



NATIONAL TRANSPORTATION SAFETY BOARD
Investigative Hearing

Washington Metropolitan Area Transit Authority Metrorail train 302 that encountered heavy smoke in the tunnel between the L'Enfant Plaza Station and the Potomac River Bridge on January 12, 2015

GROUP	
EXHIBIT	

Agency / Organization

Title

Safety Directive 15-1

Public Transportation Safety Improvements for the Washington Metropolitan Area Transit Authority Metrorail and Metrobus Systems

UNITED STATES DEPARTMENT OF TRANSPORTATION

Federal Transit Administration

[Safety Directive No. 15-1, Notice No. 1]

Safety Directive Under 49 U.S.C. 5329

Public Transportation Safety Improvements for the Washington Metropolitan Area Transit Authority Metrorail and Metrobus Systems

AGENCY: Federal Transit Administration (FTA), U.S. Department of Transportation (DOT).

SUMMARY: FTA issues Safety Directive 15-1 to require the Washington Metropolitan Area Transit Authority (WMATA) to address findings documented in FTA's Safety Management Inspection (SMI) report released on June 17, 2015. Conducted between March 16 and April 3, 2015, FTA's SMI identified organizational deficiencies and operational concerns that limit WMATA's effectiveness in balancing safety-critical operations and maintenance activities with the demand for passenger service. The Safety Directive identifies 78 corrective actions to be completed by WMATA's Metrorail system to address 44 safety findings in eight distinct categories of review and 13 corrective actions to be completed by WMATA's Metrobus system to address 10 safety findings in five distinct categories of review.

FOR FURTHER INFORMATION CONTACT: For program matters, Sean Thompson, Director, Office of Safety Review, Office of Transit Oversight and Safety, telephone (202) 366-3616 or Sean.Thompson@dot.gov; For legal matters, Scott Biehl, Senior Counsel, FTA, telephone 202-366-00826 or Scott.Biehl@dot.gov.

SUPPLEMENTARY INFORMATION:

Introduction

WMATA operates the second largest heavy rail transit system (Metrorail) and the sixth largest bus network (Metrobus) in the United States. WMATA provides 85 percent of all public transportation in the national capital region, serving a geographic area of 1,500 square miles and 5 million residents. WMATA's Metrorail system averages 730,000 weekday passengers and WMATA's Metrobus system carries approximately 465,000 weekday passengers.

Over the last decade, WMATA has experienced several serious accidents, including the collision of two Metrorail trains on June 22, 2009, near Fort Totten station, which resulted in the deaths of eight passengers and a train operator, and injured 52 others. Between 2005 and 2010, WMATA also lost eight workers in six collisions with trains and equipment on the rail transit right-of-way (ROW). Since 2010, in partnership with FTA, the Tri-State Oversight Committee (TOC), and in response to recommendations from the National Transportation Safety Board (NTSB) and increased scrutiny from the Virginia, Maryland and District of Columbia Congressional delegations, WMATA enhanced its safety focus and improved safety performance.

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As a result of these initiatives and activities, many of which were reviewed and approved by FTA and the TOC, WMATA's Metrorail system experienced no passenger, employee or contractor fatalities for 44 straight months (February 2010 through October 2013). For both Metrorail and Metrobus, employee injuries fell from 5.19 per 200,000 hours worked in calendar year 2011 to 4.2 per 200,000 hours worked for calendar year 2014. Passenger injuries fluctuated from a low of 1.68 injuries per million passengers in calendar year 2012 to 1.96 injuries per million passengers in calendar year 2014, allowing WMATA to maintain its goal of less than 2 injuries per one million passengers for four straight years.

However, on October 6, 2013, two WMATA employees were injured and a contractor was killed when they were struck by a 40-foot section of rail during an emergency evacuation of work zone in a tunnel near Union Station. During calendar year 2014, the number of fires and smoke events requiring suppression on the WMATA Metrorail system almost doubled from 15 in 2013 to 29 by the end of December 2014. On January 12, 2015, an electrical arcing incident near L'Enfant Plaza station resulted in toxic smoke conditions that caused one passenger fatality and injured 90 others.

