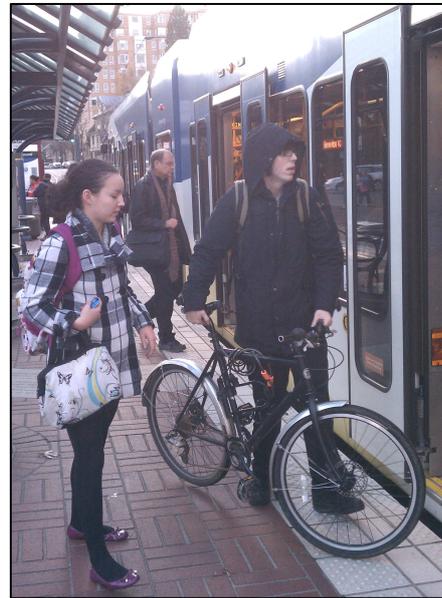




OREGON DEPARTMENT OF TRANSPORTATION

2011 THREE-YEAR SAFETY AND SECURITY REVIEW
OF TRIMET MAX LIGHT RAIL



FINAL REPORT

APRIL 2012

ASSISTED BY:

TRANSPORTATION RESOURCE ASSOCIATES



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INTRODUCTION

Overview

According to the Federal Transit Administration's (FTA) State Safety Oversight Rule (49 CFR Part 659), any state with a fixed guideway rail transit system is required to designate a State Safety Oversight Agency (SSOA) to administer safety and security oversight over those transit systems. In the State of Oregon, the designated SSOA is the Oregon Department of Transportation (ODOT). The Tri-County Metropolitan Transportation District of Oregon (TriMet) runs the MAX light rail system, which falls under these federal requirements and is the subject of this report.

Under ODOT, the state safety oversight program is structured to maximize rail transit safety and security and fulfill all FTA requirements under 49 CFR Part 659. ODOT is required to implement a program standard that identifies the rail transit agency's responsibilities for safety and security functions. In Oregon, the program standard is the combination of several State Safety Oversight Procedures (SSOPs) and the Oregon Administrative Rules (OARs). ODOT's Program Standard has been developed based on FTA's SSO requirements, including:

- TriMet's development of a System Safety Program Plan (SSPP) and Security and Emergency Preparedness Plan (SEPP)
- ODOT review and approval of SSPPs and SEPPs based on the SSOA program standard
- Investigation of certain types of accidents and hazards
- Review and oversight of implementation of corrective action plans related to accidents, hazards, internal transit system reviews, and external reviews
- Regular and periodic on-site reviews of SSPP and SEPP implementation and compliance, including Three-Year Safety and Security Reviews

Once every three years, ODOT must conduct a comprehensive on-site safety and security review at each rail transit agency under its purview. Per FTA requirements, the review focuses on 21 safety and security elements that constitute the SSPP as well as the SEPP. This report discusses the methodology, observations, and findings of the most recent Three-Year Safety and Security Review, which ODOT conducted on-site from Nov. 28 to Dec. 1, 2011.

The on-site Three-Year Safety and Security Review is an independent evaluation that supplements TriMet's internal audits and ODOT's routine oversight of the rail system. The main objectives are to identify whether TriMet:

- Maintains an SSPP and SEPP that follow ODOT and FTA standards
- Complies with its SSPP and SEPP through the creation of plans, policies, procedures, and rules, and that documentation exists for current practice
- Personnel follow established plans, policies, procedures, and rules in accordance with the SSPP, SEPP, and ODOT and FTA requirements.

ODOT intended to complete a comprehensive, thorough, and focused assessment using TriMet's plans as well as adopted standards, applicable external regulations, and industry best practices. This review is meant to assist TriMet with enhancing the safety and security of its system. It is intended to be a snapshot in time of current practice.

The ODOT review team appreciates the time and commitment that TriMet personnel provided throughout the review. ODOT was able to perform an effective review thanks to the generous help and cooperation of TriMet personnel throughout interviews, field observations, and document reviews.

