

Tri-State Oversight Committee



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DRPT

Three-Year Safety and Security Review of the Washington Metropolitan Area Transit Authority

Rail Transportation

Elements 13 and 16

Review Conducted: March and September 2015

Final Report: March 22, 2016

Introduction

Representatives from the Maryland Department of Transportation (MDOT), the District of Columbia Department of Transportation (DDOT), and the Virginia Department of Rail and Public Transportation (DRPT) comprise the Tri-State Oversight Committee (TOC), which provides regular oversight of the Washington Metropolitan Area Transit Authority (WMATA) Metrorail system. To comply with State Safety Oversight Final Rule 49 Code of Federal Regulations Part 659 (Part 659), the Federal Transit Administration (FTA) requires states to designate a State Safety Oversight (SSO) agency to administer safety and security programs for rail transit and fixed guideway systems within their jurisdictions. Specifically, 49 CFR Part 659 requires TOC to conduct an on-site safety review of each element of the WMATA System Safety Program Plan (SSPP) at least once every three years. These reviews must assess WMATA's implementation with all 21 elements of its SSPP and seven elements of its Security and Emergency Preparedness Plan (SEPP), along with related plans and procedures. Beginning in 2013, the TOC has split its Three-Year Safety and Security Review topic areas into separately occurring reviews spread out during a three-year period.

The following report documents the observations and findings of the TOC's review of WMATA's rail transportation department. Generally, this review focused on whether WMATA's rail transportation program complies with its own written plans as well as industry standards and best practices. The relevant SSPP elements for this review were all or part of:

- Element 13: Rules Compliance
- Element 16: Training and Certification

The TOC Program Standard and Procedures defines WMATA requirements for these elements in Section 12 and in Appendix B. Specific requirements are cited further, below.

Methodology

The TOC participated in the FTA's Safety Management Inspection (SMI) of WMATA's power maintenance in March and April 2015. TOC joined these reviews to avoid duplication of its simultaneous, ongoing Triennial Review schedule. Subsequent to the SMI, TOC conducted an abbreviated Triennial Review on September 22, to cover remaining questions and close the gap on topics requiring coverage between the SMI and the Triennial Review process.

For the SMI portion of the review, the FTA and TOC review teams covered all aspects of Metrorail operations, including the Rail Operations Control Center (ROCC), Rail Operations Training, and Rail Operations in the field. The review teams received an overview of the Advanced Information Management System (AIMS), the ROCC displays, including discussion of technical and procedural aspects of ventilation, power, and alarm use and indications. The group also discussed general questions about Controller response, track rights, and coordination with other desks and field personnel. The review

teams observed activity and radio communications in the ROCC during the PM rush hour, as well as observation of an unannounced loss-of-shunt alarm drill. Other ROCC observations included visiting each console for specific overviews and questions and monitoring of roadway worker protection (RWP) call-on requests. The review teams also interviewed the management teams for ROCC, Rail Station and Train Operations (RSTO), and Rail Operations Quality Training (ROQT) and performed field observations of train operations.

In advance of the TOC follow-up review, the TOC requested and reviewed relevant WMATA plans, procedures, checklists, and reports. During the TOC and FTA on-site review sessions, the review team interviewed WMATA personnel and reviewed various documents and records to assess compliance with procedures. During the abbreviated review, the TOC team began the abbreviated review by conducting interviews with several WMATA Train Operators on a variety of topics including new hire training, refresher training, rule changes, departmental communications, communications with ROCC, and several other topics. Persons interviewed (except front-line personnel) and documents reviewed are noted at the end of this report. This report identifies conditions evident during the review period, regardless of the current progress of potential remediation activities.

A Finding may refer to an instance of WMATA operating out of compliance with an applicable internal or external written requirement, plan, policy, rule, standard, or procedure. Findings may also refer to instances whereby WMATA may technically be conducting business in compliance with existing WMATA, TOC, or FTA procedures and requirements; however, there may be no relevant written plan, policy, or procedure in place, or the existing plan, policy, or procedure is not in accordance with industry best practices. Findings may be safety-critical in nature regardless of whether the issue identified is “non-compliant.”

After publication of the Final Report, TOC will transfer the report to FTA for further action. FTA will then determine the appropriate mechanism by which the findings documented in this report will be addressed by WMATA.

The TOC would like to thank WMATA personnel for their time, cooperation, and forthrightness throughout the review process.

