Control Self-Assessment – Employee Safety in the Office of Track and Structures Systems Maintenance

FINAL REPORT

Internal Operations No. CSA 11-001
September 8, 2010

Washington Metropolitan Area Transit Authority
Office of Inspector General
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MEMORANDUM

TO: GM – Richard Sarles

FROM: OIG/IG – Helen Lew /s/

DATE: September 8, 2010

SUBJECT: Control Self-Assessment – Employee Safety in the Office of Track and Structures Systems Maintenance (Internal Operations No. CSA 11-001)

The Office of Inspector General has performed a Control Self-Assessment (CSA) of employee safety in the Washington Metropolitan Area Transit Authority’s (WMATA) Office of Track and Structures Systems Maintenance (TSSM). The CSA process utilized controlled workshops during which employees gave feedback on the adequacy of safety controls in TSSM. The objectives of the CSA were to: (1) examine the effectiveness of safety internal controls from TSSM employees’ perspective, and (2) find solutions that will help eliminate or reduce preventable rail-related accidents.

The CSA results indicate that TSSM employees do not believe WMATA provides them a safe working environment. The issues brought to our attention during the CSA fell into three categories: (1) the work environment is not safe, (2) training is not adequate, and (3) both internal and external communications are not effective. We focused on 16 issues that fell within the above categories.

We made 19 recommendations to you, as the action owner and request that you develop a Corrective Action Plan within 30 days of the date of this memorandum. The Corrective Action Plan should set forth the specific action items and targeted completion dates necessary to implement corrective actions on the safety issues and recommendations contained in this report. The corrective actions proposed and implemented by the affected departments/offices will be monitored and tracked through the OIG’s Audit Accountability and Resolution Tracking System.

cc: DGMO – Dave Kubicek
Chief Safety Officer – James Dougherty
DGMA/CFO – Carol Kissal
MTPD – Michael Taborn
Chief Human Resources Officer – Gary Baldwin
COUN – Carol O’Keefe
CHOS – Shiva Pant
EXECUTIVE SUMMARY

This Final Report, entitled Control Self-Assessment - Employee Safety in the Office of Track and Structures Systems Maintenance, presents the concerns, issues, and recommendations made by participants in our Control Self-Assessment (CSA) process. The Office of Inspector General (OIG) conducted a CSA on employee safety in the Washington Metropolitan Area Transit Authority’s (WMATA) Office of Track and Structures Systems Maintenance (TSSM).1 The CSA process utilized controlled workshops during which employees gave feedback on the adequacy of safety controls in TSSM. The objectives of the CSA were to: (1) examine the effectiveness of safety internal controls from TSSM employees’ perspective, and (2) find solutions that will help eliminate or reduce preventable rail-related accidents.

The results indicate that TSSM employees do not believe WMATA provides them a safe working environment. Employees identified numerous issues to support their concerns about safety. The issues brought to our attention during the CSA fell into three categories: (1) the work environment is not safe, (2) training is not adequate, and (3) both internal and external communications are not effective. Employees identified over 50 safety-related issues during the CSA. OIG focused on 16 issues that fell within the above categories, because these issues came up repeatedly during the CSA.

Under category I, work environment is not safe, participants indicated that Right-of-Way (ROW) worksites are not properly set up, especially as it relates to shunts, lanterns, flagmen, and alerting the Operations Control Center (OCC) of workers’ locations on the ROW, and that safety rules are often not followed by some supervisors, resulting in unsafe conditions. They also indicated that there is inadequate lighting, which adversely affects their work environment; and there are safety and health risks associated with using the pocket tracks (an area where the train can park and permit the train operator to reverse ends and travel in the opposite direction) as a lavatory. According to participants, TSSM management failed to provide management oversight to ensure timely calibration of precision measurement equipment. The use of non-calibrated precision measurement equipment renders incorrect tolerances that may create unsafe conditions.

1 TSSM was recently re-organized as two offices—Systems Maintenance and Track and Structures Maintenance.
In addition, employees stated that they lacked some personal protective equipment because WMATA failed to adequately maintain them in storerooms for distribution. The lack of proper safety equipment may increase the risk of an accident that is preventable. TSSM management issued new digital radios too fast and did not ensure that users were timely trained on how to use them. Participants indicated that the new digital radio system was deployed despite problems, and employees working in the TSSM environment are not able to effectively communicate with each other, increasing the risk of personal injury. Employees stated that TSSM has insufficient personnel to meet maintenance demands and ensure that critical work is completed within a normal eight-hour shift.

At the time of the CSA, WMATA was drafting a new ROW Worker Protection Manual, developing ROW Worker Protection Training for its employees and revising the Metrorail Safety Rules Procedures and Handbook (MSRPH) to address safety-related issues. We did not evaluate or assess the draft manual, training program, or draft MSRPH.

Under category II, training is not adequate, employees identified three issues. Specifically, (1) some TSSM employees are not properly trained to operate and service new equipment and systems, (2) some TSSM employees did not receive sufficient safety-related operations and maintenance training, and (3) some supervisors and managers do not have adequate training and experience.

Under category III, employees identified five issues related to ineffective communications. These are: (1) internal TSSM communications are inadequate; (2) system maintenance repair instructions are inadequate; (3) communications with local safety committees are flawed; (4) safety briefings are not effective; and (5) working relations and communications between OCC, the Maintenance Operations Center, and TSSM, are not effective.

We made 19 specific recommendations to the General Manager to address the safety issues and concerns identified during the CSA. To address these issues and concerns, it is critical that top management—the General Manager, Deputy General Manager for Operations, and the Chief Safety Officer—provide support and demonstrate commitment to establishing a safety culture that listens to its employees and, if warranted, act on safety concerns in the most expedient manner possible. Top management also needs to carry out and enforce applicable safety laws, regulations,
and WMATA’s safety policies and procedures. Such action by management should help eliminate or minimize rail-related preventable accidents, as well as allow employees to feel safe in their work environment.

**BACKGROUND**

The Office of Track and Structures Systems Maintenance (TSSM), in the Department of Transit Infrastructure and Engineering Services (TIES), works to ensure a positive daily commute for the Washington Metropolitan Area Transit Authority’s (WMATA’s) customers. TSSM provides comprehensive inspections, maintenance, repairs, and rehabilitation programs. The following branches, along with their core responsibilities, are included in TSSM:

- **Automatic Fare Collection Branch (AFC)** is responsible for the maintenance, repair, and installation of fare collection and parking lot equipment.

- **Automatic Train Control Branch (ATC)** is responsible for the maintenance, repair and installation of wayside equipment. ATC equipment provides train position, rudimentary communication between the train and wayside, automatic control of train speed and spacing of trains. ATC has three subsystems designed to ensure safe train operation: (1) automatic train protection system, designed to ensure safe train operation; (2) automatic train operation system, which provides for the initiation of train movements, automated control of train speed while moving through the rail system, and the stopping of trains at station platforms; and (3) automatic train supervision system, which provides for the initiation of train movements, automated control of train speed while moving through the rail system, and the stopping of trains at station platforms.

- **Communication Branch (COMM)** is responsible for the maintenance and availability of WMATA’s communications systems (telephones, radios, and other communication systems equipment) in support of Bus and Rail Operations.

- **Power Branch (POWR)** is responsible for the maintenance of all WMATA AC and DC power electrical facilities and equipment to ensure power is available for all passenger stations, trains, rail yards, chiller plants, tunnels, fan shafts, bus facilities, and support for other activities. POWR inspects, modifies, overhauls, tests, and repairs power distribution switchgears, lighting systems, associated electrical equipment, and cables.
• Shops and Material Support (SAMS) is WMATA’s electronic and electro-mechanical repair facility. SAMS also facilitate equipment and materials purchasing, warehousing, and transportation.

• Structures Maintenance (STRC) is responsible for the coordination, scheduling, and maintenance activities of aerial and tunnel structures.

• Track Engineering is responsible for ensuring design and integrity for track maintenance work. Other responsibilities include analysis, modifications, and preparation of preventative maintenance procedures for track work to preserve track integrity. Track Engineering also provides technical support and advice to the Office of Engineering Support Services and the Department of System Safety and Environmental Management (SAFE).

• Track Inspections is responsible for track inspections throughout the entire Metrorail system.

• Track Maintenance is responsible for the maintenance and repair of tracks throughout the entire Metrorail system.

• Track Production is responsible for all capital track work system-wide.

Approximately four years ago, the Offices of Systems Maintenance and Track and Structures were separate entities. The two offices were merged to create TSSM to ensure effective communication and support. TSSM was recently re-organized as two offices—Systems Maintenance and Track and Structures Maintenance.

A list of acronyms used in this report appears in Appendix A.

Other Offices that Support TSSM

SAFE is responsible for safety oversight of Metro’s Bus, Rail, and MetroAccess, as well as other areas of Metro.

The Operations Control Center (OCC) within the Office of Rail Transportation (RTRA) is responsible for the safe movement of trains and equipment and authorization for access to the Right-of-Way (ROW).  

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2 The ROW is considered to be clearly defined areas established and recognized for the movement of WMATA’s trains and non-revenue vehicles.
The Maintenance Operations Center (MOC) is responsible for coordinating and monitoring all personnel and equipment responding to emergencies, revenue train delays, unusual occurrences, and equipment and facility malfunctions having the potential to disrupt or impact revenue services on the rail and bus systems.