Methodology

ODOT assembled a team of subject matter experts from its contractor, Transportation Resource Associates, Inc. (TRA), which specializes in SSOA work, including Three-Year Safety and Security Reviews. TRA team members were involved in all parts of the review process and conducted review activities on behalf of ODOT. Preceding the on-site review, ODOT requested a series of TriMet plans, policies, procedures, and other information that the review team could examine in advance. ODOT and TriMet also worked together to develop a flexible on-site review schedule to minimize interference with daily operations. ODOT provided samples of guidance forms its reviewers would use on-site for each review topic area. These guidance forms are structured upon the FTA's verification and assessment resource "Recommended Best Practices for States Conducting Three-Year Safety Reviews." In addition to those guidance forms, reviewers also compared conditions at TriMet to other industry best practices and guidelines, such as standards from the American Public Transportation Association (APTA).

The four-day on-site review period began with a kickoff meeting, during which the ODOT review team explained its methodology and process to TriMet personnel. In the following days, the team split up into functional review areas. Reviewers were coupled with TriMet personnel for all reviews, and observations were shared with TriMet contemporaneously. Review sessions involved:

- Interviews with TriMet personnel
- Examinations of records, data, procedures, and other documents
- Field inspections of current conditions and work in progress

Upon conclusion of the on-site period on Dec. 1, 2011, ODOT presented preliminary findings to TriMet and discussed any questions and concerns that transit agency personnel identified. Following completion of the on-site review, ODOT developed this report explaining the results of the review.

For purposes of this report, there are two categories of findings:

- **Findings of Non-Compliance:** A finding of non-compliance refers to an instance where TriMet is not operating in compliance or accordance with an applicable internal or external written requirement, including, but not limited to, ODOT's SSOPs; Oregon Administrative Rules 741-060-0010 through 741-060-0110; 49 CFR Part 659; the transit agency's SSPP; the transit agency's SEPP, and referenced transit agency plans, policies, and procedures. Some non-compliance findings may be safety- or security-critical in

nature; however, some findings may be related to a deficiency in the content or material reviewed.

- **Findings of Compliance with Recommendation:** A finding of compliance with recommendation refers to a condition whereby TriMet may technically be in compliance with applicable internal and external requirements; however, there may be no appropriate written plan, policy, or procedure in place, or the existing plan, policy, or procedure is not appropriate, or is not written in accordance with applicable industry practices or adopted standards. Alternatively, such a finding of compliance with recommendation may constitute a resource or organizational issue preventing the allocation of sufficient resources to system safety or security activities.

After TriMet reviewed a draft of this report, the transit agency and ODOT's review team attempted to clarify any discrepancies found in the content and related findings. Following the comment period, ODOT updated this report and has resubmitted it to TriMet as the final Three-Year Safety and Security Review report. Following the submittal of the final report, TriMet must develop Corrective Action Plans (CAPs) to address each Finding of Non-Compliance and Finding of Compliance with Recommendation. TriMet is required to submit information regarding the proposed resolution, responsible party, and expected completion date for each finding within 30 calendar days from issuance of the final report. ODOT is responsible for reviewing these CAPs and must formally approve each one. In cases where ODOT cannot approve a proposed CAP, ODOT will work with TriMet to develop an acceptable CAP. ODOT shall monitor and track the implementation of each CAP, and must verify implementation through documentation or site visits as appropriate. Some CAPs may be intrinsically long-term or resource-intensive, and as such may remain "open" for a long period of time; however the objective of the CAP process is not to close CAPs as quickly as possible, but rather to be able to document and verify progress in addressing the identified safety- or security-related finding. Only upon ODOT verification of the completion of a given CAP can ODOT consider the CAP "closed."

Report Organization

This report is split into functional areas. Each section describes the elements under review as they relate to TriMet, the criteria used, a general assessment of the topic area, and findings with recommendations. A discussion and assessment of training and certification requirements is included within each section, if applicable. The sections also list persons interviewed and documents examined.