In response to concerns regarding this recent safety performance, the FTA conducted a Safety Management Inspection of the WMATA Metrorail and Metrobus transit systems, in accordance with the safety oversight authority established by the Moving Ahead for Progress in the 21st Century Act (Pub. L. 112-141; July 6, 2012) (MAP-21). FTA's SMI evaluated WMATA's operations and maintenance programs, safety management capabilities, and organizational structures to identify areas where WMATA must further enhance its conformance with its own rules and procedures, FTA's regulations, and FTA's Safety Advisories, to reduce risks and make improvements for the safety and well-being of its passengers and employees.

Authority

Public transportation systems are subject to the Secretary of Transportation's authority to oversee the safety of those systems, in accordance with 49 U.S.C. § 5329. Pursuant to Departmental rule, 49 C.F.R. 1.91, the Secretary's authority to enforce 49 U.S.C. § 5329 has been delegated to the Federal Transit Administrator.

Safety Management Inspection Process

To conduct the SMI, FTA assembled 10 teams comprised of over 35 technical, safety and transit operations experts to conduct a comprehensive assessment. FTA's SMI teams reviewed over 1,000 documents submitted by WMATA departments, and interviewed over 300 people at all levels of the Metrorail and Metrobus systems. FTA's SMI team members conducted field observations of all shifts, and performed independent inspections, tests and measurements at WMATA's rail and bus vehicle maintenance facilities and in the field at track, switch and signal, traction power, communications and ventilation system installations.

FTA also conducted an independent safety culture assessment for front-line personnel, and reviewed the results against WMATA's safety survey, which captured the opinions, attitudes, and safety experience of over 6,500 employees in 2014. Finally, in response to NTSB Urgent Safety Recommendation R-15-7, FTA reviewed WMATA's full audit of its tunnel fan and

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ventilation system, and conducted spot audits of preventive maintenance inspections at five fan shafts and two vent shafts, including observations regarding the process required for testing remote operation in both directions from the Rail Operations Control Center.

Through all activities to assess WMATA's safety performance, FTA's SMI teams evaluated:

- WMATA's compliance with requirements specified in the agency's track, traction power, signal, and rail and bus vehicle inspection, testing, and repair programs, and needed enhancements in these programs;
- The performance and effectiveness of WMATA's Rail Operations Control Center and Bus Operations Control Center, and the overall quality of the radio system and visual display systems used to support and monitor rail and bus operations;
- The effectiveness of WMATA's roadway worker protection program;
- The quality and frequency of communication regarding maintenance and safety issues across WMATA departments and with WMATA's executive leadership and board;
- The quality of, and WMATA's conformance with, initial and refresher training programs for major classifications of operations and maintenance employees;
- Implementation of WMATA's fatigue management program;
- The quality and effectiveness of WMATA's rules compliance and operational testing programs for major classifications of operations and maintenance employees, including supervisors and yard operations;
- The quality and effectiveness of supervision provided for major classifications of operations and maintenance employees;
- The quality and availability of data in WMATA's information management systems to support enhanced safety risk assessment and hazard management activities; and
- The quality and effectiveness of WMATA's plans, procedures, and training programs for managing emergencies, and ensuring the readiness of WMATA's front-line personnel and emergency responders.

WMATA participated fully in the SMI, filling all FTA requests for: documentation, access to training materials and records, pulls and downloads from information management system databases, access to the right-of-way to observe work and conduct inspections, and staff time for interviews, observations and explanations of specific procedures or activities. WMATA personnel also participated in out-briefs and factual reviews with FTA, and kept FTA updated regarding their actions to address initial findings and considerations resulting from their examination of the issues raised in the January 12, 2015 incident at L'Enfant Plaza station.