**Control Self-Assessment**

CSA is a process that utilizes controlled workshops to involve employees in assessing the adequacy of internal, and in this case, safety controls. The controlled workshops also provide an avenue for employees to recommend or suggest opportunities for improvement of identified issues and concerns. OIG facilitated the CSA, and TSSM employees worked together during the self-assessment process to examine TSSM’s effectiveness in achieving their safety operational objectives.

The results of the CSA along with the associated recommendations are based on the feedback from TSSM employees, supervisors, and managers. See the appendices at the end of this report for a copy of the survey instrument and statements used to stimulate discussions and the associated tabulated results: Appendix-B (Recommendations), Appendix-C (Survey Instrument), Appendix-D (TSSM Safety Control Self-Assessment Comparison of Responses of Employees/Supervisors/Managers), Appendix-E (TSSM Safety Control Self-Assessment Responses of Employees/Supervisors by Group), Appendix-F (TSSM Safety Control Self Assessment Responses of Supervisors/Management), and Appendix-G (TSSM Safety Control Self-Assessment Responses of OCC/MOC), and Appendix-H (TSSM Safety Control Self-Assessment Responses of Senior Management/Executive Leadership).

It should be noted that the survey statements were used to stimulate discussion of safety issues and concerns. Accordingly, the participants’ responses on the survey did not always correspond with their comments during the CSA workshops.

**TSSM CSA Results**

The CSA results indicate that TSSM employees do not believe WMATA provides them a safe working environment. Employees, supervisors, and managers provided feedback throughout the CSA process on how to improve safety and reduce preventable rail-related accidents. Employees identified numerous issues to support their concerns about safety. The issues brought to our attention during the CSA fell into three categories: (1) the work environment is not safe, (2) training is not adequate, and (3) both internal and external communications are not effective. Each of these categories, with supporting information cited by CSA participants, is discussed below.
Our survey results indicate that employees believe there are areas in the work environment where TSSM could enhance safety, see Chart 1 below.

**Chart 1: Safety could be enhanced**

![Bar chart showing employee, supervisor, and manager responses to safety being enhanced.

Source: CSA DATA](#)

**Category I – The Work Environment Is Not Safe.**

The CSA identified the following eight issues related to an unsafe work environment:

1. **Right-of-Way worksites are not properly set up.**
2. **Safety rules are often not followed by some supervisors, resulting in unsafe conditions.**
3. **Inadequate lighting presents safety hazards.**
4. **Use of pocket tracks as a lavatory presents safety and health risks.**
5. **Calibration of equipment is not completed in a timely manner.**
6. **Employees lack some personal protective equipment.**
7. **New digital radio system was deployed despite problems.**
8. **Insufficient staffing hampers the ability to meet maintenance demands and ensure safe operations.**

### I.1 Right-of-Way worksites are not properly set up.

TSSM employees stated that some ROW worksites are not being set up correctly to ensure workers’ safety. Employees indicated that there is no consistency in what mechanics, technicians, and other departmental personnel are doing to set up ROW worksites. Employees indicated that TSSM should enforce operational
consistency in setting up those worksites, especially for the shunts, lanterns, flagmen, and alerting OCC of workers’ locations on the ROW. Examples of employee concerns relating to improper set up of ROW worksites follow.

- Employees stated that there may be two TSSM groups working in tandem on the ROW. In this case, only one of the groups may have ROW track rights to perform a task. If the group with the track rights completes its task before the other group, the first group leaves the work site. Since the second group does not have track rights, the risk of a safety-related accident increases, because the ROW may not be properly set up to complete the second group’s task.

- Employees raised concerns about the flagging rules and regulations. First, they noted that the rule requiring them to continue signaling while the train passes them creates a dangerous situation. Second, employees stated that in too many cases, the train operators do not respond to flagging signals from the work crews and do not reduce their speed when approaching a ROW work site.

The January 2004 Metrorail Safety Rules Procedures and Handbook (MSRPH), Section 1 – General Rules, subsection 1.60, indicates supervisors shall assure themselves that their subordinates are competent and shall instruct them in the performance of their duties. Subsection 4.166 of Section 1 of the MSRPH also states that when employees are on the ROW, employees shall be responsible for their own safety. MSRPH, Section 4 – Safety Rules, subsection A.4.2, states that supervisors are responsible for providing employees under their supervision with a safe and healthful work environment. According to subsection A.4.2.a of the MSRPH, supervisors shall “develop safety instructions for every job and instruct all personnel under supervision in the safe work practices and methods at the time assignments are made.”

TSSM employees cited inadequate training on ROW procedures as the primary reason for their unsafe work environment. This issue is addressed in more detail in Section II.2 of this report. Additional reasons given by employees for an unsafe work environment are the lack of appropriate supervision, clear documented policies, and management oversight. Failures to adequately train, supervise, and oversee employees working on the ROW increase the risk of injury to employees.
Based on information we received from the CSA session with TSSM Assistant General Superintendents, WMATA was drafting a new ROW Worker Protection Manual. WMATA also was in the process of developing ROW Worker Protection Training for its employees, and the anticipated completion date is October 2010. WMATA is also revising the MSRPH to address safety-related issues. We did not evaluate or assess the draft manual, training program, or draft MSRPH.

Recommendations

We recommend that the General Manager (GM) direct the Deputy GM for Operations to:

1.1 Complete the ROW Worker Protection Training Program and ensure that employees, supervisors, and managers receive this training;

1.2 Establish a process to ensure that the ROW Protection Manual, as well as WMATA’s safety policy and procedures, are followed.

I.2 Safety rules are often not followed by some supervisors, resulting in unsafe conditions.

Participants voiced concerns about supervisors not following rules, thereby creating unsafe conditions. Some key examples are discussed below.

- An employee was required to go in a manhole (confined space) 40 feet under the tracks. According to the participants, no proper air quality test was performed, no permit was timely obtained from SAFE for the work, and the area was not properly shored to prevent collapse.

Specifically, there were sink holes adjacent to the track bed at the Fort Totten Metrorail station. There was a culvert (a drain carrying water under a road, railroad, etc., or an underground channel for electrical wires or cables) underneath the track, and part of the culvert had collapsed. An employee was asked to conduct an inspection of the culvert to determine if it was structurally sound. As he was being lowered into the manhole to the culvert, which was approximately 40 feet under the tracks, he heard someone question whether they had conducted an air quality test as required, and the response he heard was “oh no, we forgot.” Instead of pulling him out and checking the air, he overheard someone say, “he’s already in there now.”
The next day, he found that the air quality had been checked on the other side of the tracks in a hole that was just three feet deep, but the air was never checked in the 40 feet deep area, where he was working. There was no shoring (putting a length of lumber or metal to support a structure from collapsing) in the area.

Also, there was no permit established through SAFE to allow personnel to perform the above task before it was completed. The permit was obtained after-the-fact. The participant stated that a representative from SAFE came out and stated that he had granted a permit, but the supervisor failed to accurately explain the depth of the hole in question. The issue was brought to the attention of the supervisor, and he responded that the employee did not have to worry about his safety, because he would not be going back into the manhole. According to the participant, the supervisor indicated he would personally go underground and take the photographs the next time.

The November 2008 Safety Rules and Procedures Manual, Confined Spaces Program, revised November 2008, Section 5.3.5, states that the entry supervisor shall ensure that the attendant, authorized entrants, and persons conducting the atmospheric monitoring, have a thorough understanding of the permit conditions and work requirements. The permit must be posted at the entry site for the duration of the entry operation.

SAFE drafted a revised policy and procedures for the Confined Space Entry Program (January 2010). The expected approval date was July 2010. We did not evaluate or assess the draft policy and procedures for the Confined Space Entry Program. Based on our conversation with SAFE personnel on July 20, 2010, the policy and procedures for the Confined Space Entry Program had not been approved.

- An employee was taken by his supervisor to an unsafe height in a man-lift and threatened with retaliation when he voiced his concern. The supervisor elevated the man-lift basket with the employee to approximately 60 to 70 feet above the ground. The man-lift was well above the area structure and rocking in the wind. Because he felt unsafe, he asked the supervisor to lower him, and the supervisor then threatened his job. When the employee later
called his superintendent and told him he wanted to file a complaint against his supervisor, the superintendent threatened to cite him for tardiness. The employee stated that this is why he does not report safety issues to his manager.

- An employee was directed to use a man-lift when, contrary to safety rules, there were high winds. The employee voiced his concern to his supervisor, but the supervisor directed the employee to do the job anyway. When the employee refused and contacted the Occupational Safety and Health Administration (OSHA), the job was cancelled for the day due to high winds.

- During the January 2010 snow storm, there was insufficient preparation on the part of TSSM management in planning and reacting to the snow conditions. TSSM managers directed COMM workers to clear snow on the rails in an unsafe manner. TSSM employees stated that they were instructed to dismount from the prime movers (heavy rail equipment used to maintain tracks) and to manually clear the snow from the tracks with 750 volts on the third rail. They did not know where the third rail was, due to the depth of the snow. In some areas, the third rail cover board was missing. COMM personnel stated that this was a significant safety issue, because they do not normally perform duties on the ROW and are not trained to work in that environment. ATC supervisors also stated that they were concerned for the health and well being of the COMM personnel, because they reported to the job site without the necessary tools and/or cold weather clothing. Some supervisors refused to use COMM employees to clear snow from the tracks in an unsafe manner. But, one ATC supervisor commented, “Yes, I used them because, personally, I would rather have them jump off than have my guys jump off. I have to deal with my guys in safety every day!”