Current Conditions

ROCC

The Rail Operations Control Center (ROCC) is led by a Director (currently an Acting Director), who reports to the Manager Director of Rail Transportation (RTRA). There is one day and one night Superintendent on duty each for the ROCC and the Maintenance Operations Center (MOC), which have seven and six Superintendent positions, respectively. There is always an Assistant Superintendent on duty; they are responsible for incidents, managing decisions on ventilation, and offering help when needed.

Controller shifts run 5 a.m. to 1 p.m., 1 p.m. to 9 p.m., and 9 p.m. to 5 a.m. The MOC portion of the ROCC is broken into desks for power, Automatic Train Control (ATC), elevator/escalator, communications, and car maintenance. The ROCC has three consoles, one each for the Red Line; the Orange, Silver, and Blue Lines from Largo to Arlington Cemetery; and the Yellow, Green, and Blue Line from Arlington Cemetery to Franconia/Springfield. Each desk has a corresponding radio channel. The desks have one “Buttons Controller” who initiates commands and monitors alarms on the AIMS screen, and one “Radio Controller” who communicates with the Train Operators and others. They are sometimes assisted by an “Administrative Controller” who completes paperwork and other tasks as requested. This staffing remains consistent 24 hours a day. The room also has a Rail Operations Information Center desk responsible for communication with Station Managers and Automated Fare Collection, making public address announcements, and coordinating with first responders for sick customers.

ROCC management reports that they try to rotate Controllers among the desks so they remain familiar with each line. There are also “as directed” Controllers who may fill in; their shifts are not consistent.

New information results in blanket announcements to Train Operators, followed by the Controllers individually contacting each Train Operator to confirm receipt. If Controllers are unable to communicate with field personnel, they request a Station Manager meet the personnel on the platform.

The Superintendents conduct audits after incidents, including minor events, using audiotape. They inform Controllers how they performed and initiate refresher training if needed.

ROCC management reported their biggest problem to be railcar availability. Shortages result in shortening trains from eight to six cars to keep headways consistent.

The AIMS default screen for each Controller depicts train locations/movement and signal aspects. Controllers zoom in and select various layers to view and manipulate detailed indications such as third rail power, ventilation fans, and alarm status. Ventilation fans are located at every underground station, as well as in long stretches between stations. Each ventilation fan icon on the screen has an associated arrow for up (exhaust, up from the tunnel) or down (intake, into the tunnel). Between Morgan Boulevard and Largo, the software allows the Controller to select a scenario (i.e. emergency exit east) to automatically arrange ventilation direction. ROCC management reports that ventilation is used almost daily due to smoke from railcars (“hot brakes”); during emergencies, direction is to be coordinated with the responding fire department.

If equipment is in an abnormal state, it generates an on-screen alarm to the Controller. The alarm is automatically added to a list of alarms for each console, as well as one of all ROCC alarms visible to management. Controllers were observed to constantly have their respective list of alarms visible on their screens. The alarm lists the time of generation,

the type, and location. The Controller can click on the local view of the alarm location to see a blinking red icon in the problem location, and then respond accordingly by working with the MOC or field personnel. Both MOC and ROCC Controllers are expected to acknowledge each alarm. The many causes of alarms also include red signal overruns, trains with improper route identification numbers, and other operational or infrastructure issues. Assistant Superintendents report that they monitor the status of alarms and check with Controllers is one goes unacknowledged (blinking on the list). However, it was reported that hundreds to thousands of alarms occur per day. During ROCC observations, at one point there were dozens of unacknowledged alarms extending to an hour old. Older alarms were acknowledged, but Controllers are not required to note whether they take no action for each alarm. Daily summary logs are used to describe actions taken to significant alarms. RTRA management reported that they have recently convened a committee to analyze which alarms are unnecessary and can be diverted from the Controllers' view. Controllers confirmed that it is difficult to keep up with alarms, and that many are ignored; it was reported that ignoring a pump alarm caused a station to flood.

ROCC management described one location where a red signal overrun alarm repeatedly occurs due to an infrastructure problem. Because ATC personnel have not been able to determine the problem, they have notified ROCC not to notify them of the problem any longer, and Controllers are expected to acknowledge the alarm and assess the situation but not take further action if train movement appears acceptable.

There are two types of alarms that set off a special series of events. Loss of shunt alarms, reported to happen two to three times a week, initiate an amber light and audible alarm on the ROCC floor. During the audit, ROCC and ATC personnel initiated an unannounced loss of shunt alarm as a demonstration and a drill. This resulted in immediate coordination of absolute block operations in the area affected and MOC dispatch of field personnel. The second type of special alarm is for the PROTECT chemical detection system (further described in the 2014 TOC Triennial Review of Emergency Management).