In order to show how all safety and security elements listed in Part 659 were reviewed, the table on the next page illustrates the correlation between those elements and the sections of this report.

Section Number/Title in This Report	49 CFR Part 659 Section Reference	TriMet System Safety Program Plan Section Number	
1. System Safety and Related Topics	1. Policy Statement	SSPP Preface	
	2. Goals & Objectives	B. Goals and Objectives	
	3. Overview of Management Structure	C. Overview	
	4. SSPP Control & Update Procedure	D. SSPP Review and Updates	
	5. SSPP Implementation Activities and Responsibilities		C. Overview
			O. Interdepartmental / Interagency Coordination
	6. Hazard Management Process	E. Hazard Management Program	
	7. System Modification	M. System Modification Process	
	8. Safety Certification	X. Safety and Security Certification Process	
	9. Safety Data Collection and Analysis	N. Safety Data Acquisition and Analysis	
	10. Accident/Incident Investigations	F. Accident/Incident Notification, Investigation, and Reporting	
	12. Internal Safety Audits	G. Internal Safety Audit Process	
	16. Training & Certification Program	K. Training and Certification Program	
	17. Configuration Management	P. Configuration Management	
	18. Local, State, and Federal Requirements	Q. Safety Program for Employees and Contractors	
19. Hazardous Materials Program	R. Hazardous Materials Program		
21. Procurement	U. Procurement		
2. Security and Emergency Preparedness	11. Emergency Management Program	L. Emergency Management Program Activities	
	Security and Emergency Preparedness Plan	Security and Emergency Preparedness Plan	
	16. Training & Certification Program	K. Training and Certification Program	

3. Rail Operations	13. Rules Compliance	J. Rules and Procedures Development, Maintenance, & Compliance
	16. Training & Certification Program	K. Training and Certification Program
		W. Hours of Service
4. Drug and Alcohol Program	20. Drug & Alcohol Program	S. Drug and Alcohol Abuse Program
5. Vehicle Maintenance	15. Maintenance Audits & Inspections	I. Maintenance Audit and Inspection Program
	16. Training & Certification Program	K. Training and Certification Program
6. Facility Safety: Shops	14. Facilities & Equipment Inspections	H. Facility and Equipment Inspections
	19. Hazardous Materials Program	R. Hazardous Materials Program
7. Station Maintenance	14. Facilities & Equipment Inspections	H. Facility and Equipment Inspections
8. Communications	15. Maintenance Audits & Inspections	I. Maintenance Audit and Inspection Program
9. Elevators	15. Maintenance Audits & Inspections	I. Maintenance Audit and Inspection Program
10. Maintenance of Way	15. Maintenance Audits & Inspections	I. Maintenance Audit and Inspection Program
	16. Training & Certification Program	K. Training and Certification Program
11. Structures	15. Maintenance Audits & Inspections	I. Maintenance Audit and Inspection Program

SYSTEM DESCRIPTION

Overview

TriMet provides transit service in the Portland metropolitan area, which includes Clackamas, Multnomah, and Washington counties. TriMet operates a light rail transit system called MAX, which is subject to state safety oversight and is the focus of this review. MAX serves the downtown Portland area and west to Beaverton and Hillsboro (along the Blue Line), east to Gresham (Blue Line), north/east to Portland International Airport (Red Line), north to the Expo Center (Yellow Line), and south/east to Clackamas Town Center (Green Line).

The east-side portion of the Blue Line was opened in 1986, and the west-side in 1998. The Red and Yellow lines opened in 2001 and 2004, respectively. TriMet's newest link, the Green Line, opened along the I-205 corridor in 2009. Passengers traveling between downtown Portland stations (including Portland State University and stations east to Lloyd Center) can do so without paying fare. TriMet is constructing a 7.2-mile MAX extension from Portland State University through Southeast Portland to Milwaukie. This project, which includes a transit bridge across the Willamette River, is scheduled to open in 2015.