Some employees commented that some supervisors do not listen to members of the work crew on the proper way to perform the job, especially when the supervisor was not familiar with the work. Some supervisors ignored written safety rules in an attempt to quickly get the job done. Management also provided limited leadership and oversight. Supervisor participants commented that they did not frequently see their managers in the field to observe their operations.
The MSRPH, Section 4 - Safety Rules, subsection A.4.2, states that supervisors are responsible for providing employees under their supervision with a safe and healthful work environment. To achieve this objective, supervisors, among other things shall:

1. Request, be knowledgeable of, and enforce the OSHA safety and health standards applicable to their department, including the use of proper protective equipment and suitable tools for the job.

2. Detect, correct and prevent all unsafe acts and conditions that exist in their area of responsibility.

3. Set a good example for persons under their supervision. Offer positive reinforcement to employees who need to improve their safety behavior.

**Recommendation**

We recommend that the GM direct the Deputy GM for Operations to:

1.3 Ensure that managers/supervisors are knowledgeable of and adhere to established safety rules and regulations, as well as provide proper oversight of TSSM employees.

I.3 **Inadequate lighting presents safety hazards.**

Participants voiced concerns regarding the inadequate lighting along the ROW, rail stations, mezzanines, outside parking lots, and revenue holding vault areas. Also, the positioning of the lighting at employees’ work stations needs improvement within SAMS. Inadequate lighting in the work environment affects the efficiency of operations, as well as the safety of the employees maintaining the equipment. Some of the examples cited by participants are provided below.

- Light bulbs along the ROW need to be replaced and lenses need to be cleaned to improve lighting in the tunnels.
• The poor lighting in the rail stations negatively impacts the vision of the employees and their ability to effectively and efficiently repair equipment. The participants identified 28 mezzanines in rail stations where additional lighting is needed over the fare gates. In order to improve safety, additional lighting is needed at Metro’s parking lots at Naylor Road, West Hyattsville, and College Park.

• The lighting in the areas of the revenue holding vaults is inadequate. These areas are isolated, and the employees work alone without a Metro Transit Police Department escort.

• SAMS provides insufficient lighting in the shop. Some of the lighting could be redirected to improve the lighting at employees’ work stations.

MSRPH, Section 4 - Safety Rules, subsection A.4.2, states that supervisors are responsible for providing employees under their supervision with a safe and healthful work environment. The MSRPH, Safety Rules, Section 4, subsection K.4.178, states while walking or working in tunnels or on elevated structures, employees shall arrange to carry or otherwise provide sufficient light to permit work to be performed safely. Section 4, subsection F.4.54 of the MSRPH, Safety Rules, states equipment shall be maintained in a clean and operational condition.

Recommendation

We recommend that the GM direct the Deputy GM for Operations to:

1. Ensure that all employees have sufficient lighting when working along the ROW, rail, stations, mezzanines, outside parking lots, and revenue holding areas.

I.4 Use of pocket tracks as a lavatory presents safety and health risks.

Participants voiced concerns that employees use the pocket tracks (an area where the train can park and permit the train operator to reverse ends and travel in the opposite direction) as a lavatory at Mount Vernon Square, Southern Avenue, and Grosvenor.
This safety and health hazard is the result of inadequate time being allowed at the end of the line for train operators to have bathroom breaks. This practice causes delays in performing maintenance inspections on some ATC equipment.

**Recommendation**

We recommend that the GM direct the Deputy GM for Operations to:

1.5 Review the schedules of train operators to ensure that there are adequate allowances for bathroom and other personal breaks at the end of a line.

**1.5 Calibration of equipment is not completed in a timely manner.**

Participants voiced concerns that TSSM failed to provide management oversight to ensure timely calibration of precision measurement equipment (PME). The use of non-calibrated PME renders incorrect tolerances that may create unsafe conditions for WMATA employees and customers.

TSSM does not submit WMATA-owned PME to SAMS for them to test, calibrate, and adjust the equipment and systems in accordance with established guidelines outlined in the System Safety Program Plan (SSPP). SAMS does not have an adequate staff of trained technicians to calibrate and repair PME. It also does not have test equipment necessary to maintain some of WMATA’s PME. As of July 15, 2010, TSSM had 1,665 equipment items that had not been submitted for calibration.

Operations Administrative Procedures 200-16 requires WMATA’s managers to provide PME to SAMS for periodic testing and certification to assure its accuracy in accordance with established specifications and standards and to comply with monthly calibration schedules.

**Recommendation**

We recommend that the GM direct the Deputy GM for Operations to:

1.6 Ensure that WMATA-owned PME is properly and timely calibrated and maintained.
I.6 Employees lack some personal protective equipment (PPE).

Our survey results show employees agreed that TSSM provides them appropriate PPE to perform their job safely. However, during the CSA, participants commented that WMATA failed to maintain an adequate supply of PPE in storerooms for distribution. The failure to provide employees with the proper safety equipment may increase the risk of a preventable accident. Participants identified instances where they did not have some required PPE, such as switching suits, safety vests, specific types of gloves, hot sticks, and hard hats. Employees provided the following examples below.

- Low-voltage POWR employees assigned to work with high-voltage employees did not have high-voltage training or proper PPE, such as switching suits, to work in a high-voltage environment. Switching suits are required by OSHA when employees switch anything above 277 volts to ground.

- POWR management provided one set of electrical gloves for a crew of 13 employees, although they routinely test the third rail to determine the presence or absence of electrical current. There were not a sufficient number of hot sticks for all the employees; they stated that they had to share the limited hot sticks available to them. Participants stated that they brought the hot stick issue to their supervisor's attention, and the supervisor did not take immediate action. The hot sticks were received three or four weeks after the supervisor requested them.

- A supervisor and manager stated that they withheld electrical gloves to ensure supplies were available for employees who were bidding into their area of responsibility. The employees only received the needed gloves after discussing this concern in the CSA workshop.

- Electrical gloves issued to COMM employees were missing the required liners. The glove issue was discussed with a COMM supervisor approximately six months prior to our CSA discussions, and the liners still had not been provided.
• Rodents and other animals often get into vending equipment and build nests, die, and create a stench. According to the participants, employees must service the equipment without the benefit of face masks or protective gloves in public areas in order not to alarm patrons.

• Employees requested replacements for hard hats that had cracked, but they were told replacement hard hats were not in stock. When participants informed their supervisor, the supervisor stated, “We will try to get one for you.”

The MSRPH, Safety Rules, Section 4, subsection A.4.2.c, states that supervisors shall provide personnel protection equipment and enforce its use at all times.

**Recommendation**

We recommend that the GM direct the Deputy GM for Operations to:

1.7 Ensure adequate PPE is on hand to support maintenance activities and provide management oversight to supervisors to ensure they provide PPE to employees and enforce its use at all times.

**I.7 New digital radio system was deployed despite problems.**

Participants commented that TSSM management issued the new digital radios too fast and did not ensure timely training to users. As a result, employees working in the TSSM environment are not able to effectively communicate when needed. This creates an unsafe environment, increasing the risk of personal injury, as well as opportunities for costly damage to WMATA equipment.

WMATA did not effectively analyze, purchase, and deploy the digital radio system to ensure that the system met WMATA’s organizational needs. The radio system was rolled out without input from the intended users. The radios also were not properly tested under the conditions of actual use. The participants stated that they presented their concerns about the digital radios to their supervisor who commented: “We’ll figure it out.” The participants also stated that the new XTS 3000 digital radios were not simultaneously deployed to all employees. Some employees had the old radios, while others had the new digital units. This situation caused transmission problems. Other problems are discussed below.
• Employees who operated equipment on the ROW could not talk to the flagger, because everyone had not received the new radios. The flagger and equipment operator have to carry both the old and new radios in order to communicate.

• The new radios do not allow them to “break-in” on OCC’s radio communications in emergency situations. According to TSSM managers, this is a training issue.

• Some employees were issued the digital radios without training. Some employees who received training indicated that it was limited and provided too early to be useful. Also, employees were not provided training on the stationary radio equipment installed in non-revenue equipment, such as the prime mover.

• There are transmission delays in using the new digital radios. This could create a safety issue when rail equipment is moving toward a danger area on the ROW.

• The participants identified a number of known radio communications “dead spots,” where radio communication is insufficient to maintain safe operations. While these areas are known by some personnel who work on the ROW, these areas are not officially mapped.

The MSRPH, Section 4 - Safety Rules, subsection A.4.2, states, “Supervisors are responsible for providing employees under their supervision with a safe and healthful work environment.” The MSRPH, Section 1, General Rules, subsection 1.78, states, “Employees shall initiate and acknowledge radio messages in a manner that ensures establishment of communication between the intended parties.” The MSRPH, Section 1, General Rules, subsection 1.79, states, “Employees shall not take any action until they are positive that all radio transmissions or receptions are heard, fully understood and acknowledged.”