The MOC is not involved with active work crews; responsibility is with either the Mobile Operations Command Center (MOCC) or ROCC. Complete shutdowns for roadway work result in MOCC authority over the work area. Any work areas involve the Controller establishing AIMS "prohibited exits" on the segment affected. All such work, except in emergency situations, is managed through the General Order Track Rights System requiring advance permission. Controllers may make notes on the screen or on hard copy track maps issued daily. Routine roadway access such as track inspections does not require prior coordination; in these cases, the Controller must depict the area affected as blue with a stickman icon along with the Roadway Worker In Charge (RWIC) identification number. Observations during prime roadway worker call-on time (10 a.m.) and interviews with Controllers show that there is a barrage of information, permission, recordkeeping, and announcements during certain times that can be overwhelming for a two-person desk to handle. WMATA should consider making personnel available during such prime times – as it does for incident management – to take control of this dedicated task while the existing Controllers perform their regular duties.

At the time of the SMI, there were two students nearing completion in Controller training, and several classes were certified last year. ROCC initial training is a 13-module curriculum that takes about 17 weeks. It is preceded by orientation training required for all other personnel and Train Operator training (if not hired from among RTRA personnel). It is accompanied by quizzes and tests required an 85 percent to pass (with two retests allowed), but records showed a student allowed to progress without evidence of retesting. There is also no documented inventory of quizzes and tests; one presented verbally to the audit team did not coincide with records from classes before 2015. Practical exams were recently created to accompany the 17-week program. After this classroom portion, new Controllers then experience 14 weeks of on-the-job training split among each of the three shifts. It was unclear whether there were documented objectives or milestones for the on-the-job training. ROCC recertification occurs annually as a rules exam.

There are two training instructors in addition to an Assistant Superintendent who has assumed training roles. The trainers fall under the RTRA Director of Training. Two trainers retired last year but have not been replaced.

Training

WMATA's new hire training for Train Operators begins with a 13-week course which includes classroom time along with experiential learning in WMATA yards, plus 4 weeks of on-the-job (OTJ) training prior to certification. Train Operators interviewed by TOC indicated that they felt a high degree of comfort and familiarity with train operation at the conclusion of the 13-week new hire training course.

Currently, recertification is required for Train Operators every 2 years. Recertification consists of a full written retest of Operator competency along with a physical walk-through test during which Operators must identify and explain the role of train controls and parts. Operators also are required to hold active RWP certification.

Until several years ago, WMATA offered Operators up to two days of refresher training on an annual basis. Operators interviewed by TOC indicated that this practice has ended. This training originally consisted of classroom time and a field component. Operators indicated that it has become more challenging to recall obscure skills and procedures now that refresher training is no longer offered. In the event that rare problems arise and Operators are not familiar with procedures, ROCC can sometimes offer a walkthrough. However, the Operators indicated that many Controllers do not have sufficient experience to describe procedures accurately.

Operators also discussed recent training they had undergone for familiarization with WMATA's newest fleet vehicles, the 7000-Series. At the time of the review, the Operators interviewed indicated that 7000-Series training consists of a single day course. Operators receive instruction in the differences between the 7000-Series console and consoles of older vehicles. They also experience yard and mainline operation of the new vehicles during the training, although Operators did not practice certain procedures such as moving vehicles into a shop.

A training manual is provided during the course, but materials in the manual are currently not finalized; no exact procedures exist for train inspection, ground walkarounds, troubleshooting, and other key areas. The training manual contained some materials derived from training manuals for the rest of the WMATA fleet which were not customized for the 7000-Series. Operators indicated that there is no information available about when the materials will be finalized and whether they will be retrained to operate the 7000-Series at that point.

Trainers did offer a questionnaire on how to improve the training, but did not offer additional training time except to say that more training might be offered when procedures are finalized. After this training, Operators could conceivably be drafted into service to operate 7000-Series trains. No signoff exists to confirm that Operators feel they are competent in operating the 7000-Series vehicles following training. The Operators interviewed were unanimous in their assertion that more substantial 7000-Series training and more detailed training materials should be provided.

The Operators interviewed by TOC did not recall receiving retraining in ATO operation before ATO operation resumed in portions of the WMATA system recently.

One Operator raised several general concerns regarding training which the Operator felt were commonly-held opinions in the department. First, the Operator noted that many instructors are not hired from within, and oftentimes instructors have less familiarity with the intricacies of the system than Operators. Second, the Operator noted feeling pressure to sign off on training even when he felt the training was inadequate or unclear to protect his job and win the confidence of Supervisors.

