OPERATIONS CONTROL CENTER (ROCC) – ROCC OPERATIONS MANUAL

INTERVIEWEE/S: ROCC CONTROLLERS ([REDACTED] / [REDACTED] / ROCC ASSISTANT SUPERINTENDENT [REDACTED] / ROCC SUPERINTENDENT [REDACTED] / ROCC COORDINATOR [REDACTED] / ROCC DIRECTOR [REDACTED] / ROQT DIRECTOR [REDACTED]

Serial	Question /Observation	Reference	Objective Evidence / Non-Confirmity	Conformity	
				✓	X
1	<u>Observation:</u> Did the Radio Console Supervisor Monitor the headway of trains and make adjustments to maintain 95% headway adherence?	ROCC Procedures Manual 6.3.1, Page 14.	It was observed that Radio Console Supervisor did make adjustments to maintain appropriate space and time differences between trains.	✓	
2	<u>Observation:</u> Did the Radio Console Supervisor document all train malfunctions and discrepancies on the Daily Summary's and notify Car Maintenance (CMNT) to input information into Maximo?	ROCC Procedures Manual 6.3.3, Page 14.	As per the the Daily Summary of Train Operations documents provided dated 6/26/2017 and 6/27/2017 and their associated Maximo work orders.	✓	
3	<u>Observation:</u> Did the Radio Console Supervisor inform Maintenance Operations Control (MOC) of any System Maintenance problems reported?	ROCC Procedures Manual 6.3.4, Page 14.	On the Green line console it was observed that Radio Console Supervisor did document discrepancies in the Daily Summary, Automatic Train Control (ATC) group was informed.	✓	
4	<u>Observation:</u> Did the Radio Console Supervisor make frequent announcements during service disruptions to train operators, keeping them informed of any situation that will impact service?	ROCC Procedures Manual 6.3.5, Page 14.	On the Green line console it was observed that Radio Console Supervisor did make frequent announcements to Train Operators during the incident.	✓	
5	<u>Observation:</u> Did the Radio Console Supervisor report all incidents and unusual occurrences to the on duty Assistant Superintendent, ROIC, MTPD, and MOC and to the Central Control Supervisor if their line is affected?	ROCC Procedures Manual 6.3.7, Page 14.	Based on the following Incident Reports, relevant parties were informed of the incidents: 1- Incident ID: 2017177RED13 2- Incident ID: 2016187RED29 3- Incident ID: 2016245ORANGE1 4- Incident ID: 2016258GREEN1	✓	
6	<u>Observation:</u> Did the Radio Console Supervisor provide positive radio and telephone communications with field personnel?	ROCC Procedures Manual 6.3.9, Page 14.	As per the Radio Protocols audit check list.	✓	

Serial	Question /Observation	Reference	Objective Evidence / Non-Confirmit	Conformity	
				✓	✗
7	<u>Observation:</u> Did the Radio Console Supervisor maintain support personnel sheets for the field, making initial location announcements of personnel on the roadway and blanket announcements in 20 minute intervals. Reference SOP 28?	ROCC Procedures Manual 6.3.10, Page 14.	On the Orange/Silver lines console, it was observed that the Radio Console Supervisor maintained Maintenance Personnel Road Way Access sheet, location announcements of personnel were observed with less than 20 minutes intervals between blanket announcements.	✓	
8	<u>Observation:</u> Did the Radio Console Supervisor maintain chronological notes during incidents?	ROCC Procedures Manual 6.3.11, Page 14.	Based on the following Incident Reports chronological notes were maintained: 1- Incident ID: [REDACTED] 2- Incident ID: [REDACTED] 3- Incident ID: [REDACTED] 4- Incident ID: [REDACTED]	✓	
10	<u>Observation:</u> Did the Radio Console Supervisor maintain Daily Summary's, removing closed out information and updating carry over items?	ROCC Procedures Manual 6.3.12, Page 15.	As per the the Daily Summary of Train Operations documents provided dated [REDACTED] and [REDACTED] and the ROCC Assistant Superintendant Summary provided.	✓	
11	<u>Observation:</u> Did the Radio Console Supervisor record work crew request time, start time and close out time in GOTRS. Verify track rights, work location and chain markers in General Orders & Track Rights System (GOTRS)?	ROCC Procedures Manual 6.3.13, Page 15.	Times are recorded as per the Maintenance Personnel Roadway Access sheets submitted, data is later on entered on GOTRS.	✓	
12	<u>Observation:</u> Did the Radio Console Supervisor enforce proper radio procedures and transmissions?	ROCC Procedures Manual 6.3.14, Page 15.	ROCC Radio Console Supervisor did not enforce speed restrictions blanket messages acknowledgment by the Train Operators.		✗
13	<u>Observation:</u> Did the Radio Console Supervisor provide operators with an approximate holding time at platforms during Major delays and extended single tracking operations?	ROCC Procedures Manual 6.3.17, Page 15.	On the Green line console it was observed that Radio Console Supervisor did provide operators with approximate holding time during an ATC related incident.	✓	
14	<u>Observation:</u> Did the Train Control Supervisor inform the on duty Assistant Superintendent and other concerned departments of all incidents, delays, major service disruptions and unusual occurrences?	ROCC Procedures Manual 6.4.2, Page 15.	Refer to question number 5, both Radio Console Supervisor and Train Control Supervisor work as a team.	✓	