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3 The areas with “dead spots” include Rhode Island Avenue; Minnesota Avenue; Potomac Yard; Forest Glenn; Arlington Cemetery; Franconia/Springfield, between Shady Grove and Rockville; New York Avenue; Court House; Clarendon; and Virginia Square.
Recommendation

We recommend that the GM direct the Deputy GM for Operations to:

1.8 Provide all intended users in TSSM with the appropriate radios and related training to ensure adequate communications.

I.8 Insufficient staffing hampers ability to meet maintenance demands and ensure safe operations.

TSSM has insufficient personnel to meet maintenance demands and responsibilities to ensure completion of critical work within an eight-hour shift. As a result, maintenance demands are not timely addressed. Some of the examples identified by participants are provided below.

- Insufficient staffing and pressure from senior management to close work orders hampers TSSM’s ability to properly complete the required work. Senior managers require mid-level managers to meet established goals even when they are aware of existing staffing shortages. This causes mid-level managers to take short cuts, which undermines the integrity and accountability of WMATA’s reporting systems and increases the risk of safety-related incidents.

- Track walkers do not have enough time to adequately review and inspect the tracks due to long routes. As a result, track walkers rush to complete inspections. Participants also stated that there are not enough track inspection supervisors on the Red Line to review track inspections.

- MOC instructed staff to work in the tunnels alone rather than with a partner because of staffing shortages. For safety reasons, the participants stated that TSSM should have at least two technicians working together in the tunnels.

- SAMS has an insufficient number of supervisors to support all work shifts. For example, it does not have a supervisor or manager working on the evening shift.

- COMM has insufficient staff to meet the demands of preventative maintenance inspections (PMIs). The number of PMIs for equipment has drastically increased due to the acquisition of new equipment. Assistant
General Superintendents stated that, due to insufficient resources, they are focusing on corrective actions rather than PMIs. This suggests that the focus is on making repairs after a failure rather than maintenance to prevent the failure.

- Work order tickets are being closed in MAXIMO⁴ prior to the completion of work. According to the participants, this is due to inadequate staffing and pressure from upper management. Managers are also closing out repair tickets without ensuring the necessary repairs have been completed. In some cases, they close out a work order and open a new work order to meet management’s operational goals. By doing this, it appears that the work was done on the first work order when it was not. Instead, the work is really done under a second order.

- Participants stated that due to staffing shortages, overtime was used excessively. Many employees work extended hours, and as a result, may suffer from fatigue. Assistant General Superintendent participants stated that their work force is exhausted. TSSM’s safety may be at risk due to fatigue.

**Recommendation**

We recommend that the GM direct the Deputy GM for Operations to:

1.9 Perform an assessment of TSSM’s staffing needs to ensure that adequate resources are available to meet maintenance objectives, including properly completing work orders in MAXIMO.

**Category II – Training Is Not Adequate**

Employees identified three issues related to inadequate training: (1) some TSSM employees are not properly trained to operate and service new equipment and systems, (2) some TSSM employees did not receive sufficient safety-related operations and maintenance training, and (3) some supervisors and managers do not have adequate training and experience. These issues are discussed below.

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⁴ The MAXIMO system is a maintenance and inventory software package that maintains data on inventory and maintenance tasks, as well as other operations. WMATA implemented MAXIMO in 2006.
II.1 Some TSSM employees are not properly trained to operate and service new equipment and systems.

WMATA installed new equipment in the rail system without ensuring that TSSM maintenance personnel and supervisors were properly trained to service the equipment. New equipment manuals and schematics are not always available for technicians to use when servicing the equipment. Some examples of training-related issues are provided below.

- POWR had no input in the requirements for two un-interruptible power supply units and electronic transfer switches to serve as a backup emergency system for the new control center at the Carmen Turner Facility. At the end of the construction contract, the responsibility for maintenance of the equipment was transferred to POWR. The contractor provided POWR with operational training for the power supply units but refused to provide the necessary maintenance training, because the maintenance training and manuals were not a part of the contract. POWR is not trained to service the equipment, and there are no manufacturer’s manuals to help them learn the equipment.

- New track equipment is sometimes placed into service without training the equipment operators or providing them with necessary instructions. The supervisors in our workshops stated that equipment operators are expected to familiarize themselves and learn how to operate the equipment on site. They acknowledged that they did not provide them guidance on how to operate the new equipment.

- COMM was not provided training for new systems. COMM technicians and supervisors need training on the multiple fire alarm systems, Ramex Intercom System, closed circuit televisions, public address system, comprehensive radio UHF communication system, VHF radio, and the digital video recording system.

- COMM employees have not been trained on the Multi-Yard Parameter Security System, comprised of six major subsystems. While some COMM employees attended some training, they did not receive the schematics or system manuals training. As a result, TSSM is unable to service or repair the system, which has been inoperable in excess of three years.
• SAMS is usually not included in training for new equipment or training is provided too far in advance of receiving the equipment. SAMS technicians need to be included in new equipment training to ensure that their employees are properly prepared to repair the equipment after the warranty period expires.

In the past, the Infrastructural Renewal Program-managed contracts for new equipment and systems included training, manufacturers’ manuals, and spare parts. However, due to budget constraints, the Infrastructural Renewal Program modified the contracts and removed or reduced the amount of training from the contracts. In some cases, training and related system documentation was reduced or removed from the contract to allow WMATA to obtain additional spare parts. These decisions were made without input from TSSM.

Good internal controls include a commitment to employee competence. Management should provide employees with the necessary knowledge, skills, and tools to support the achievement of objectives.

The failure to provide appropriate training to personnel maintaining critical operational equipment and systems increases the risk of accidents and unsafe conditions.

**Recommendation**

We recommend that the GM direct the Deputy GM for Operations to:

2.1 Ensure that the Infrastructural Renewal Program-managed contracts for new equipment include training, schematics, and manufacturers’ manuals; and TSSM, in conjunction with the Office of Chief Engineer Vehicles, Technical Training and Document Control Branch (TTDC), properly train employees to operate and service equipment and systems, including providing employees necessary training materials to operate and service equipment and systems assigned to them.

II.2 Some TSSM employees did not receive sufficient safety-related operations and maintenance training.

New employees are reportedly not provided adequate training to work on the ROW, and WMATA has no ROW refresher training for existing employees. Employees were asked to respond to the statement, “WMATA provides effective safety training for their employees.” The results indicated that they believe management needs to improve safety training for their employees, see Chart 2.
Employees (50 percent), supervisors (60 percent), and managers (76 percent) indicated that TSSM’s ROW training for front-line employees is inadequate, see Chart 3.

**Chart 2: WMATA provides effective safety training for their employees**

Source: CSA DATA

**Chart 3: TSSM’s right-of-way training for front line employees is adequate**

Source: CSA DATA
Chart 4 shows how members of WMATA’s senior and executive leadership voted concerning the statement “TSSM’s right-of-way training for front-line employees is adequate.” This chart shows perceived disagreement on the adequacy of right-of-way training provided.

Chart 4: TSSM’s right-of-way training for front line employees is adequate

TSSM employees did not receive periodic refresher training on systems maintenance and safety. As a result, they are not able to perform their duties in a safe manner. Some new personnel, who have not been adequately trained, are required to work alone. Participants told us that there are times when training is offered, but employees are not able to attend, for example, when the training is provided only during one shift. When employees receive their training during their regular shift, too few employees are available to perform normal duties.

The TTDC Branch has not provided sufficient training for TSSM employees. In some cases, the training is not consistent with the work performed. Some of the training instructors do not have practical knowledge and are not qualified instructors. Participants gave the following examples:

- There is no organizational standard operating procedure for ensuring that all new employees of TSSM received the same training. Supervisors commented that they do not always have enough time to provide detailed training for new employees. Instead of providing classroom training, supervisors send new employees to the job site to work with a crew. In many
cases, new employees were turned over to a lead worker who provided on-the-job training. As a result, there is no continuity of training, and employees learn inconsistent and sometimes improper practices. The on-the-job training also is not formalized or documented.

- TTDC needs to provide refresher training for ATC to operate equipment, such as the Model 6, M3, and 55E switch machines; vital and non-vital processors; AF800, F800w, Alstom track circuits; Horton and Alstom Remote Terminal Units; and the Asco transfer panel.

- STRC participants stated that TTDC needs to provide refresher and/or new training on conducting welding inspections, blue print readings, digital thickness gauge procedures, working in confined spaces, fall protection, traffic control, using ladders, and equipment training on forklifts, bucket trucks, Aspen Aerial down and under equipment, and Genie man-lifts.

- TSSM needs safety refresher training on emergency first responders, CPR and first aid, blood-borne pathogens, and respirators.

- Some contractors are working in the rail system without an escort present. Participants stated that the departments which are assigned escorting duties need to ensure that the escort personnel have a clear understanding of the work area and the contractors' job responsibilities and duties to ensure that the contractors are safe and are providing the services expected.

The CSA survey indicated that employees (56 percent) and supervisors (54 percent) agree, and managers (57 percent) disagree that, TSSM provides training to enable employees to perform their duties safely, see Chart 5.
**Recommendation**

We recommend that the GM direct the Deputy GM for Operations to:

2.2 Develop a formal training program for TSSM employees that would enable them to successfully and safely carry out their duties and responsibilities. The program should include journeyman, supervisory, and technical training on operating and maintaining equipment used to support rail operations. The program should also include periodic refresher training for existing employees.