Rule Changes / Temporary and Permanent Orders

TOC representatives also discussed how rule changes and new orders are communicated to Train Operators.

Changes to the Metrorail Safety Rules and Procedures Handbook (MSRPH) in whole are scheduled to take place very two years, which includes revisions to include the rule changes codified by Permanent Orders since the Previous MSRPH revision. WMATA convenes a Rulebook Committee, Chaired by the Director of ROCC, to issue the revisions to the MSRPH, as well as rule changes promulgated by Permanent Orders.

When WMATA issues a rule change to the MSRPH, changes are delivered to Operators by way of Supervisors. Typically, Operators are provided with a document that shows each rule with any changes underlined. Each Operator is required to sign for rule changes to indicate that the new rules are understood. Some Supervisors review these materials directly with Operators, while other Supervisors do not. Supervisors are available to offer clarification when Operators do not clearly understand rule changes. Operators described

this practice as fairly effective, and noted that in a majority of cases, follow-up from major incidents involves rules that are already in place.

The Operators described changes in procedures which were released following the January 2015 smoke incident at L'Enfant Plaza, which focused on using onboard environmental (EV) systems to vent smoke from trains. A memorandum describing changes in procedure was distributed, but no new training was offered. Operators noted that the rule changes developed following this incident were fairly clear.

Radios

At least one Operator interviewed by TOC claimed to have observed no significant improvements in radio dead spots throughout the system since WMATA's transition to a digital radio system. Recalibration did contribute to some positive changes in the quality of radio communications. Operators described training on the new radio system as a demonstration by a Supervisor and distribution of a new list of radio codes. Operators remained concerned regarding clear communications with central during incidents, noting that performance of the system remains poor in many areas and some trains, particularly the 5000-Series, are not equipped with digital radios.

Communications

Operators described being provided with a list of words and terms to utilize when making routine announcements to passengers via the public address (PA) system. Train Operators received this list several years ago. Operators noted that each Operator speaks into the cab microphone in different ways, which could contribute to variations in the clarity of Operator announcements to passengers.

Regarding interactions with ROCC, the Operators interviewed by TOC expressed concern about how Controllers must be contacted before Operators may take actions such as activating the vehicle EV system, and in certain instances would prefer to trust their own intuition for making correct use of tools at their disposal. The Operators described a desire to make their own decisions when receiving incorrect instructions from ROCC, but they also feared retribution for insubordination when relying on their own common sense to resolve situations on scene. Operators explained that the reality of operating a train in the field deviates significantly from training received by Controllers.

Operators characterized general communications with Controllers as poor. In certain instances, for example, Operators have found Controllers too quick to offload trains with stuck doors; Operators prefer workarounds such as cutting out individual doors to remain in service. In other instances, Train Operators felt either hurried or slowed down by ROCC to remain on schedule, and described feeling discomfort in these situations. Overall, the Operators interviewed felt that Controllers did not always issue correct instructions and were not sufficiently experienced with the WMATA system. They noted that following protocols for communication with control has improved the quality of Operator interactions with ROCC.

One Operator expressed an observation that individual Controllers appear to recognize the voices of particular Operators, and felt that individual Operators sometimes acquired a negative reputation in the ROCC, making it challenging for those Operators to work productively. He expressed a fear of retaliation were this problem to be communicated to Supervisors, and observed that Operators have changed to operating trains on different lines to escape this problem.

Managing Safety Concerns

The Operators interviewed by TOC described several modes by which safety concerns can be raised and addressed. The primary avenue for communicating a safety concern is discussing the issue with a Supervisor. Not all of the Operators routinely participated in regularly-scheduled Safety Committee meetings, though they noted that meeting times and dates are posted for employees to review. One Operator noted that the same issues tended to surface in these meetings from month to month without resolution. Concerns may also be submitted via suggestion box or the close-call reporting system.

Generally, the Operators described several challenges with elevating safety concerns in the Rail Operations department. The Operators noted that without tangible safety changes, there are few incentives to report concerns; they do not communicate concerns because they do not expect a response or assume that management is already aware of certain problems. The Operators felt that superintendents at each division were reluctant to take ownership over safety problems. Inside the organization, the Operators were skeptical that their concerns would remain confidential and anonymous while utilizing several of the reporting channels to express safety concerns.