Safety Concerns Identified during the Safety Management Inspection

As a result of the SMI, FTA found that, over the last five years, WMATA has implemented new management initiatives and programs to address safety concerns and improve safety culture. WMATA has made advancements in many areas, including:

- Standing up a significantly strengthened Safety Department, reporting directly to the General Manager/Chief Executive Officer, supplemented by technical services contract for engineering and auditing support;
- Re-building WMATA's safety committee structure, and establishing clear procedures and

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processes for the management of Local Safety Committees, Departmental Safety Committees and the Executive Safety Committee;

- Initiating a first-of-its-kind, scientifically based fatigue management program for public transit employees;
- Initiating and sustaining a biennial employee safety culture survey assessment and sharing the results back with supervisors and employees;
- Establishing new hiring and training plans to “right size” the agency to address staffing needs for the new Silver Line extension and service expansions;
- Establishing an enhanced Roadway Worker Protection program that incorporates lessons learned and effective practices from other transit agencies and the Federal Railroad Administration;
- Developing new internal auditing and quality programs to assess (more accurately) the agency’s level of conformance with plans, procedures and requirements;
- Developing new training programs to enhance skills for technical employees;
- Developing and carrying out two long-term capital investment programs (MetroForward and Momentum) to bring rail vehicles and infrastructure and buses and facilities into a better state of repair;
- Working cooperatively with the TOC, the entity responsible for managing the federally required State Safety Oversight Program for the Metrorail system, to close 201 corrective action plans, stemming from audits, accidents, and internal reviews, since 2012; and
- Completing work to close out 26 safety recommendations issued by the NTSB since 2005, including completion of major programs to restore the reliability of the automatic train control system, to replace 178 No. 8 standard turnouts with guarded turnouts on mainline track, and to develop an industry-leading program for confidential close call reporting with WMATA’s Amalgamated Transit Union (ATU) Local 689.

While FTA acknowledges WMATA’s clear and substantial progress over the last five years, FTA’s SMI also identified organizational deficiencies and operational concerns that continue to limit the agency’s effectiveness in recognizing and resolving safety issues and hazards. FTA’s SMI found that, in key areas, WMATA’s organization is not effectively balancing safety-critical operations and maintenance activities with the demand for passenger service.

Specifically for Metrorail, FTA’s SMI team determined that WMATA work crews do not have sufficient access to the rail right-of-way to perform critical inspection, testing and maintenance activities. Increased demands for passenger service have shrunk available maintenance windows during the evenings, weekends, and late nights. As a result, records show that up to 30 percent of planned maintenance work must be re-scheduled due to lack of track access. As a direct consequence, WMATA’s maintenance departments collectively have accumulated thousands of backlogged work orders dating back to 2012 and 2013. Lack of track access has left WMATA’s maintenance managers struggling to prioritize the most significant and safety critical repairs for completion, while deferring and re-scheduling other work.

FTA’s SMI team recognizes that years of underfunding and tremendous regional growth have resulted in underinvestment and significant deterioration Metrorail’s core transit infrastructure

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and assets. However, while WMATA has developed and launched new initiatives, including MetroForward and Momentum, to bring the system into a better state of repair, without the ability to access the right-of-way to make repairs and sustain enhancements, it is unlikely these initiatives will deliver the intended results.

FTA's SMI team also found that for some of Metrorail's more complicated technical systems, shared responsibilities for maintenance inspections and repairs, training, and operational testing are not always well managed, leaving one department's top safety priorities unaddressed by another department with different focus areas and considerations. FTA's SMI team identified several instances where supporting departments did not complete priority repairs required in the tunnel ventilation and traction power systems in a timely manner. FTA's SMI team also found that due to right-of-way access limitations, staffing limitations, or coordination challenges in working with other departments or divisions, scheduled preventive maintenance activities or inspections were missed or falling behind.

In addition, FTA's SMI team identified clear deficiencies in the availability, quality and performance of technical training, refresher training, and rules compliance and operational testing activities. Refresher training in operating and maintenance departments was generally far behind schedule. Most Metrorail departments also face significant challenges in ensuring their personnel are scheduled to receive the required Roadway Worker Protection refresher and re-certification training.

Based on interviews, records reviews, and field observations conducted across several technical disciplines, FTA's SMI team also discovered that there is no enterprise-wide strategy for technical training to ensure the proficiency of WMATA personnel, and many gaps exist for operations and maintenance departments. Training is under-resourced and fractured, provided by five different WMATA departments, and the Department of Information Technology.