Serial	Question /Observation	Reference	Objective Evidence / Non-Confirmity	Conformity	
				✓	X
15	<u>Observation:</u> Did the Train Control Supervisor operate signals/Interlocking, checks the status of the assigned section of rail road to assure all automatic routing is set, assures each interlocking and appropriate turn back is fleded in preparation for revenue service. Removes automatics, cancels all routing, places prohibit exits, blocked track indication and crew ID's on vehicles after revenue hours for track maintenance?	ROCC Procedures Manual 6.4.3, Page 15.	As per the observation conducted at 6/26/2017 and the interviews conducted with the controllers.	✓	
16	<u>Observation:</u> Did the Train Control Supervisor operate third rail breakers in order to energize/ de-energize third rail power during emergencies, for track maintenance or for testing?	ROCC Procedures Manual 6.4.4, Page 15.	As per the emergency Drill that was conducted on Sunday, April 23, 2017 at the Navy Yard Metro Station.	✓	
17	<u>Observation:</u> Did the Train Control Supervisor operate ventilation fans for testing purposes, during emergencies and while track maintenance is being performed?	ROCC Procedures Manual 6.4.5, Page 15.	As per the emergency Drill that was conducted on Sunday, April 23, 2017 at the Navy Yard Metro Station.	✓	
18	<u>Observation:</u> Did the Train Control Supervisor inform the appropriate MOC desk supervisor of any abnormalities that are reported or detected on the AIMS display?	ROCC Procedures Manual 6.4.6, Page 15.	Yes, as per the interviews with ROCC controllers.	✓	
19	<u>Observation:</u> Did the Train Control Supervisor notify Terminal Supervisors of delays, adjustments to schedules, incident train car numbers. Request additional operators or Gap trains when required?	ROCC Procedures Manual 6.4.7, Page 15.	As per the observation conducted at 6/26/2017	✓	
20	<u>Observation:</u> Did the Train Control Supervisor monitor train schedules for headway adherence?	ROCC Procedures Manual 6.4.10, Page 16.	Yes, was observed on the three (3) consoles.	✓	
21	<u>Observation:</u> Did the Outgoing Supervisor (OS) thoroughly briefed the Incoming Supervisor (IS) on the current status of their assignment including potential problem areas?	ROCC Procedures Manual 7.4.1, Page 19.	Yes, as per the interviews with ROCC controllers.	✓	
22	<u>Observation:</u> Did the Inoming Supervisor assume control of and responsibility for the assignment after being briefed on and thoroughly understanding the current status of that assignment?	ROCC Procedures Manual 7.4.2, Page 19.	Yes, as per the interviews with ROCC controllers.	✓	
23	<u>Observation:</u> Did the Radio Console Supervisor of the delayed Line will instruct Train Operators on that Line to inform their Customers of the delay?	ROCC Procedures Manual 8.3.1.1, Page 24.	As observed on the Green Line console during at ATC related incident.	✓	