RTRA Rail Operations Quality Training

During a second component of the abbreviated review, TOC interviewed management representatives from RTRA's Rail Operations Quality Training (ROQT) group, with an emphasis on training for operating rules and rule compliance, radio and communications discipline, training on new operating equipment (i.e. the 7000-series railcars), refresher training, and baseline training for Field Supervisors.

The ROQT group described their participation in the update process for rules and procedures. When temporary and permanent change orders are issued, RTRA received notification of updates and delivers those updates to individual instructors. The ROQT group is not typically consulted before rule changes become official, noting that existing corrective action 14-061 requires a solution to address this deficiency. For employees who are already working in the field, the new rules are distributed to division leadership, Field Supervisors, and superintendents.

The current mechanism for frontline employees to provide feedback on new rules is a conversation with a Field Supervisor. After an overhaul of the Line Platform Instructor

(LPI) program conducted under corrective action 14-061, LPIs and training instructors will also offer guidance in this area.

ROQT observed that a gap exists when Operators sign off on rules between ensuring that rules have been received and ensuring that rules have been understood. WMATA currently has no mechanism to address this issue. Corrections will involve the LPI training program, which addresses how instruction is delivered, how feedback is provided, and whether employees understand individual rules. Under a new “Know the rule, understand the rule, apply the rule” framework, pre- and post-testing will be conducted to gauge Operator comfort with new rules following training. New LPI program developments will align the LPI program with other training, which may contribute to a more-effective learning experience for Operators.

TOC representatives expressed concern at an earlier discovery that new trainees had entered revenue service without having operated on the mainline. This deficiency was identified and articulated during the FTA SMI. Following this discovery, WMATA instituted a 30-hour minimum requirement for mainline training of new Operators, along with a minimum of two weekend round trips during practical examinations. Operator trainees are required to operate vehicles for 30 hours in the yard and receive a minimum of 30 hours of OJT, with additional time added if performance is not adequate.

TOC next raised questions regarding RTRA’s instructor pool. ROQT noted that a new directive, 15-1, add standard for new Supervisors and training advisors who did not come up through the WMATA ranks. This standard has been submitted to the FTA for review. At the time of the FTA SMI, WMATA had no minimum vehicle operating hours requirement for Supervisor recertification. This deficiency will also be addressed by directive 15-1.

TOC and ROQT discussed training materials developed for the 7000-series railcar. TOC noted that Operators consistently stated that training on this series was insufficient, a clear example of employees signing off on training despite being uncomfortable with the material provided. ROQT explained that while 7k-series cars are being integrated into the fleet, accessing the cars can be challenging. Complete procedures cannot be developed until RTRA’s trainers have consistent access to the vehicle. ROQT also noted that training materials are expanded and customized to suit each series as the unique qualities of each vehicle become apparent during operation. Currently, no 7k-series simulator is available. ROQT is aware of concerns about the length of the course thanks to feedback received on evaluation questionnaires offered at the end of 7k-series training.

ROQT next described the process of refresher training and recertification. After preliminary training and before OTJ training, new Operators conduct a self-assessment, after which additional training is available to target problem areas. An LPI is assigned to work with each student, which becomes part of remediation and response to identified issues.

In the past, annual refresher training was offered even when Operators were not due for recertification. ROQT indicated that the refresher training program will be returning in a

new form. ROQT noted that filling Operator trainer vacancies has been a challenge, exacerbated by the opening of the Silver Line and several retirements. Per Corrective Action Plan (CAP) 14-061, all trainers must undergo train-the-trainers coursework. ROQT noted that when Automatic Train Operation (ATO) resumed on the Red Line, a combination of formal training and OTJ training was offered to Operators. This training included a CBT component.

ROQT explained that the role of the department is limited to onboarding, technology training, all initial Controller training, certification, recertification, and currency training. ROQT has not participated in development of formal protocols for use of tunnel fans. Once the protocols are developed, they will be submitted to ROQT to be integrated into training exercises. The ROQT team does have a resident OCC subject matter expert.

RTRA uses audits to ensure that protocols for communication between Controllers and Operators are being followed. WMATA Quality Assurance typically conducts field audits covering communications. Assistant superintendents in the control center also audit communications on a random basis. WMATA is currently developing a formal process for Controller-Operator communications audits.

Regarding Operator communications with passengers, RTRA does provide standard announcement templates. WMATA's OCC will sometimes instruct Operators to use certain messages in certain situations when making announcements to passengers. RTRA offers a one-day elocution class for proper enunciation.