FTA's SMI team found that announced and unannounced testing of operational personnel (including Train Operators, Station Managers and Interlocking Operators) at WMATA is not being conducted consistently or effectively. Periodic quality reviews conducted by Rail Operations Support generally show rates of 20 to 40 percent non-compliance with key safety rules, while reports submitted by Rail Supervisors regarding the results of more routine compliance checks on Train Operators show rates of less than one percent. Rules checks conducted by FTA's SMI team also showed 20 to 40 percent or greater non-compliance with selected safety rules. Poorly functioning and poorly utilized information management systems and technology also limit the effectiveness of WMATA's training, rules checks and operational testing, and maintenance programs and activities.

Perhaps most significantly, FTA's SMI team found serious safety lapses in the Rail Operations Control Center, related to the training and certification of Rail Traffic Controllers; the organization and staffing of the desks and control functions; the availability of checklists, procedures, manuals and tools; the quality of the radio system and radio communications; and the performance of the Advanced Information Management system to visually display and monitor the status of the rail transit system. Collectively, these issues significantly impact the

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ability of the Metrorail system to schedule and conduct maintenance work, to manage abnormal and emergency events, and to ensure the safety of trains and personnel on the right-of-way.

For the Metrobus system, FTA's SMI team found many effective practices relating to WMATA's industry-leading fatigue management program and WMATA's use of cameras and DriveCam technology on bus vehicles to monitor the safety of service and the performance of Operations personnel. FTA's SMI team also generally observed a streamlined and effective process for the selection of Bus Operators, a comprehensive new-hire Bus Operator training program, as well as an extensive training program for new bus mechanics. FTA's SMI team determined that WMATA conducts a general knowledge assessment survey for mechanics, and supports a Mechanic Apprentice Program to guide mechanics through increasing levels of qualification and certification. Metrobus requires Automotive Service Excellence certification of all mechanics, and provides a cash incentive program for mechanic performance. Metrobus also works to incorporate information technology, and to thoroughly document maintenance activities in its MMIS.

While FTA's SMI team found many effective practices at Metrobus, FTA's SMI team also identified concerns in WMATA's Bus Operations Control Center (BOCC) regarding the lack of manuals, documented checklists and procedures for bus dispatchers, and a general level of informality in bus radio use and communications. FTA's SMI team also determined that WMATA's bus operating and maintenance departments have unmet training needs, and do not generally conform with all requirements specified in rules compliance and operations testing programs, including annual refresher requirements. FTA's SMI team identified areas where automated systems could greatly improve safety processes, and where specific types of maintenance inspections and reviews would benefit fleet safety performance. FTA also found that Metrobus employees at all levels of the organization identified their most significant safety concern as WMATA's ability to protect bus operations personnel from violent, disgruntled, or disruptive passengers and members of the public.

Directive and Required Actions

FTA recognizes that WMATA, one of the public transportation industry's largest and most used systems, has made considerable improvement to its safety performance over the past few years. However, FTA's Safety Management Inspection identified gaps in WMATA's compliance with its own operating rules and procedures that could negatively impact public safety. FTA issues Safety Directive 15-1 to address findings from FTA's SMI and to support needed public safety improvements on the WMATA Metrorail and Metrobus systems.

In accordance with 49 U.S.C. § 5329 and the authority delegated to the Federal Transit Administrator by the Secretary of Transportation, 49 CFR 1.91, FTA is directing WMATA's Metrorail system to complete 78 corrective actions that address 44 safety findings in eight categories from FTA's SMI, and WMATA's Metrobus system to complete 13 corrective actions that address 10 safety findings in five categories from FTA's SMI.

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WMATA will have 30 days to respond to FTA’s Safety Directive, to provide additional information for consideration, and to propose any equivalent alternate actions for consideration by FTA’s Acting Administrator.

Sixty days thereafter, WMATA must submit a tracking matrix to FTA that identifies the specific actions that will be performed to address each required element specified in this Safety Directive; the milestone schedule for completing corrective action; the responsible parties for action and their contact information; and the verification strategy for ensuring the completion of required work.

FTA will review and approve WMATA’s work plans, and will monitor the agency’s progress in resolving each finding and required action. FTA also will consult with the TOC on review and final approvals for WMATA work plans addressing Metrorail activities.

FTA will conduct monthly meetings with WMATA to review progress until such time as FTA determines that these meetings are no longer needed or may be conducted with less frequency.