Serial	Question /Observation	Reference	Objective Evidence / Non-Confirmity	Conformity	
				✓	X
24	<u>Observation:</u> Was the Assistant Superintendent informed within 2 minutes of incidents requiring assistance of other departments or having the potential of causing delays to customers?	ROCC Procedures Manual 11.1.1, Page 53.	As observed on the Green Line console during at ATC related incident.	✓	
25	<u>Observation:</u> Was the responsible discipline called immediately via direct dialing and an entry placed in Maximo in case of emergency, defective equipment or incidents requiring assistance?	ROCC Procedures Manual 11.1.2, Page 53.	As per the observation conducted at 6/26/2017 and the corresponding maximo workorders.	✓	
26	<u>Observation:</u> During an all personnel computer failure, was a general announcement on all operating frequencies that operators are to operate their trains Mode 2 Level 1 not to exceed 59 MPH?	ROCC Procedures Manual 12.3.1, Page 59.	As per the [REDACTED] initiated at [REDACTED], noted in the Daily Summary.	✓	
27	<u>Observation:</u> Were the Computer Tech and MOC notified that the system is down, incident recorded on the Daily Operations Summary, and when the system was restored , the number of minutes the system was down was recorded in the incident duration column?	ROCC Procedures Manual 12.3.2, Pages 59,60.	As per the [REDACTED] initiated at [REDACTED], noted in the Daily Summary.	✓	
28	<u>Observation:</u> Were the information on the Daily Summary of Train Operations placed into MAXIMO by the ROCC Radio Console Supervisor?	ROCC Procedures Manual 14.3.1, Page 70.	It is evident that it is placed into MAXIMO either by the Radio Console Supervisor or some one else.	✓	
29	<u>Observation:</u> Did the outgoing ROCC Radio Console Supervisor check on the status of all open items and report findings to the incoming ROCC Radio Console Supervisor during shift changes?	ROCC Procedures Manual 14.3.4, Page 70.	Yes, as per the interviews with ROCC controllers.	✓	

8.7 APPENDIX G: ROCC EMERGENCY DRILL ASSESSMENT CHECKLIST



Quality Assurance, Internal Compliance & Oversight (QICO) Audit Checklist

DATE: 4/23/2017

AUDITEE/S: RAIL OPERATIONS CONTROL CENTER (ROCC), EMERGENCY DRILL – PROCEDURE #1A COMMAND, CONTROL AND COORDINATION OF EMERGENCIES ON THE RAIL SYSTEM

INTERVIEWEE/S: ROCC CONTROLLERS () / ROCC ASSISTANT SUPERINTENDENT () / ROCC SUPERINTENDENT () / ROCC COORDINATOR () / ROCC DIRECTOR () / ROQT DIRECTOR ()

Serial	Question /Observation	Reference	Objective Evidence/Non-Conformity	Conformity	
				✓	X
1	<p><u>Question:</u> Did ROCC make public address announcements to customers at the incident scene as necessary?</p>	<p>1A.5.1.2.8 Page 5</p>	<p>There were frequent radio announcements such as: Full-Scale drill exercise will take place, Green line trains will use a single-track between Navy Yard and Anacostia stations, Navy Yard station will remain open; Half Street entrance closed; Use New Jersey Avenue entrance.</p> <p>Passengers who still wanted to begin their commute from the Navy Yard Station while the drill was in effect were informed. The Passenger Information Display System (PIDS) on Track #1, which was de-energized, displayed the following information: "Please use opposite platform and No train from this platform".</p>	✓	
2	<p><u>Question:</u> Were action plans developed to include length of disruption and possible use of bus bridges or single track operations?</p> <p>Verify through emergency drill records if applicable.</p>	<p>1A.5.1.2.10 Page 5</p>	<p>A single tracking plan was developed and executed.Track 1 was unaccessible because of Emergency Drill exercise. However, customers who preferred to commute via Navy Yard platform #2, were able to access the station and boarded the train.</p>	✓	