Trains on all lines consist of two light rail vehicles (LRVs) from among a fleet of more than 100 Bombardier high-floor (non-wheelchair accessible) cars from the original rail line and a number of Siemens low-floor (accessible) cars. Due to accessibility issues, trains always include at least one low-floor LRV.

All MAX light rail trains are propelled by electric traction motors, which derive power via a roof-mounted pantograph that glides along the overhead contact system. The MAX system is virtually all two tracks wide. The trains run on a total of 52 miles of track and serve 85 stations. On a typical weekday, MAX trains travel approximately 11,600 miles, according to TriMet, which reports 41.2 million light rail boardings in fiscal year 2011.

Additional descriptions regarding each technical area can be found in the respective sections that follow. TriMet's other operations, such as bus and WES commuter rail, are not part of this assessment. This review also does not include Portland Streetcar, for which TriMet provides operational support to the City of Portland; ODOT reviews that system separately.

SUMMARY OF FINDINGS

1. System Safety and Related Topics

Findings of Non-Compliance

1.1: The SSPP does not differentiate between the goals and objectives for Safety versus Transportation Operations, and it is not specific in the objectives to be achieved.

1.2: The SSPP does not contain general information on TriMet's compliance with local, state, and federal requirements.

Findings of Compliance with Recommendation

1.1: The safety task matrix in the SSPP only assigns tasks as a "primary" or "oversight" responsibility for various departments; however, it does not assign "support" roles.

1.2: Some Safety Specialists have not received professional credentials in safety certification and educational programs.

1.3: Safety-related training that TriMet performs is not clearly described in the SSPP.

1.4: The comprehensive and effective Accident Incident Database (ACID) is not designed to generate summary reports.

1.5: Until recently, the Safety Committee at Ruby Junction has not met regularly and has not kept records of all of its meetings.

2. Security and Emergency Preparedness

Findings of Non-Compliance

2.1: The SEPP does not fully describe the process to inform ODOT of revisions to the SEPP, the process for initiating an SEPP review, who is responsible for the review, or the process to inform ODOT of plan revisions and for ODOT to review the plan.

Findings of Compliance with Recommendation

2.1: TriMet may benefit from reaching out to local businesses and vendors adjacent to their operations in order to extend a "ring" of security around system assets.

2.2: Some SOPs and blocks of training relating to security and system familiarization lack formalization and frequency of occurrence.

3. Rail Operations

Findings of Non-Compliance

3.1: Transportation Operations and Operations Training have not been providing the TCRC with a trend analysis of all operational safety check activity for quarterly review, as specified by the SSPP.

3.2: Requests for right-of-way access permits are not being submitted according to the deadlines specified by TriMet.

Findings of Compliance with Recommendation

3.1: TriMet does not have clear processes in place for Special Instructions and other documents used on an interim basis in the change/update process for rules and procedures.

3.2: The TriMet Hours of Service Policy does not reflect the APTA Standard for Train Operator Hours of Service that the rail transit industry developed in response to the NTSB's finding on this subject matter and the FTA's request that APTA address this critical issue.

3.3: The SSPP specifies non-existent refresher instruction and annual recertification for Rail Supervisors and Rail Controllers.

3.4: TriMet does not have a process in place to verify that ground inspections are completed as required.

4. Drug and Alcohol Program

Findings of Non-Compliance

This review identified no findings of non-compliance.

Findings of Compliance with Recommendation

This review identified no findings of compliance with recommendation.

5. Vehicle Maintenance

Findings of Non-Compliance

5.1: A large number of inspections in 2011 were performed late, resulting in fewer inspections than should have been performed.

5.2: Personnel are not entering the actual mileage on the vehicle inspection forms.

5.3: The Rail Equipment Maintenance recurrent training matrix shows many cells with no data or overdue dates.

5.4: There are many tools and pieces of equipment which do not have up-to-date calibration dates on the calibration log.

Findings of Compliance with Recommendation

This review identified no findings of compliance with recommendation

6. Facility Safety: Shops

Findings of Non-Compliance

This review identified no findings of non-compliance.