It is hereby directed that WMATA develop and implement FTA-approved work plans to address the following required items:

Findings by Category		Required Action (Safety Directive 15-1) by Category	
Metrorail Category 1: Inadequate Rail Operations Control Center Staffing and Procedures			
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.

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	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 by-passes, 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.
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.

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Finding R-12 WMATA's training program for new RTCs is inadequate.	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.
Metrorail Category 2: Ineffective Training, Operational Testing and Rules Compliance Programs	
Finding R-15 Maintenance and Operations Departments have not ensured the RWP training program is being conducted as required. Annual refresher and biennial re-certification 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	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.

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<p>directed and resourced, and relies significantly on on-the-job-training (OJT) which is informal and lacks oversight.</p>	<p>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.</p>
	<p>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.</p>
	<p>R-2-16-d WMATA must establish formal guidance for maintenance employees responsible for providing on-the-job training.</p>
<p>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.</p>	<p>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.</p>
	<p>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.</p>
	<p>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.</p>
	<p>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.</p>
	<p>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.</p>
<p>Finding R-18 Rules compliance checks of operational personnel are inconsistent.</p>	<p>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.</p>

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	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.
Metrorail Category 3: Insufficient Track Time for Maintenance	
Finding R-23 Current OWL nighttime maintenance window typically only allows between 90 minutes and two hours of on track time.	R-3-23-a WMATA must ensure that a process is in place for identifying and scheduling sufficient track time to complete required inspection, testing and maintenance activities.
Finding R-24 WMATA has reduced other options for track access, including holiday weekend work shut-downs, early outs, and single-tracking.	R-3-24-a WMATA must establish firm limits on minimum track time for inspection, testing and maintenance activities per month, and revisit limits annually.
Finding R-25 Due to lack of track time, WMATA's maintenance departments must	R-3-25-a WMATA must develop and implement staffing plans to eliminate maintenance work orders backlogs and manage on-

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consistently re-schedule work, and, as a result, have growing maintenance backlogs, dating back to 2012 and 2013	going workload in track and structures, traction power, communications, and automated train control departments.
Finding R-26 Efficiencies can be obtained to improve the way in which WMATA's workers and contractors currently access the right-of-way.	R-3-26-a WMATA must improve interdepartmental coordination and communication to take full advantage of track time.
Metrorail Category 4: System-wide Maintenance Issues	
Finding R-27 Documented maintenance procedures and standard operating procedures are not implemented as required.	R-4-27-a For all major departments with inspection and maintenance responsibilities for critical infrastructure, WMATA must establish and/or update a preventive maintenance and inspection testing quality audit process to ensure compliance with established maintenance and testing practices, and to monitor missed or incomplete preventive maintenance activities and/or inspections.
Finding R-28 Walking track inspection resources have been cut in half.	R-4-28-a WMATA must review the workload and inspection territory assigned to track inspectors, and leverage non-track inspectors to perform watchman duties.
Finding R-29 All ATC alarms and issues must be communicated to ATC for investigation, repair and analysis.	R-4-29-a WMATA must ensure that ROCC reports all signal alarms and notifications to ATC.
Finding R-30 WMATA's program for measuring, documenting and addressing the potential impacts of stray negative return current on the condition of WMATA's infrastructure is not documented in a formal plan to ensure coordination across departments and contractor services.	R-4-30-a WMATA must develop a plan to document roles and responsibilities, activities, and points of coordination regarding its program to measure, document and mitigate the impacts of stray negative return current.
Finding R-31 ATC resource challenges potentially impact service expansion.	R-4-31-a WMATA must assess adequacy of Automatic Train Control staffing levels resulting from the addition of the Silver Line.
Finding R-32 WMATA has no formal program for reviewing the proficiency of maintenance field staff.	R-4-32-a WMATA must ensure that each department within Transit Infrastructure and Engineering Services creates a formal program of Supervisory inspections to observe maintenance, look at quality of work in the field, and formally intervene to evaluate, re-train (if necessary), and enhance the professional development of employees.