RTRA is currently in the process of resequencing train instruction for Controllers. New course materials will be rolled out during classes in October. ROQT noted that OCC rules and procedures change relatively dynamically, with old material purged and new material becoming active every six months.

Records Review

TOC performed a records review of a sample of ROQT Yard Practical Rotation Evaluation Forms ("self-assessments"), student evaluations of the one-day 7000-series railcar familiarization workshop, and sign-in sheets for the elocution class.

In a review of Yard Practical Rotation Evaluation self-assessments for Class 15-06, TOC observed that of 31 total students, 22 marked training in all categories as satisfactory. The remaining nine students assessed themselves as deficient in one or more of 18 total training areas.

Category	Number Deficient	Category	Number Deficient
Troubleshooting	4	Radio operation channel	2
Radio communication	5	Operate route selection box	4

Total isolation (4,6,8 car consist)	3	Turn back operation	1
Coupling	1	Mode and level operation (ATO/manual)	2
Uncoupling	1	Required announcements	1
Exterior inspection	2	Yard moves	2
Interior inspection	2	Operation through connector/pocket track	1
Recovery operation	2	Operation as flagger	1
Moves into shop	2	Operation from third car	1

FTA Findings

In addition to the new issues identified in the Findings section below, the TOC concurs with the following findings and recommendations from the FTA's SMI report dated June 17, 2015. These deficiencies will be tracked to resolution by TOC via the FTA SMI CAP process:

Finding R-1 WMATA's Rail Operations Control Center is significantly understaffed.	R-1-1-a WMATA must fully staff the Rail Operations Control Center.
Finding R-2 RTC re-certification has not occurred as required.	R-1-2-a WMATA must complete and maintain required annual re-certifications for Rail Traffic Controllers.
Finding R-3 RTCs receive limited refresher training and no road days.	R-1-3-a WMATA must establish a program to provide each Rail Traffic Controller with mandatory road days for territory familiarization and to keep up with changing system elements.
	R-1-3-b WMATA must require all Rail Traffic Controllers to obtain and maintain Level 4 Roadway Worker Protection training and certification.
Finding R-4 There is a high level of noise and distraction in the ROCC, and a lack of electronic controls in the AIM system to prevent errors.	R-1-4-a WMATA must complete its assessment regarding the identification of critical versus non-critical notifications and alarms in the Rail Operations Control Center, and options for removing non-critical notifications must be implemented.
	R-1-4-b WMATA must conduct an engineering assessment, and implement the results regarding options to reduce noise in the Rail Operations Control Center, including ambient noise and feedback from the radio system.
	R-1-4-c Until such time as electronic records of train movement are readily available to on-duty Rail Traffic Controllers, WMATA must ensure that its Rail Traffic Controllers maintain a paper-based record of all mainline train movements, signal bypasses, and unusual movements.
Finding R-5 WMATA RTCs are required to perform many tasks outside of industry standards.	R-1-5-a WMATA must ensure Rail Traffic Controller workload and distraction do not interfere with the safe and efficient movement of trains.
Finding R-6 Radio discipline is poor.	R-1-6-a WMATA must establish and enforce a proper protocol for language and terminology that is used over the radio – to include 100 percent word-for-word read-back for safety-related instructions and unusual train movements.