Findings of Compliance with Recommendation

6.1: There appears to be no process to expeditiously address hazardous conditions identified by the Ruby Junction Safety Committee.

6.2: Several bottles containing liquids were unmarked on a work desk in Ruby Junction North.

6.3: Two instances were observed of fall protection netting not fully applied over the edges of maintenance pits.

7. Station Maintenance

Findings of Non-Compliance

This review identified no findings of non-compliance.

Findings of Compliance with Recommendation

7.1: It is unclear whether inspectors are using the “Facility Platform Inspections” checklist to conduct preventive maintenance inspections of stations.

7.2: The Facilities Systems Maintenance Plan does not fully reflect current station preventive maintenance inspection practice.

8. Communications

Findings of Non-Compliance

This review identified no findings of non-compliance.

Findings of Compliance with Recommendation

This review identified no findings of compliance with recommendation.

9. Elevators

Findings of Non-Compliance

This review identified no findings of non-compliance.

Findings of Compliance with Recommendation

This review identified no findings of compliance with recommendation.

10. Maintenance of Way

Findings of Non-Compliance

10.1: Track inspection records for summer and fall 2011 show numerous deferred visual/walking inspections.

10.2: Some quarterly Signals tests are not documented as being completed.

10.3: Substations preventive maintenance and testing is not consistently performed at the planned monthly interval.

10.4: Substations transfer trip (or emergency power off) tests were not completed for two of the seven substations audited.

Findings of Compliance with Recommendation

10.1: Section 2.1 of the Track Standards Manual does not identify who conducts the daily visual right-of-way inspection.

10.2: OCS repair items on inspection sheets are not initialed, signed, or otherwise checked off when entered into the MMIS system.

10.3: Maintenance of Way does not have time-based tolerances for inspection and test intervals.

10.4: Substations does not have a field on its monthly inspection and preventive maintenance forms for notes on repairs needed and other miscellaneous comments.

10.5: Supervisor signatures were missing from some Signals switch maintenance forms.

10.6: Maintenance of Way preventive maintenance and inspection activities could benefit from a more complete description in the SSPP.

10.7: Safety meetings and rules and procedures checks within Maintenance of Way are not fully described in the TriMet SSPP.

11. Structures

Findings of Non-Compliance

This review identified no findings of non-compliance.

Findings of Compliance with Recommendation

11.1: Contractor bridge inspection reports include recommendations for structural maintenance that are not being completed.

11.2: TriMet does not receive copies of bridge inspection records for three bridges over which TriMet runs, nor for bridges over the MAX right-of-way.

1 - SYSTEM SAFETY AND RELATED TOPICS

Overview

The implementation of safety activities as described in TriMet's SSPP for the MAX light rail system was reviewed for compliance with ODOT and FTA requirements. In addition to verifying implementation compliance with the SSPP, the ODOT reviewers checked SSPP content for compliance with federal requirements of 49 CFR Part 659. During the course of the review, senior TriMet Safety personnel described planned modifications to the current SSPP. As appropriate, ODOT is including the potential impact of these changes on review findings described in this report. Extensive detail on all system safety topics described below is available in the checklists appended to this report. The checklists outline the comprehensive system safety activities of TriMet.

Policy Statement: The document used as the basis for this review is the TriMet SSPP of October 2011, which is appropriately endorsed by the General Manager and authorizes the Safety, Security, and Environmental Services (SSES) Department to develop, implement and administer the SSPP as required by 49 CFR § 659.19 (a). The overall review of the TriMet SSES Department indicated that activities are taking place in accordance with the policy statement.

Goals and Objectives: The processes required by 659.19(b) for Safety Program Goals and Objectives are described in SSPP Section B. The SSPP sets goals and measurable objectives for TriMet, managed by the SSES Department. The objectives are to be tracked and reported to the Executive Directors, the General Manager and the Board of Directors on a monthly basis. The assessment and findings subsections below detail a deficiency and planned changes in this area that were already underway to address this deficiency.