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<p>Finding R-33 Inventory “stockouts” have impacted maintenance operations. Material control stock out items are reported by Superintendents in Rail Car Maintenance, Traction Power and Plant as a serious concern in the performance of maintenance activities and ensuring equipment availability, however mitigations have not been implemented.</p>	<p>R-4-33-a Each WMATA Department impacted by inventory stockouts must develop a recovery or corrective action plan to ensure equipment availability and to manage delays.</p>
Metrorail Category 5: Fire/Life Safety and Emergency Preparedness	
<p>Finding R-34 Priority maintenance work for Fire/Life Safety (FLS) systems and other critical infrastructure with shared departmental responsibilities for inspection and maintenance is not completed as required.</p>	<p>R-5-34-a WMATA must complete its “Fire/Life Safety 1000” maintenance procedure, to clarify roles and responsibilities, and outline expectations regarding how departments should work together to coordinate inspection, maintenance and repair of these system components.</p>
<p>Finding R-35 WMATA must do more to prevent and manage conditions that cause smoke in tunnels.</p>	<p>R-5-35-a WMATA must establish clear definitions for infrastructure conditions requiring immediate or emergency action, such as “arcing insulator.”</p>
	<p>R-5-35-b WMATA must address third rail insulator cleaning and replacement requirements and third rail jumper cable inspection and replacement requirements as part of the “FLS 1000” procedure, or in separate but referenced procedures.</p>
	<p>R-5-35-c WMATA must improve its ability to detect the location of smoke in its tunnel network.</p>
	<p>R-5-35-d WMATA must resume its program for cable insulation resistance testing for its power cables. Insulation resistance testing should be performed on power cables every 10 years.</p>
	<p>R-5-35-e WMATA must replace all defective power cables that have been identified by traction power inspectors and maintainers.</p>
	<p>R-5-35-f WMATA must set a schedule of drills to assess the effectiveness of WMATA’s response to smoke in tunnel and station conditions.</p>
Metrorail Category 6: Condition and Performance of Tunnel Ventilation System	
<p>Finding R-36 Documentation and scheduling of tunnel ventilation system inspections must be improved to ensure compliance with required procedures.</p>	<p>R-6-36-a WMATA must establish a ventilation system testing quality audit process to ensure compliance with established maintenance and testing practices.</p>

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Findings by Category	Required Action (Safety Directive 15-1) by Category
	R-6-36-b WMATA must automate inspection and maintenance record keeping for tunnel ventilation systems, drainage pumping stations, and other critical systems managed by the Office of Plant Maintenance.
Finding R-37 Newer technology will enhance the performance of inspections and their quality.	R-6-37-a WMATA must complete replacement of the pneumatic control boxes for ventilation fans with Programmable Logic Control systems within the next five years.
Finding R-38 WMATA's existing tunnel ventilation system was designed and installed before modern fire/life safety standards were issued for the rail transit environment, however, with growing passenger loads and eight-car trains, WMATA must look for opportunities to improve ventilation performance and capacity.	R-6-38-a WMATA must conduct an engineering assessment to identify ways in which to improve the performance and capacity of the tunnel ventilation system.
Metrorail Category 7: Performance of Information Management Technology	
Finding R-39 Difficulties with WMATA's ELM have forced departments to use work-arounds resulting in poor documentation of initial and refresher training, certifications, professional licenses and re-certifications.	R-7-39-a WMATA must evaluate the existing Enterprise Learning Management recordkeeping system and take corrective action, as necessary, to ensure accurate training, re-certification, and professional certification records are created, maintained, and readily accessible to appropriate managers and employees.
Finding R-40 WMATA's MMIS, in its current configuration, is cumbersome and challenging to use for many WMATA maintenance employees.	R-7-40-a WMATA must develop a training strategy for improving the capabilities of employees to enter, analyze and assess information into the agency's Maintenance Management Information System.
	R-7-40-b WMATA must establish a data reliability working group focused on maintenance information.
	R-7-40-c The Information Technology Department must coordinate with the Technical Training Department to ensure the availability of additional training on the use of WMATA's Maintenance Management Information System for WMATA's maintenance departments.
Finding R-41 WMATA's IT Department lacks necessary authority to ensure that all WMATA departments use IT applications in the same manner to ensure data sharing, coordination of training, and conduct of audits in a consistent manner.	R-7-41-a WMATA must assess data accessibility and coordination needed to support safety functions throughout the agency including the operations and maintenance departments.
	R-7-41-b The Information Technology Department must coordinate with Rail Operations Quality Training to ensure the availability of additional training for the Rail Operations Control Center staff on the Advanced Information Management system.