**II.3 Some supervisors and managers do not have adequate training and experience.**

Participants commented that their supervisors had not completed journeyman and/or supervisory training. Some participants stated that their supervisors did not have the requisite knowledge and skills related to the functions performed by their employees.

Some employees are moved up through the ranks and into supervisory positions without completing systems and equipment training and testing. Some supervisors and mid-level managers have not completed supervisory training but are empowered to make operational decisions. These supervisors do not have...
the requisite knowledge and skills related to functions performed by the mechanics and technicians for whom they are supposed to provide oversight and guidance.

STRC supervisors voiced a desire to receive internal controls training to improve their ability to supervise personnel and manage projects.

**Recommendation**

We recommend that the GM:

2.3 Ensure that supervisors/managers have the necessary training, knowledge, skills and abilities to effectively perform the assigned duties of their positions.

**Category III – Both Internal and External Communications Are Not Effective**

Employees identified five issues related to inadequate communications: (1) inadequate internal TSSM communications; (2) inadequate system maintenance repair instructions; (3) flawed communications with local safety committees, (4) ineffective safety briefings; and (5) unsatisfactory working relationships and communications between OCC, MOC, and TSSM. These issues are discussed below.

**III.1 Internal TSSM communications are inadequate.**

There is a need for better communication and information sharing to enable TSSM employees to be more effective in conducting, managing, and controlling TSSM operations. Employees gave the following examples:

- TSSM is constantly operating in a crisis mode. This type of working environment does not allow for effective communication and planning.

- Employees indicated they are not always informed or given an opportunity to address the causes of an incident. When an incident occurs, attention is given to the immediate event, but the underlying causes and weaknesses (lessons learned) are not always identified and corrected before the next occurrence.
• Area managers questioned whether or not safety concerns were being elevated to the appropriate level of leadership in TSSM for corrective action. They questioned whether the General Superintendent is aware of the safety concerns in TSSM.

• ATC workers commented that they received more information from the newspapers about Metro than directly from their supervisors. They feel that their supervisors received information from the Superintendent, but the information is not shared with the work force. The workers requested that a platform be established that allows management to hear their safety concerns and provide meaningful solutions within a reasonable amount of time. They are aware of the many different safety committees, but those communications links are not always effective.

• STRC supervisors commented that they had difficulty getting safety issues to the correct office in WMATA, and they need to have the support of SAFE and Engineering to address these concerns. For an example, there is a need for a clearly communicated policy for “No Clearance” requirements. There should be a process established to disseminate and share information related to accidents, incidents related to safety, and lessons learned throughout TSSM. There is a need for timely feedback on safety issues investigated and forwarded to TSSM's upper management.

• All levels of management (supervisor through assistant general superintendents) commented that they do not have opportunities to meet with their peers to discuss common supervisory and management-level TSSM concerns and issues. They voiced a desire to have the opportunity to work more closely with all levels to: develop standard operating procedures, share knowledge and experiences, develop a greater understanding of how the work of one group impacts other groups, and establish alignment with organizational goals and objectives.

5 A “No Clearance” is an area where the minimum safe distance between all points on a moving vehicle and fixed wayside structures or appurtenances is not sufficient to allow personnel to occupy this area during passage of a train.
Our survey results indicate that, prior to the CSA workshop discussions, there was disagreement between employees, supervisors, and managers on effective and timely resolution of safety issues. However, during the CSA discussions, all participants agreed that open communication was a concern within TSSM, see Chart 6.

Chart 6: Supervisors/managers provide effective and timely resolutions to safety issues presented by TSSM employees

![Chart 6](image)

Source: CSA DATA

**Recommendation**

We recommend that the GM direct the Deputy GM for Operations to:

3.1 Ensure there is effective communication up and down the chain of command by establishing strategic goals, objectives, and milestones that include proactive activities, embracing and instilling the need for open communication throughout the TSSM organization.

**III.2 System maintenance repair instructions are inadequate.**

ATC participants voiced their concerns about the availability of PMI procedures, diagrams, and technical information to aid them in performing maintenance activities. When technicians request information, some of the supervisors indicated that the technicians should be able to trouble shoot and/or make repairs without support diagrams or guides, which the technicians believe is not
realistic or efficient.\textsuperscript{6} Participants stated that supervisors and management do not give constructive guidance on how to proceed when PMI procedures are lacking, but they want 100 percent completion and on-time performance. The examples below illustrate their concerns.

- COMM supervisors stated they need Engineering to provide PMI procedures for the public address system and the fire and intrusion system.

- Engineering has not consistently provided Equipment Modification Instructions (EMI) and training for equipment modifications. For example, AFC participants commented that vending machines were updated and/or changed, but they did not receive any EMI following the modification. In one instance, new bill valuators were installed without EMIs being provided. When they asked, their supervisor instructed them to call the engineer. We were told that the engineer promised to respond, but no response was received.

- TSSM distributed some PMIs that were not finalized and approved, were confusing, and contained conflicting information. There is no clear guidance in some instances on which PMI should be performed. Some PMI procedures do not state the required time to complete a task, and some PMIs allot unreasonably short times to complete a task due to interruptions, need for trouble shooting, and working with unskilled workers. We were told that TSSM provided verbal instructions to ATC supervisors to perform inspections of switch obstructions and track circuits using draft PMIs that were inadequate and had conflicting information.

- In January 2009, ATC engineers rewrote most of the PMIs without field testing them. PMIs were sent to the supervisors for testing and comments and were found unacceptable. Supervisors suggested that the engineer come to the field to observe the issues technicians were experiencing, but the engineers refused. Employees gave the following additional examples of inadequate communications/instructions:

\textsuperscript{6} MSRPH, Section 1 – General Rules, subsection 1.60, states that, supervisors shall ensure themselves that their subordinates are competent and shall instruct them in the performance of their duties.
a) The PMI for General Railway System track circuits refers to an outdated procedure.

b) The PMI procedures for track circuits, AF 800, point detector for the 55E and M-3 switch machine, and meggering cable do not work.

c) There is a need for specific PMIs on indication locking, maximizing broken rail protection (eliminate 1000 MCM jumper), and testing and maintaining proper grounding.

Chart 7 depicts the results of the PMI question posed to employees, supervisors, and managers about whether or not procedures are properly updated. The data showed that each group voiced concern about PMIs not being adequate. Chart 8 depicts how the TSSM branches responded to this question. CSA data indicated that employees of ATC, Track, COMM, and POWR were most concerned and impacted by inadequate PMIs.

Chart 7: PMI procedures are up-to-date to enable employees to perform their jobs safely
Chart 8: Group responses to PMI procedures are up-to-date to enable employees to perform their jobs safely

Recommendation:

We recommend that the GM direct the Deputy GM for Operations to:

3.2 Assess TSSM’s PMI system and equipment documentation needs and take appropriate action to ensure that all PMIs are up-to-date and develop and test new PMIs prior to circulating them to technicians and mechanics.

III.3 Communications with local safety committees are flawed.

Participants indicated that TSSM management failed to provide oversight and follow-up on employees’ concerns through local safety committees. There is no process in place to track committee actions on safety concerns back to the submitter. Participants indicated that when personnel are not provided timely responses to their safety concerns, they believe safety is not a high priority.

The survey results indicate that supervisors and managers generally agree that the safety committees are active and results-oriented groups, but some employees disagree, especially regarding some of the local safety committees. Participants stated that, even though local committees are active, some of the committees do not consistently share information with TSSM personnel. Some employees do not know who serves on the local committees. Some employees
stated that they never get feedback on issues provided to management for resolution. Area managers also stated that they do not receive feedback when they request it from their assistant superintendents. Participants provided the following additional concerns:

- Track participants stated that following a change of supervisor, several months would elapse without a local safety committee meeting.\(^7\)

- Both OCC and MOC participants stated they did not have a local safety committee.

- Safety officers do not attend and participate in local safety committees.

- Employees entered safety concerns in the TSSM safety action database, but the issues would remain unresolved.

**Recommendation**

We recommend that the GM direct the Deputy GM of Operations to:

3.3 Ensure that the results of local safety committees in TSSM are communicated to all TSSM employees; that safety concerns, if warranted, are resolved; and that local safety committees are established within OCC and MOC and other offices not having a safety committee.

**III.4 Safety briefings are not effective.**

WMATA has established safety briefings as a means to identify hazards and risks associated with work scheduled for the day. The safety briefings also include a pre-selected safety rule, known as the “rule of the day,” which is shared throughout TSSM on the selected day. Participants stated that safety briefings in TSSM are not effective and often have no correlation with the work that they do.\(^8\) Participants cited the following:

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\(^7\) MSRPH, Section 4 - Safety Rules, subsection A.4.2.k., states that supervisors shall schedule and conduct regular safety meeting with their employees, and follow-up on their suggestions.