Serial	Question /Observation	Reference	Objective Evidence	Conformity	
				✓	X
3	<u>Question:</u> Was an initial On Scene Commander (OSC) appointed if no MTPD personnel are on the scene at the time of the emergency?	1A.5.1.3.2 Page 6	The initial On Scene commander was the train operator identified as unit [REDACTED]. He was relieved by the Rail Operator Supervisor identified as unit [REDACTED]. The final on scene commander was the MTPD as soon as they arrived at the scene.	✓	
4	<u>Question:</u> Were all field activities and requests coordinated through the On Scene Commander (OSC)?	1A.5.1.3.2 Page 6	On scene Commander was the coordinator of all activities taking place at the Navy Yard station.	✓	
5	<u>Question:</u> Was the location of Incident Command Post obtained?	1A.5.1.3.3 Page 6	The Incident Command Post was located at Half ST/ M Street by Metro Station entrance.	✓	
6	<u>Question:</u> Were all WMATA and non-WMATA departments and personnel notified, as required?	1A.5.1.3.4 Page 6	All WMATA personnel and customers were informed through media that it will be an Emergency drill exercise at Navy Yard Metro station.	✓	
7	<u>Question:</u> Was a log of individuals assigned to Incident Commander (IC), On Scene Commander (OSC), Liaison positions and the location of command post maintained?	1A.5.1.3.5 Page 6	Logs of individuals assigned to incident Commander (IC), On scene commander(OSC), Liaison positions, the location of Command Post and volunteers names were maintained.	✓	
8	<u>Question:</u> Was safe movement of all trains through the rail system coordinated and directed by ROCC? Trains at the incident scene may only be moved with the permission of the Incident Commander (IC) and On Scene Commander (OSC).	1A.5.1.3.6 Page 7	All train movements were coordinated directly by the ROCC Controllers.	✓	
9	<u>Question:</u> Was the ventilation system activation procedures activated, as required by the Incident Commander (IC) and On Scene Commander (OSC)?	1A.5.1.3.7 Page 7	The ventilation system activation took place at the Navy Yard, at the same time, ROCC Supervisor instructed train operators moving through the station to turn the ventilation system on.	✓	

Serial	Question /Observation	Reference	Objective Evidence	Conformity	
				✓	X
10	<u>Question:</u> Was the assistance of MTPD requested in critical stations for crowd control?	1A.5.1.3.8 Page 7	The event was well planned and broadcasted. Customers were aware of the event. No request was made for MTPD assistant because the event went smoothly as planned.	✓	
11	<u>Question:</u> Was the supplementary bus service coordinated with Bus Operations Control Center (BOCC), as required by the On Scene Commander (OSC)?	1A.5.1.3.9 Page 7	Navy Yard station was not shut down completely. For the fact of having a single tracking operation between Annacostia and Water Front stations, the bus service was not needed to accommodate the customers.	✓	
13	<u>Question:</u> Were system-wide public address announcements made frequently to provide customers with up-to-date information concerning Rail System status and update the Passenger Information Display system on the same?	1A.5.1.3.11 Page 7	System-Wide Public address announcements were made frequently to provide to customers with up-to-date information concerning Rail System status and the Passenger Information Display System (PIDS) as well. Signs like: "Please use opposite platform and no train from this platform" were displayed in the station.	✓	
14	<u>Question:</u> Were the restoration activities coordinated with the Maintenance Operations Center (MOC)?	1A.5.1.3.12 Page 7	Power, Car Maintenance (CMNT) and Automatic Train Control (ATC) activities were coordinated by MOC.	✓	
15	<u>Question:</u> Were frequent updates provided to and obtained from Maintenance Operations Center (MOC) on events as they occur?	1A.5.1.3.13 Page 7	Frequent updates were provided to and obtained from MOC on the events as they occur.	✓	

8.8 APPENDIX H: PERMANENT ORDER 17-R-02 GRANTING FOUL TIME ASSESSMENT CHECKLIST



Quality Assurance, Internal Compliance & Oversight (QICO) Audit Checklist

DATE: 6/1/17

AUDITEE/S: ROCC -TIME-PERMANENT ORDER NO.R-17-02 GRANTING FOUL TIME (FT)

INTERVIEWEE/S: N/A, ASSESSMENT DONE USING AUDIO RECORDINGS.