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Findings by Category		Required Action (Safety Directive 15-1) by Category	
Finding R-42	Proactive safety analysis of information provided by Operating and Maintenance departments is not routinely conducted. This negatively impacts ability of WMATA to provide more support for proficiency testing, conduct more in-depth safety studies, reviews and accident/incident investigations.	R-7-42-a	WMATA operating and maintenance departments must work together to develop a strategy to more actively analyze, review, and assess rail operations and maintenance data from a safety perspective.
		R-7-42-b	WMATA must work with the Tri-State Oversight Committee and FTA to establish and pilot an enhanced investigation process for rail transit accidents, incidents and safety studies that identify systemic root causes and deficiencies.
Metrorail Category 8: Outstanding Items from Previous FTA Audits and Reviews			
Finding R-43	Corrective Action Plans from the 2009 Fort Totten collision remain open, including 38 items from the System Implementation Gap Analysis Report (SIGAR), which have not yet been addressed.	R-8-43-a	WMATA must assess the resources assigned to the Automatic Train Control Department to ensure their sufficiency to carry out critical work, including completion of the program for replacement of the Alstom Gen II track circuits by 2017.
		R-8-43-b	WMATA must expedite actions to address Corrective Action Plans from 2009 Fort Totten collision, including the 38 open items from the System Implementation Gap Analysis Report (SIGAR).
		R-8-43-c	WMATA must replace ATC cables with low insulation resistance readings.
Finding R-44	CWR installation and maintenance program changes have not been sufficiently evaluated.	R-8-44-a	WMATA must complete required submittals to FTA to close-out 2012 Safety and Maintenance Audit Recommendation #2 relating to the WMATA's rail de-stressing program.
		R-8-44-b	WMATA must conduct an independent engineering assessment regarding the Critical Rail Neutral Temperature and Preferred Rail Laying Temperature Range established in "Track Maintenance & Inspection Manual" Revision 6 approved on March 16, 2015, to ensure that the likelihood of rail buckles is decreased. WMATA's proposed range (+10 to -19 degrees below the preferred rail laying temp of 95) is 9 degrees below WMATA's original measures and does not conform to industry standards and recommended practices.
Metrobus Category 1: Concern over the Protection of Metrobus Operations Personnel			
Finding B-1	WMATA has not addressed operator assaults (by passengers) at a level commensurate with the number of occurrences.	B-1-1-a	WMATA must expedite development of an agency-wide, coordinated strategy to address contributing elements to Bus Operator Assaults, including training, deployment of police and security resources, enhanced community outreach, and resolving fare box performance and reliability issues. To the extent practical, WMATA should incorporate findings from the forthcoming Transit Advisory Safety Committee (TRACS) report on this topic.

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Findings by Category		Required Action (Safety Directive 15-1) by Category	
		B-1-1-b	WMATA's Safety Department must increase its level of involvement in the Operator Assault Preventative/Awareness Safety Initiative at Local Safety Committees, and in the development of the overall strategy for enhanced protection of Bus Operators.
Metrobus Category 2: Limited Availability of Training for Operations and Maintenance Personnel			
Finding B-2	Refresher and other training gaps exist within the Transportation and Maintenance Departments.	B-2-2-a	WMATA must develop a strategy and approach for developing, offering and updating refresher training as required in current policies and standards, for key categories of Transportation and Maintenance personnel, including Bus Operators, Street Supervisors, Bus Operations Control Center Specialists, and Bus Maintenance personnel.
Finding B-3	WMATA does not have a current "BOCC Manual" which lists all office procedures and interpretations of rules or instructions pertaining to the BOCC Specialist's duties. There are no checklists available for BOCC Specialists to dispatch service or manage incidents.	B-2-3-a	WMATA must develop a Bus Operations Control Center Manual (with processes and procedures for Bus Controller Specialists) and a complete set of checklists for implementing Standard Operating Procedures and bus vehicle troubleshooting guidance. A clear accompanying process should be established for updating the Manual and training specialists on its contents and updates.
Metrobus Category 3: Inconsistent Operational Testing and Rules Compliance Checks			
Finding B-4	Bus pre-trip inspections are not being completed, documented, or monitored to the degree necessary to comply with internal WMATA SOPs or with industry standards.	B-3-4-a	WMATA must assess its overall approach to the performance of pre-trip inspections to determine the adequacy of time available for Operators to perform these inspections, the level of training available to Operators regarding the conduct of these inspections, and whether additional condition cards should be developed for different sub-fleets.
Finding B-5	Within WMATA Bus Transportation, there are limited formal evaluations being conducted of the proficiency of Bus Operators. Although there are evaluation checklists and protocols to measure performance and proficiency of WMATA Bus Operators, the application of this process is not expansive, uniform, nor structured within established timeframes.	B-3-5-a	WMATA must establish and enforce a formal program to ensure that Supervisors assess Bus Operator performance.
		B-3-5-b	WMATA must expand the total number and frequency of Passenger Service / Operator Skills Audits performed by Corporate Quality Assurance.
Finding B-6	WMATA BOCC Specialists and SOM/Street Supervisors are excluded from WMATA's fatigue management program.	B-3-6-a	WMATA must establish a strategy and timeframe for extending the Fatigue Risk Management Program to all Bus Operations Control Center staff, including BOCC Specialists and the Street Operations Managers (SOMs), formerly Street Supervisors.