\(^8\) MSRPH, Section 4 - Safety Rules, subsection A. Safety Responsibilities, 4.2.a., states that supervisors shall develop safety instructions for every job, and instruct all personnel under their supervision in the safe work practices and methods at the time assignments are made.
• Safety briefings are often no more than a “signing process” imposed by supervisors, because employees are required to sign a document signifying that they are present and understand the safety briefing.

• OCC and MOC participants stated that they have not had any safety briefings.

• MOC participants stated that the office manager sends an email on a weekly basis concerning safety facts, but this information is generally not related to safety in the workplace.

• SAMS participants stated that they watch the same safety movies over and over, and this is not effective. Safety briefings are not conducted by the supervisor. The safety briefings have been turned over to senior mechanics/technicians. They stated that safety briefings would be more meaningful if the focus were directed to tools and equipment that they do not frequently use and are not familiar with.

• Track participants stated that the safety rule is read quickly, and they do not always understand the content. When employees asked the supervisor for clarification, some supervisors could not explain the essence of the rule of the day. They feel the briefing is simply a pretence to “cover the back” of the supervisor.

• For their part, supervisors acknowledged that they were instructed by TSSM management to present a rule of the day in conjunction with the safety briefing. They realize that the message does not relate to the planned work of the day or the environment in which the crew is working.

• Our survey results show that TSSM employees believe they are not properly trained in safety rules, see Appendix D, Chart 4, page 51.

Recommendation

We recommend that the GM direct the Deputy GM for Operations to:

3.4 Ensure that daily safety briefings provided by TSSM supervisors focus on current issues related to tasks being performed by their work crews.
III.5 Working relations and communications between OCC, MOC, and TSSM are not effective.

Employees identified three issues related to inadequate communications related to OCC, MOC, and TSSM: (1) between OCC and TSSM, (2) between MOC and TSSM, and (3) between OCC and MOC. These issues are discussed below.

Good internal controls require WMATA to establish effective communications to promote teamwork and to carry out responsibilities. Without effective communication, operational delays could occur, ineffective maintenance resources could be deployed, and there could be lost revenue because the trains may be affected.

III.5.A OCC and TSSM working relations and communications need improvement.

TSSM employees believe that ineffective communication between OCC and TSSM results in not enough time to complete scheduled track maintenance tasks, which leads to rushing, errors, and unsafe acts. In these circumstances, safety rules are often ignored to get the job done.

- TSSM participants commented that OCC personnel are not always aware of the location of TSSM employees on the ROW, what tasks they are performing, or the working environment. Some OCC controllers are inexperienced and have little knowledge of the railroad. As a result, they can create unnecessary delays on the lines, as well as other serious problems.

- OCC grants TSSM personnel access to the ROW, but they will have the work crews placed in stand-by mode for an extended period of time. This situation often causes the TSSM work teams to rush through trouble shooting, completing repairs, and completing other assigned tasks, all of which negatively affects safety.

- TSSM participants stated that, on multiple occasions, OCC delayed the start of track maintenance projects even though a schedule had been agreed to by OCC earlier. However, the finish time did not change. For example, they went to a General Orders and Track Rights meeting and planned for a project months in advance and obtained track rights for a
10:00 PM start. OCC did not allow them to start on the project until 12:00 AM. Participants commented that, when the time changes, the safety aspects are “thrown out the window” because the deadline for completion does not change.

- POWR participants stated that there have been times when they called OCC in an emergency. For example, when a prime mover was coming toward a work crew, and OCC did not pick up. Other times, when they did get in touch with OCC, there was so much going on in the background that they could not hear or understand the communication. Participants stated that sometimes it takes approximately one hour to establish communications with OCC. In addition, there were numerous times when it took an average of 30 minutes to have OCC acknowledge the call.

- OCC will tell TSSM personnel to stand by and stand clear, but the controllers will sometimes forget to get back to them. In some cases, TSSM personnel have notified MOC and requested that MOC notify OCC to facilitate communication between a work crew and OCC.

MSRPH, Section 1, General Rules, subsection 1.78, states that employees shall initiate and acknowledge radio messages in a manner that ensures establishment of communication between the intended parties.

Participants believe that there are competing functions within OCC with respect to revenue (maintaining train schedules) and maintenance (personnel providing maintenance for WMATA’s track infrastructure). There is a perception that the OCC’s controllers lack an understanding of the track maintenance personnel’s duties and responsibilities. OCC participants voiced a desire to develop a better understanding of the challenges facing employees working on the ROW in order to be more effective OCC operators. This perception is reflected in the participants’ response to the statements: “Safety of operations is more important than revenue operations” and “TSSM and OCC have a working relationship that fosters a safe working environment,” see Chart 9 and Chart 10 respectively.
TSSM participants recommended that OCC controllers be provided training, including visiting TSSM branches and field locations. They also recommended that OCC personnel be required to receive training along the wayside at times when TSSM personnel are active and performing their functions to expose them to the environment, the dangers that are present for TSSM workers, and their safety concerns.
Recommendations

We recommend that the GM direct the Deputy GM for Operations to:

3.5 Ensure that OCC is provided training opportunities that include challenges and safety-related issues TSSM encounters on the ROW to help cultivate a shared appreciation of work responsibilities.

III.5B MOC and TSSM working relations and communications need improvement.

MOC and TSSM communications are ineffective due to insufficient knowledge by MOC of ROW activities, inadequate training, and the absence of written standard operating procedures and clearly defined management instructions.

- Participants stated that some MOC personnel have no operations background or understanding of work being performed by TSSM maintenance personnel on the ROW and do not have a good understanding of ROW nomenclature. For example, OCC personnel could receive a call from a worker indicating he or she is going to a fan shaft, and the MOC operator, without proper training, may grant approval without knowing that the worker is requesting permission to go to the wayside.

- Participants stated that some MOC employees are hired who have not received formal training. Instead, they are directed to sit with various MOC employees for on-the-job training. Afterwards, they are to take a safety certification test. Participants stated that there is no manual of established rules and/or protocols that define what MOC is about.

- Participants stated that MOC is responsible for monitoring all midnight-shift maintenance activities performed by TSSM and all emergency maintenance or preventive maintenance affecting the configuration of wayside equipment during revenue service hours. Participants also stated that MOC has not established written standard operating procedures.
Participants commented that management’s objectives are not documented and clearly defined. As a result, some MOC personnel are doing the same work but in a different manner.

MOC participants acknowledged that they were not always aware of the presence and position of TSSM maintenance workers on the ROW. According to MOC, TSSM maintenance workers do not always inform MOC that they have been granted access to the ROW and what tasks they are performing. MOC operators stated that they are expected to be aware of maintenance functions underway throughout the ROW without any notification from OCC or the workers. Some MOC participants felt that the maintenance workers should contact MOC immediately after they were granted access, while others felt that OCC should inform MOC since OCC grants access. For example, if there is a burning insulator on the track that requires a MOC operator to send a POWR crew, the MOC operator may not be immediately aware that a POWR crew is needed, because he is left out of the conversation between OCC and others that make the decision. The MOC operator would only be notified after management learns the correct crew is not on-site.

Chart 11 depicts that there is even disagreement between senior managers and executive leadership on whether or not OCC and TSSM have a good working relationship.

Chart 11: TSSM and OCC have a working relationship that fosters a safe working environment

Source: CSA DATA
Recommendation

We recommend that the GM direct the Deputy GM for Operations to:

3.6 Ensure that (1) a formal training program is developed for all MOC personnel to provide them with technical knowledge and understanding of WMATA’s equipment and maintenance needs; (2) wayside operations procedures are put in place to effectively communicate with technical maintenance personnel in the field; and (3) a procedures manual for MOC operations and responsibilities is developed to ensure consistency of MOC operations.

III.5.C MOC and OCC communications are not effective.

Prior to MOC becoming a part of OCC, MOC was a part of the former Systems Maintenance. OCC and MOC were merged to facilitate the exchange of maintenance information. OCC participants commented that MOC personnel are underutilized within the OCC operations environment. MOC participants agreed that they felt underutilized due to limited communications and their lack of operational involvement. MOC participants indicated that OCC does not consider them to be full partners in the OCC. Therefore, OCC does not work well with the MOC.

Participants from both groups commented that critical information is not shared between OCC and MOC although MOC is responsible for taking action to resolve or mediate emergency situations. For example, MOC participants stated that there was an emergency situation when water was flooding the tracks at Van Ness. OCC did not contact the MOC. Instead, OCC contacted passenger operations and then the controller. However, everyone expected MOC to know what was going on. When a MOC employee asked the assistant superintendent what was going on, the assistant superintendent said he did not have time to talk. MOC participants commented that the flooding problem would ultimately be resolved through the intervention of MOC, but MOC was not brought in until the final critical moments. Participants stated that they have raised this issue to their assistant superintendents, but nothing has been done to correct the situation.
Recommendation

We recommend that the GM direct the Deputy GM for Operations to:

3.7 Ensure that OCC management establishes a process that will foster better communications with MOC so the right information is provided to the responsible parties in a timely manner.

CONCLUSIONS

Many of the TSSM employees' concerns discussed in this report are not new and have been reported repeatedly over the years without resolution or feedback. This may explain why some employees are frustrated and reluctant to report safety concerns and violations to management. The lack of consistent management attention, oversight, and commitment to correcting the problems reported has led to the current status quo as described in this CSA.