Serial	Question /Observation	Reference	Objective Evidence/Non-Conformity	Conformity	
				✓	X
1	<u>Observation:</u> Did the employee grant the Foul Time with the implimentation of checklists to ensure the necessary protection is in place?	Permanent Order R-17-02	Checklists have been developed based upon the Permanent Order NO. 17-02 Granting Foul Time.	✓	
2	<u>Observation:</u> Did ROCC supervisor repeat the Foul Tme request and advise Roadway worker In charge (RWIC) Requestor and crew to stand by and stand clear?	Permanent Order R-17-02 Step 1	The controller repeated FT request and advise Roadway Work In Charge(RWIC) /Requestor and crew to standy and stand clear.	✓	
3	<u>Observation:</u> Did the ROCC controller cancel all approaching signals to ensure FT area is protected by RED SIGNALS (remove automatic signaling if applicable)?	Permanent Order R-17-02 Step 2	The controller cancelled all all approaching signals to ensure FT is protected by RED SIGNALS.	✓	
4	<u>Observation:</u> Did the controller establish "Prohibit Exits" in FT area?	Permanent Order R-17-02 Step 3	The controller establisheed the "Prohibit Exits" in FT area.	✓	
5	Did the controller inform Train Operators in approach to FT area that there is a RED SIGNAL ahead-Tain ID contacted?	Permanent Order R-17-02 Step 4	As noted in the audio recordings and the foul time checklists'	✓	
6	Did the controller establish"Blue Block Traffic" and Human Form" in FT area?	Permanent Order R-17-02 Step 5	The "Blue Block Traffic" and "Human Form" were established in FT area.	✓	
7	Did the the Roadway Worker In Charge (RWIC) confirm over the radio that all protections have been established and which signals have been cancelled?	Permanent Order R-17-02 Step 7	The RWIC confirmed over the radio that all protections have been established and which signals have been cancelled.	✓	
8	Did the RWIC call ROCC to relinquish the FT when the work is completed?	Permanent Order R-17-02 Step 9	The RWIC called ROCC to relinquish the FT when the work is completed.	✓	
9	Did the ROCC supervisor denote time Foul Time was relinquished?	Permanent Order R-17-02 Step 9 part3	Controller denoted time Foul Time was relinquished.	✓	

List of Authorized Terms and Responses

<u>TERM</u>	<u>DESCRIPTION</u>
<u>Central</u>	<u>Rail Operations Control Center (ROCC)</u>
<u>Copy</u>	<u>The transmission was heard and understood</u>
<u>Disregard</u>	<u>Canceling previous instructions</u>
<u>Hold</u>	<u>Hold your position – DO NOT MOVE until so instructed</u>
<u>Affirmative</u>	<u>Yes</u>
<u>Landline</u>	<u>Call by telephone, specified number or person</u>
<u>Out</u>	<u>Used by Central Control (ROCC). End of transmission, no reply is needed</u>
<u>Over</u>	<u>I am finished with my transmission and I am turning control of the air time over to you and I am awaiting your response</u>
<u>Proceed</u>	<u>Permission to move train</u>
<u>Negative</u>	<u>No</u>
<u>Repeat</u>	<u>Repeat all of your last transmission</u>
<u>Single Tracking</u>	<u>Controlled changes in the direction of traffic, on a single main line track segment, between selected interlockings.</u>
<u>Urgent (to be used in emergencies)</u>	<u>Repeated three times consecutively (Urgent, Urgent, Urgent) to notify parties of a hazardous condition which could result in death or injury, damage to property, or cause a serious disruption in operations.</u>
<u>Standby</u>	<u>STOP TRANSMITTING (Calling station should honor “standby” without question unless the calling station has an URGENT call to report) Wait for further instruction</u>