	R-1-6-b As part of the radio protocol required in R-1-6-a, WMATA must establish an approach for communicating and managing all speed restrictions that requires two-way communication between the ROCC and Train Operator and takes full advantage of available electronic AIM system features.
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Finding R-7 WMATA's ROCC lacks formal procedures, manuals and checklists	R-1-7-a WMATA must establish procedural checklists for Rail Operations Control Center staff to implement the Standard Operating Procedures attached to the Metrorail Safety Rules and Procedures Handbook.
	R-1-7-b WMATA must enhance RTC reference materials to direct internal operations at the Rail Operations Control Center, including the use of the Advanced Information Management system, visual schematics of WMATA stations and facilities, and internal ROCC administrative policies and procedures.
Finding R-8 Personal cell phones are used by RTCs in the ROCC.	R-1-8-a WMATA must establish a clear policy that prohibits distractions from the use of cell phones and other electronic devices in the Rail Operations Control Center.
Finding R-9 No formal transfer records are used when RTCs complete shift briefings.	R-1-9-a Until such time as electronic transfer records are implemented, WMATA must ensure that its Rail Traffic Controller use paper-based logs with formal signatures.
Finding R-10 WMATA does not use industry standard rules reviews and scenario testing activities.	R-1-10-a WMATA must establish an on-going "efficiency" testing program for Rail Traffic Controllers to evaluate their in-service performance and competency.
Finding R-11 WMATA faces major challenges in recruiting and training new RTCs.	R-1-11-a WMATA must establish an independent committee to evaluate and monitor the recruitment of Rail Traffic Controller trainees, the quality and performance their training, and the certification of new candidates.
Finding R-12 WMATA's training program for new RTCs is	R-1-12-a WMATA must overhaul, correct, revise and improve its training program for Rail Traffic Controllers.
	R-1-12-b WMATA must establish performance standards to be qualified for all positions in the Rail Operations Control Center.
Finding R-13 WMATA's accident investigation process does not look at the ROCC or individual RTCs.	R-1-13-a WMATA must expand the focus of its accident investigation process to include an active review of the actions of the ROCC, and to ensure that RTCs whose performance could have contributed to the accident are taken for mandatory post-accident drug and alcohol testing as per 49 CFR Part 655.44.
Finding R-14 While it has improved, the quality of WMATA's radio system is still poor in some locations.	R-1-14-a WMATA must expedite activities underway to modify the radio system design to add coverage to the areas that currently are not part of the system design, including tunnel ventilation and fan shafts, safe and refuge areas, and tunnel portals.
	R-1-14-b WMATA must assess and prioritize for additional radio enhancements not covered by Capital Improvement Plan (CIP) 136.

Finding R-15 Maintenance and Operations Departments have not ensured the RWP training program is being conducted as required. Annual refresher and biennial recertification requirements for Level II and Level IV are behind schedule.	R-2-15-a Each WMATA Department with Roadway Worker Protection-trained and qualified employees must coordinate with Technical Skills & Maintenance Training to get or establish an accurate status on each employee's refresher and requalification training.
	R-2-15-b Each WMATA employee with lapsed refresher training or requalification must repeat the initial training and qualification for his or her level as specified in WMATA's roadway worker protection training program.
	R-2-15-c WMATA's Information Technology Department must work with Technical Skills & Maintenance Training to develop a long-term solution to tracking employee status and ensuring that Computer-Based Training

	records, classroom records and employee records are accessible to all departments.
	R-2-15-d WMATA must include annual Roadway Worker Protection refresher and requalification time in overall work scheduling protocols and requirements.
Finding R-16 Technical Training for operations and maintenance departments is under-resourced and fractured, currently provided by five different departments and IT, is insufficiently directed and resourced, and relies significantly on on-the-job-training (OJT) which is informal and lacks oversight.	R-2-16-a WMATA must conduct a coordinated study to prioritize technical training needs for maintenance personnel, and operations training for Rail Traffic Controller, Train Operators, and Field Supervisors.
	R-2-16-b WMATA must evaluate whether re-organization or consolidation of training functions would improve the agency's ability to manage, schedule, budget for, develop, oversee and assess training and ensure that training material remains up-to-date.
	R-2-16-c WMATA must establish a comprehensive training program to communicate the new "Fire Life Safety 1000 --Inspection, Testing and Maintenance Procedure" to WMATA Operations and Maintenance personnel.
	R-2-16-d WMATA must establish formal guidance for maintenance employees responsible for providing on-the-job training.
Finding R-17 WMATA does not have a clear strategy for the development or delivery of emergency response training to WMATA's frontline personnel, or for managing the logistical challenges associated with coordinating familiarization training with local emergency responders.	R-2-17-a WMATA's Office of Emergency Management must conduct a formal review of the Metrorail Safety Rules and Procedures Handbook, the supporting Standard operating Procedures, and the new checklists and tools developed by the Rail Operations Control Center to ensure conformance with WMATA's emergency plans and the understanding of local jurisdictions as reflected in region-wide emergency operations plans.
	R-2-17-b WMATA's Office of Emergency Management must conduct a formal review of all training provided to frontline, Supervisory and ROCC personnel regarding the actions required to be performed during an emergency to ensure its conformance with WMATA's emergency plans and the understanding of local jurisdictions as reflected in region-wide emergency operations plans.
	R-2-17-c WMATA must establish an approach for delivering updated emergency response training to front-line Train Operators, Supervisors, Stations Managers, Rail Traffic Controllers, and other personnel.
	R-2-17-d WMATA must review and update its approach to providing familiarization training to local emergency responders, and ensure that emergency responders have ample opportunities to learn and practice activating and using fire life safety equipment and systems, including ventilation fans, fire suppression system, standpipes, communication equipment, and other systems.
	R-2-17-e WMATA must test its backup Rail Operations Control Center on a quarterly basis and demonstrate the ability to safely control train traffic.