To address the safety concerns in this CSA, it is critical that top management—the General Manager, Deputy General Manager for Operations, and the Chief Safety Officer—provide support and demonstrate commitment to establishing a safety culture that listens to its employees and, if warranted, act on safety concerns in the most expedient manner possible. Top management also needs to carry out and enforce applicable safety laws, regulations, and WMATA’s safety policies and procedures. Such action by management should help eliminate or minimize rail-related preventable accidents, as well as allow employees to feel safe in their work environment.

OBJECTIVES, SCOPE AND METHODOLOGY

The objectives of the CSA of TSSM were to: (1) examine the effectiveness of safety internal controls from TSSM employees' perspective, and (2) find solutions that will help eliminate or reduce preventable rail related accidents. We developed and administered a safety-related survey, composed of 21 statements (see Appendix C), to selected WMATA employees. This survey was to stimulate discussions during the CSA and identify safety issues and concerns. The survey results were tabulated and analyzed for comparison and evaluation, see Appendices D, E, F, G, and H. CSA participants identified approximately 50 safety-related issues. We focused on 16 issues that came up repeatedly in the CSA.
We randomly selected 274 employees from approximately 1,250 TSSM employees, who participated in 27 workshops. The CSA process included discussions with 153 employees, 76 supervisors, and 45 managers of TSSM. All other participants responses were entered onto Excel worksheets and used to create charts depicting the results. We also analyzed the responses to identify safety issues and concerns, trends, and patterns. We also held two workshops with OCC and MOC, which included four and five employees, respectively. At the conclusion of the workshop process, we discussed selected survey statements with the General Superintendent of TSSM, the Managing Director of RTRA, and the Assistant General Manager of TIES, see Appendix H for their responses. We also interviewed the Manager of TTDC, TIES, and the prior acting Chief Safety Officer. The CSA was conducted from February 2010 through July 2010.

The CSA is a non-audit service as defined by generally accepted government auditing standards; therefore, these standards were not followed.
**APPENDIX A – LIST OF ACRONYMS**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tbody>
<tr>
<td>AFC</td>
<td>Automatic Fare Collection Branch</td>
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<tr>
<td>AGM</td>
<td>Assistant General Manager</td>
</tr>
<tr>
<td>AGS/AST GN SUPT</td>
<td>Assistant General Superintendent</td>
</tr>
<tr>
<td>AST DIV SUPT</td>
<td>Assistant Division Superintendent</td>
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<tr>
<td>ATC</td>
<td>Automatic Train Control Branch</td>
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<td>COMM</td>
<td>Communication Branch</td>
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<td>CSA</td>
<td>Control Self-Assessment</td>
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<td>EMI</td>
<td>Equipment Modification Instructions</td>
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<td>EMP</td>
<td>Employee</td>
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<tr>
<td>GM</td>
<td>General Manager</td>
</tr>
<tr>
<td>GS/GN</td>
<td>General Superintendent</td>
</tr>
<tr>
<td>MGR</td>
<td>Manager</td>
</tr>
<tr>
<td>MOC</td>
<td>Maintenance Operations Center</td>
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<tr>
<td>MSRPH</td>
<td>Metrorail Safety Rules Procedures and Handbook</td>
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<td>MAINT</td>
<td>Maintenance</td>
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<tr>
<td>OCC</td>
<td>Operations Control Center</td>
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<td>OIG</td>
<td>Office of Inspector General</td>
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<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
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<tr>
<td>PME</td>
<td>Precision Measurement Equipment</td>
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<tr>
<td>PMI</td>
<td>Preventive Maintenance Inspection</td>
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<td>POWR/PWR</td>
<td>Power Branch</td>
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<tr>
<td>PPE</td>
<td>Personal Protective Equipment</td>
</tr>
<tr>
<td>ROW</td>
<td>Right-Of-Way</td>
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<td>RTRA</td>
<td>Office of Rail Transportation</td>
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<tr>
<td>SAFE</td>
<td>Department of System Safety and Environmental Management</td>
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<td>Shops and Material Support</td>
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<td>SSPP</td>
<td>WMATA System Safety Program Plan</td>
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<td>STRC</td>
<td>Structures Maintenance</td>
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<td>Superintendent</td>
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<td>SUP</td>
<td>Supervisor</td>
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<td>TIES</td>
<td>Department of Transit Infrastructure and Engineering Services</td>
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<td>Track Maintenance and Production</td>
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<td>TSSM</td>
<td>Office of Track and Structure Systems Maintenance</td>
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<td>TTDC</td>
<td>Technical Training and Document Control Branch</td>
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<tr>
<td>WLK</td>
<td>Walker</td>
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<td>WMATA</td>
<td>Washington Metropolitan Area Transit Authority</td>
</tr>
</tbody>
</table>
TSSM Safety Control Self-Assessment

Recommendations
TSSM Safety Control Self-Assessment
Recommendations


We recommend that the General Manager (GM) direct the Deputy GM for Operations to:

1.1 Complete the Right-of-Way (ROW) Worker Protection Training Program and ensure that employees, supervisors, and managers receive this training;

1.2 Establish a process to ensure that the ROW Protection Manual, as well as the Washington Metropolitan Area Transit Authority’s (WMATA) safety policy and procedures, are followed.

1.3 Ensure that managers/supervisors are knowledgeable of and adhere to established safety rules and regulations, as well as provide proper oversight of Track and Structures Systems Maintenance (TSSM) employees.

1.4 Ensure that all employees have sufficient lighting when working along the ROW, rail, stations, mezzanines, outside parking lots, and revenue holding areas.

1.5 Review the schedules of train operators to ensure that there are adequate allowances for bathroom and other personal breaks at the end of a line.

1.6 Ensure that WMATA-owned precision measurement equipment is properly and timely calibrated and maintained.

1.7 Ensure adequate personal protective equipment (PPE) is on hand to support maintenance activities and provide management oversight to supervisors to ensure they provide PPE to employees and enforce its use at all times.

1.8 Provide all intended users in TSSM with the appropriate radios and related training to ensure adequate communications.
1.9 Perform an assessment of TSSM's staffing needs to ensure that adequate resources are available to meet maintenance objectives, including properly completing work orders in MAXIMO.

Category II–Training Is Not Adequate

We recommend that the GM direct the Deputy GM for Operations to:

2.1 Ensure that the Infrastructural Renewal Program-managed contracts for new equipment include training, schematics, and manufacturers’ manuals; and TSSM, in conjunction with the Office of Chief Engineer Vehicles, Technical Training and Document Control Branch, properly train employees to operate and service equipment and systems, including providing employees necessary training materials to operate and service equipment and systems assigned to them.

2.2 Develop a formal training program for TSSM employees that would enable them to successfully and safely carry out their duties and responsibilities. The program should include journeyman, supervisory, and technical training on operating and maintaining equipment used to support rail operations. The program should also include periodic refresher training for existing employees.

2.3 Ensure that supervisors/managers have the necessary training, knowledge, skills and abilities to effectively perform the assigned duties of their positions.

Category III–Communications

We recommend that the GM direct the Deputy GM for Operations to:

3.1 Ensure there is effective communication up and down the chain of command by establishing strategic goals, objectives, and milestones that include proactive activities, embracing and instilling the need for open communication throughout the TSSM organization.
3.2 Assess TSSM’s preventive maintenance inspection (PMI) system and equipment documentation needs and take appropriate action to ensure that all PMIs are up-to-date and develop and test new PMIs prior to circulating them to technicians and mechanics.

3.3 Ensure that the results of local safety committees in TSSM are communicated to all TSSM employees; that safety concerns, if warranted, are resolved; and that local safety committees are established within Operations Control Center (OCC) and Maintenance Operations Center (MOC) and other offices not having a safety committee.

3.4 Ensure that daily safety briefings provided by TSSM supervisors focus on current issues related to tasks being performed by their work crews.

3.5 Ensure that OCC is provided training opportunities that include challenges and safety-related issues TSSM encounters on the ROW to help cultivate a shared appreciation of work responsibilities.

3.6 Ensure that (1) a formal training program is developed for all MOC personnel to provide them with technical knowledge and understanding of WMATA’s equipment and maintenance needs; (2) wayside operations procedures are put in place to effectively communicate with technical maintenance personnel in the field; and (3) a procedures manual for MOC operations and responsibilities is developed to ensure consistency of MOC operations.