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Findings by Category	Required Action (Safety Directive 15-1) by Category
Metrobus Category 4: System-wide Maintenance Issues	
Finding B-7 The bus maintenance materials procurement process is not being executed in accordance with FTA standards meant to ensure the safety and quality of parts being purchased (FTA Circular 4220.1F).	B-4-7-a WMATA must develop and implement a plan to bring its bus maintenance materials procurement process into compliance with FTA Circular 4220.1F. This plan must include a formal testing process for newly procured parts and enhancements to the process currently used to accept new bus vehicles.
Finding B-8 Newly delivered buses have body, system, and component problems.	B-4-8-a WMATA must conduct a resource evaluation regarding overall staffing and resources available to Corporate Quality Assurance and to other quality divisions and departments within Bus Maintenance and Bus Operations to support in-plant inspection and general maintenance materials procurement. Options to re-instate factory visits must also be considered as part of this assessment.
Metrobus Category 5: Lack of Information Management System Technology	
Finding B-9 Insufficient staffing and tools in place for collecting available Bus Operations data to support more proactive analysis from a safety perspective.	B-5-9-a Conduct an assessment determining the adequacy of resources available to support Bus Operations Control Center and Bus Superintendents with data entry and analysis.
Finding B-10 Proactive safety analysis of information provided by Operating and Maintenance departments is not routinely conducted. This negatively impacts ability of WMATA to provide more support for proficiency testing, conduct more in-depth safety studies, reviews and accident/incident investigations.	B-5-10-a WMATA must formalize the procedure for how a Local Safety Committee will elevate a safety concern to the Departmental Safety Committee.
	B-5-10-b WMATA must define the Bus Safety Officer roles and responsibilities and conduct an assessment determining the adequacy of resources available for Bus Safety Officers to complete these responsibilities.

Petitions for Relief or Reconsideration

WMATA may petition for special approval to take actions not in accordance with this directive, or may petition for reconsideration. Such petitions shall be submitted to the Acting Administrator, who shall be authorized to dispose of those requests without the necessity of amending this directive. In reviewing any petition for special approval, the Acting Administrator shall grant petitions only in which WMATA has clearly articulated an alternative action that will provide, in the Acting Administrator's judgment, at least a level of safety equivalent to that provided by compliance with this directive. In reviewing any petition for reconsideration, the Acting Administrator shall grant petitions only in which WMATA has clearly articulated material facts not in evidence at the time of this directive.

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A petition for special approval or for reconsideration must be filed within thirty days from the date of this directive.

Penalties

Any violation of this directive or the terms of any written plan adopted pursuant to this directive to provide alternate protection shall be managed in accordance with FTA's authorities under 49 U.S.C. § 5329.

WMATA participated in the SMI fully and cooperatively, and FTA anticipates that cooperation to continue through the completion of all corrective actions in response to Safety Directive 15-1.

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Therese W. McMillan

Acting Administrator
Federal Transit Administration
U.S. Department of Transportation