Management Structure and SSPP Implementation: The management structure required by 49 CFR § 659.19 (c) is adequately described in SSPP Section C – Overview. Activities required by 49 CFR § 659.19 (e) to implement the SSPP are described in Section C as well as Section O – Interdepartmental/Interagency Coordination. Safety personnel were recently moved from Operations to the new SSES Department, and this is reflected in the SSPP. The SSPP does not specifically describe “support” roles for safety functions, however. Discussions with TriMet personnel and review of documentation provided indicates that implementation activities are occurring as described in and compliant with the SSPP. Safety integration is evidenced through documented activities such as the Accident Incident Database (ACID), extensive Transit Change Review Committee (TCRC) agendas/logs, and minutes of Safety Committees. There is a new safety position opening for involvement in New Starts.

SSPP Control and Update: The process required by 49 CFR § 659.19 (d) for revising the SSPP is adequately described in Section D – Program Plan Review and Updates. Discussions with TriMet personnel and review of documentation provided indicate that the process is active and compliant, and that the SSPP has been updated more frequently than required, in order to incorporate all changes resulting from New Starts and other capital projects. The process is currently being followed to meet annual SSPP review and modification requirements, including

coordination with ODOT. Modifications are reviewed and managed by the Transit Change Review Committee. The revised SSPP is posted on TriNet following approval by TriMet and ODOT.

Hazard Management: The hazard management process required by 49 CFR § 659.19 (f) is adequately described in SSPP Section E – Hazard Management Program. Hazard identification, analysis and corrective action are logged and monitored in separate, but appropriate locations, through ACID, the TCRC Follow-Up Action Log and the Safety All Open Items CAP list. Hazards reported from several sources including accident/incident logs, employee submissions, audits, inspections and QA processes are analyzed, tracked and resolved through specific identified processes and tracking mechanisms. Coordination with ODOT complies with SSPP and federal requirements. Hazard resolution and tracking are significant hazard management requirements. The TCRC Follow-Up Action Log and Safety All Open Items CAP list are key program elements.

System Modification: The system modification process required by 49 CFR § 659.19 (g) is adequately described in SSPP Section M – System Modification Process. The TCRC is specifically responsible (as per referenced SOP #001) for changes to SOPs and configuration of in-service equipment and facilities. This activity was verified through interviews with TriMet personnel and reviews of the TCRC agendas and Follow-Up Action Log and complies with the SSPP. TriMet administers a comprehensive program for monitoring all safety implications associated with system modification and maintains extensive formal documentation in support of this program.

Safety Certification: The safety certification process required by 49 CFR § 659.19 (h) is described in SSPP Section X – Safety and Security Certification Process. The SSPP provides a detailed outline of the process. ODOT also examined the Portland-Milwaukie Safety & Security Certification Plan and found the documentation to be of high quality. TriMet administers a comprehensive safety certification program and maintains extensive formal documentation in support of this program.

Safety Data: The process required by 49 CFR § 659.19 (i) to collect and analyze safety data is adequately described in SSPP Section N – Safety Data Acquisition and Analysis. Sources of information and organizations responsible for reporting safety information are identified. Specific uses for the information are listed. Detailed procedures for data analysis are described in other SSPP sections. Data reporting, collection and analysis appear to be compliant with the SSPP. TriMet continues to reevaluate how to best gather and use safety data to improve system safety. The department recently added a database specific to employee injuries.

Accident Investigation: The process required by 49 CFR § 659.19 (j) for accident notification, investigation and reporting is adequately described in SSPP Section F – Accident/Incident Notification, Investigation and Reporting. A detailed description of the notification process is provided in the SSPP. Detailed investigation procedures are provided in SOP #576, which is referenced in the SSPP and was recently updated to provide extensive information on how to conduct a comprehensive accident investigation. Accidents meeting SOP #217 criteria are analyzed by the Safety and Security Department and TCRC, resulting in determination of

corrective action and tracking through the TCRC Follow-Up Action Log. Review of the ACID report and TCRC Log plus interviews with TriMet personnel indicate that the implemented process complies with the SSPP. TriMet's requirements for reporting and coordination with ODOT are also being met.