3.7 Ensure that OCC management establishes a process that will foster better communications with MOC so the right information is provided to the responsible parties in a timely manner.
## APPENDIX C – SURVEY INSTRUMENT

### TSSM Safety Control Self Assessment

<table>
<thead>
<tr>
<th></th>
<th>1 - Strongly Agree</th>
<th>2 - Agree</th>
<th>3 - Disagree</th>
<th>4 - Strongly Disagree</th>
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<tbody>
<tr>
<td>1</td>
<td>Safety in my daily operation is our number one priority.</td>
<td></td>
<td></td>
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<tr>
<td>2</td>
<td>There are areas in my work area where safety could be enhanced.</td>
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<td>3</td>
<td>TSSM’s right-of-way training for front line employees is adequate.</td>
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<td>4</td>
<td>TSSM employees are properly trained in safety rules.</td>
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<tr>
<td>5</td>
<td>TSSM provides training to enable employees to perform their duties safely.</td>
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<tr>
<td>6</td>
<td>My supervisor consistently provides safety briefings for employees.</td>
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<tr>
<td>7</td>
<td>My supervisor often observes my work practices for the purpose of protecting my health and safety.</td>
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<tr>
<td>8</td>
<td>The Safety Committee is an active and results oriented group.</td>
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<td>9</td>
<td>WMATA provides effective safety training for their employees.</td>
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<td>PMI procedures are up to date to enable employees to perform their jobs safely.</td>
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<tr>
<td>12</td>
<td>PMI inspections are completed as scheduled to ensure equipment/systems safety.</td>
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<td>13</td>
<td>Supervisors effectively review work completed.</td>
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<tr>
<td>14</td>
<td>TSSM provides the appropriate equipment to ensure a safe working environment.</td>
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<tr>
<td>15</td>
<td>Safe operating procedures for using equipment/machines are reviewed and revised as necessary.</td>
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<tr>
<td>16</td>
<td>Workplace accidents and/or near misses are sometimes not reported.</td>
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<tr>
<td>17</td>
<td>TSSM encourages employees to report safety concerns.</td>
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<tr>
<td>18</td>
<td>Supervisors/managers provide effective and timely resolutions to safety issues presented by TSSM employees.</td>
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</tr>
<tr>
<td>19</td>
<td>Safety of operations is more important than revenue operations.</td>
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<tr>
<td>20</td>
<td>TSSM and OCC have a working relationship that fosters a safe working environment.</td>
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<td>21</td>
<td>I have no fear or concerns related to retribution resulting from commenting on safety working conditions.</td>
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</tbody>
</table>
APPENDIX D

TSSM Safety Control Self-Assessment
Comparison of Responses
Of
Employees/Supervisors-Managers

Chart percentages are rounded up to the next whole number.
1. Safety in my daily operation is our number one priority.
2. There are areas in my work area where safety could be enhanced.
3. TSSM’s right-of-way training for front line employees is adequate.
4. TSSM employees are properly trained in safety rules.
5. **TSSM provides training to enable employees to perform their duties safely.**
6. My supervisor consistently provides safety briefings for employees.
7. My supervisor often observes my work practices for the purpose of protecting my health and safety.
8. The Safety Committee is an active and results oriented group.
9. WMATA provides effective safety training for their employees.
10. PMI procedures are up to date to enable employees to perform their jobs safely.
11. TSSM provides the appropriate personal protection equipment to enable front line employees to perform their job safely.
12. PMI inspections are completed as scheduled to ensure equipment/systems safety.
13. Supervisors effectively review work completed.
14. TSSM provides the appropriate equipment to ensure a safe working environment.
15. Safe operating procedures for using equipment/machines are reviewed and revised as necessary.
16. Workplace accidents and/or near misses are sometimes not reported.
17. TSSM encourages employees to report safety concerns.
18. Supervisors/managers provide effective and timely resolutions to safety issues presented by TSSM employees.
19. Safety of operations is more important than revenue operations.
20. TSSM and OCC have a working relationship that fosters a safe working environment.
21. I have no fear or concerns related to retribution resulting from commenting on safety working conditions.
TSSM Safety Control Self-Assessment Responses Of Employees/Supervisors By Group
1. Safety in my daily operation is our number one priority.
2. There are areas in my work area where safety could be enhanced.
3. TSSM’s right-of-way training for front line employees is adequate.
4. TSSM employees are properly trained in safety rules.
5. TSSM provides training to enable employees to perform their duties safely.
6. My supervisor consistently provides safety briefings for employees.
7. My supervisor often observes my work practices for the purpose of protecting my health and safety.
8. The Safety Committee is an active and results oriented group.
9. WMATA provides effective safety training for their employees.
10. PMI procedures are up to date to enable employees to perform their jobs safely.
11. TSSM provides the appropriate personal protection equipment to enable front line employees to perform their job safely.
12. PMI inspections are completed as scheduled to ensure equipment /systems safety.
13. Supervisors effectively review work completed.
14. **TSSM provides the appropriate equipment to ensure a safe working environment.**
15. Safe operating procedures for using equipment/machines are reviewed and revised as necessary.
16. Workplace accidents and/or near misses are sometimes not reported.
17. **TSSM encourages employees to report safety concerns.**
18. Supervisors/managers provide effective and timely resolutions to safety issues presented by TSSM employees.
19. Safety of operations is more important than revenue operations.
20. TSSM and OCC have a working relationship that fosters a safe working environment.
21. I have no fear or concerns related to retribution resulting from commenting on safety working conditions.
APPENDIX F

TSSM Safety Control Self-Assessment Responses Of Supervisors/Management*

*Includes AREA MGR, MAINT MGR, AST DV SUPT, SUPT, AST GN SUPT, GN SUPT, and AGM TIES.
1. Safety in my daily operation is our number one priority.
2. There are areas in my work area where safety could be enhanced.
3. TSSM’s right-of-way training for front line employees is adequate.
4. TSSM employees are properly trained in safety rules.
5. **TSSM provides training to enable employees to perform their duties safely.**
6. My supervisor consistently provides safety briefings for employees.
7. My supervisor often observes my work practices for the purpose of protecting my health and safety.
8. The Safety Committee is an active and results oriented group.
9. WMATA provides effective safety training for their employees.
10. PMI procedures are up to date to enable employees to perform their jobs safely.
11. TSSM provides the appropriate personal protection equipment to enable front line employees to perform their job safely.
12. PMI inspections are completed as scheduled to ensure equipment /systems safety.
13. Supervisors effectively review work completed.
14. TSSM provides the appropriate equipment to ensure a safe working environment.
15. Safe operating procedures for using equipment/machines are reviewed and revised as necessary.
16. Workplace accidents and/or near misses are sometimes not reported.
17. TSSM encourages employees to report safety concerns.
18. **Supervisors/managers provide effective and timely resolutions to safety issues presented by TSSM employees.**
19. Safety of operations is more important than revenue operations.
20. TSSM and OCC have a working relationship that fosters a safe working environment.
21. I have no fear or concerns related to retribution resulting from commenting on safety working conditions.
APPENDIX G

TSSM Safety Control Self-Assessment
Comparison of Responses
Of
OCC / MOC
1. Safety in my daily operation is our number one priority.
2. There are areas in my work area where safety could be enhanced.
3. TSSM’s right-of-way training for front line employees is adequate.
4. TSSM employees are properly trained in safety rules.
5. **TSSM provides training to enable employees to perform their duties safely.**
6. My supervisor consistently provides safety briefings for employees.
7. My supervisor often observes my work practices for the purpose of protecting my health and safety.
8. The Safety Committee is an active and results oriented group.
9. WMATA provides effective safety training for their employees.
OCC and MOC did not respond to this statement because the statement did not directly relate to their daily activities.

10. PMI procedures are up to date to enable employees to perform their jobs safely.
OCC and MOC did not respond to this statement because the statement did not directly relate to their daily activities.

11. TSSM provides the appropriate personal protection equipment to enable front line employees to perform their job safely.
OCC and MOC did not respond to this statement because the statement did not directly relate to their daily activities.

12. PMI inspections are completed as scheduled to ensure equipment /systems safety.
13. Supervisors effectively review work completed.
OCC and MOC did not respond to this statement because the statement did not directly relate to their daily activities.

14. TSSM provides the appropriate equipment to ensure a safe working environment.
OCC and MOC did not respond to this statement because the statement did not directly relate to their daily activities.

15. Safe operating procedures for using equipment/machines are reviewed and revised as necessary.
16. Workplace accidents and/or near misses are sometimes not reported.
17. TSSM encourages employees to report safety concerns.
18. Supervisors/managers provide effective and timely resolutions to safety issues presented by TSSM employees.
19. Safety of operations is more important than revenue operations.
20. TSSM and OCC have a working relationship that fosters a safe working environment.
21. I have no fear or concerns related to retribution resulting from commenting on safety working conditions.
APPENDIX H

TSSM Safety Control Self-Assessment Responses Of Senior Management*/Executive Leadership

*Includes Managing Director of RTRA and GS TSSM.
1. Safety in my daily operation is our number one priority.
2. There are areas in my work area where safety could be enhanced.
3. TSSM’s right-of-way training for front line employees is adequate.
4. TSSM employees are properly trained in safety rules.
5. **TSSM provides training to enable employees to perform their duties safely.**
6. My supervisor consistently provides safety briefings for employees.
7. My supervisor often observes my work practices for the purpose of protecting my health and safety.
8. The Safety Committee is an active and results oriented group.
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10. PMI procedures are up to date to enable employees to perform their jobs safely.
11. TSSM provides the appropriate personal protection equipment to enable front line employees to perform their job safely.
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13. Supervisors effectively review work completed.
14. **TSSM provides the appropriate equipment to ensure a safe working environment.**
15. Safe operating procedures for using equipment/machines are reviewed and revised as necessary.
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17. TSSM encourages employees to report safety concerns.
18. Supervisors/managers provide effective and timely resolutions to safety issues presented by TSSM employees.
19. Safety of operations is more important than revenue operations.
20. TSSM and OCC have a working relationship that fosters a safe working environment.
21. I have no fear or concerns related to retribution resulting from commenting on safety working conditions.