Finding R-18 Rules compliance checks of operational personnel are inconsistent.	R-2-18-a WMATA must require Rail Supervisors to complete meaningful rules checks on Train Operators, not just single observation items, unless directed as part of a special emphasis program.
	R-2-18-b WMATA must establish documentation and a training program to ensure that Rail Supervisors know how to conduct and record meaningful rules checks of Train Operators, and how to discuss results with Train Operators.
Finding R-19 Rail Transportation is not ensuring that Field Supervisors conduct required rules compliance checks on station managers and Train Operators.	R-2-19-a WMATA must develop a formal operations testing program to include active, fail-safe testing of all employees responsible for operating or directing the safe movement of trains.

	R-2-19-b WMATA must document operational testing requirements and test results to improve the utility of the program as part of a robust testing and observation program.
Finding R-20 New Supervisors are not familiar with rules compliance checks requirements.	R-2-20-a WMATA must improve the quality and consistency of training for new Rail Supervisors to include purpose and requirements for rules checks.
Finding R-21 Some newly promoted Field Supervisors, who have not previously operated rail vehicles, are not sufficiently trained to relieve Train Operators on the mainline.	R-2-21-a WMATA must establish a minimum number of trips per month that each Rail Supervisor must complete on the mainline to ensure the sufficiency of his or her skills.
	R-2-21-b WMATA must review Supervisor Daily Activity Reports to ensure that Supervisors are completing required activities, including the minimum number of established trips per month.
Finding R-22 WMATA must ensure that two-year re-certifications are being performed for Train Operators.	R-2-22-a WMATA must review its schedule of in service evaluations to ensure sufficient time is available for each Train Operator to receive his or her two-year re-certification.
	R-2-22-b WMATA's Information Technology Department must work Rail Operations Support to develop a long-term solution to tracking Train Operator re-certification status and the results of any other in service examinations or activities completed.

The TOC does not require a separate response to the FTA findings. The TOC will monitor implementation of the recommendations through WMATA's CAP submissions to the FTA.

TOC Findings

Finding 1: RTRA does not provide annual refresher training to Train Operators.

Train Operators interviewed noted that there have been some instances in which their application of infrequently-used skills was problematic as a result. RTRA ROQT management staff acknowledged that restoration of refreshers would be beneficial to Train Operators; due to resource limitations in training staff, ROQT prioritized training new Train Operators in light of a large number of Train Operator retirements and to increase the size of the Train Operator pool to staff the Silver Line.

Finding 2: Train Operators sign off on rule changes without fully comprehending new rules.

When WMATA issues rule changes via Permanent Order or Temporary Order, Train Operators are required to sign for and acknowledge receipt of the same. Receipt of the rule does not necessarily constitute understanding of the rule.

Finding 3: The 1-day familiarization course offered for the 7000-series vehicle is insufficient.

Train Operators interviewed and comments on course evaluation surveys reviewed indicated that a longer familiarization course, particularly more time spent training on the 7k equipment itself, was desired by Operators. Additionally, training materials are incomplete and ROQT set the expectation to Operators that more 7k training would be made available at a later date.

Finding 4: ROQT has insufficient lead time to develop new training curricula in response to WMATA initiatives.

Ideally, ROQT would be notified immediately upon the

genesis of new operating initiatives in order to allow sufficient time to develop the training to support the new initiative. The 7k program is an example of a program that would have benefitted from increased lead time for ROQT to develop the supporting training.

Persons Interviewed

- [REDACTED] (ROQT)
- [REDACTED] RTRA/ROQT
- [REDACTED] RTRA/ROQT
- [REDACTED] RTRA/ROQT
- [REDACTED] QAAW
- [REDACTED] SAFE
- [REDACTED]
- [REDACTED]
- [REDACTED] RTRA
- [REDACTED] RTRA
- ROCC Controllers (Names withheld)
- ROCC Controller Trainees (Names withheld)
- Metrorail Operators (names withheld)

Documents Received / Reviewed

- ROQT Yard Practical Rotation Evaluation Forms (“self-assessments”)
- Student evaluations of the 1-day 7000-series railcar familiarization workshop
- RTRA Elocution course sign-in sheets
- RTRA Elocution course syllabus
- Train Operator Initial Training Orientation Participant Guide
- 7000-series Railcar Verifications
- RTRA QA/QC Group Standard Operating Procedures
- WMATA Elocution for Improved Comprehensibility Training Design Document