Internal Safety Audits: The process required by 49 CFR § 659.19 (l) for scheduling and performing internal safety reviews is described in SSPP Section G – Internal Safety Audit Process. The process description in the SSPP and the referenced Internal Safety Audit Process meet Part 659 requirements. A review of completed audits indicated that they are completed primarily by Safety personnel, but also may be performed by TriMet Internal Audit staff, the Exclusions Coordinator, or Safety Certification personnel. Review of audit information and interviews with audit personnel indicate that the implemented process generally complies with the SSPP. A checklist process is used and appears to be implemented appropriately. Completed ISAs include corrective actions and descriptions of how findings may be closed out.

Training and Certification: Interviews with personnel and review of documentation provided affirmed the active role of the Safety and Security Department and implementation of training activities identified in the SSPP (as Safety and Security responsibilities) in Section P – Training and Certification Program.

Configuration Management Control: The process required by 49 CFR § 659.19 (q) for configuration management control is described in SSPP Section P – Configuration Management. TCRC procedures and responsibilities are defined in SOP #001 and include review of changes to Standard Operating Procedures and configuration of in-service equipment and facilities. The SOP provides for inclusion of key operations, maintenance and support departments. The SSPP, SOP #001 and review of the TCRC Follow-Up Action Log affirm compliance with 49 CFR Part 659 requirements.

Local, State, and Federal Requirements: The employee/contractor safety program required by 49 CFR § 659.19 (r) is described in SSPP Section Q – Safety Program for Employees and Contractors. The SSPP references TriMet's Construction Safety Program document which addresses the specific requirements of 49 CFR Part 659. Interviews with the Safety and Security Department and documentation provided indicate program implementation as required by the SSPP. However, the SSPP does not outline specific requirements, only the fact that governmental requirements exist. This is described further in Finding of Non-Compliance 1.2. Also, some safety-related training that TriMet performs is not clearly described (see Finding of Compliance with Recommendation 1.3).

Hazardous Materials: The hazardous materials program required by 49 CFR § 659.19 (s) is described in SSPP Section R – Hazardous Materials Program. The SSPP includes programs to control procurement, use, storage and proper disposal of hazardous materials, as well as training for these activities. Procurement & Contracts verifies that hazardous materials are approved for use prior to allowing purchases. Purchasing Card procedures also detail requirements, and P-Card statements are sometimes audited for compliance. An on-line system is used to check or request approval of all MSDS items. Interviews with personnel and review of on-line systems and information verify compliance with SSPP requirements.

Procurement: Inclusion of safety in the procurement process required by 49 CFR § 659.19 (u) is described in SSPP Section U – Procurement. Interviews with personnel and review of documents indicate that the process has been implemented as described and involves all necessary departments. An evaluation committee determines compliance of new and existing products. Maintenance supervisors perform quality control over receipt of all materials.

Responsibility

The Safety, Security, and Environmental Services Department is responsible for managing TriMet’s safety function. TriMet reorganized since the last three-year review and moved safety personnel from the operations function into this independent department to reflect the systems-nature of system safety and the independence of the safety personnel. Each Overview subsection, above, describes the responsibility for each system safety-related element. Additional information regarding specific responsibilities of Safety personnel or others in support of SSES personnel is included in the detailed checklists contained in the appendix of this report.

Evaluation Criteria

Criteria used to conduct this evaluation included:

- 49 CFR Part 659
- FTA Recommended Best Practices for States Conducting Three Year Safety Reviews. March 2009.
- ODOT Program Standard. January 2010.
- TriMet System Safety Program Plan. October 2011.

General Assessment

ODOT found Safety personnel to be very proactive on safety issues. The department has attained a high stature within TriMet such that other departments worked well with Safety and incorporated safety into their work as a course of duty, not as a separate, standalone requirement. ODOT reviewers were especially impressed with safety certification efforts, the system modification program, the accident investigation process, and the TCRC activities. The TCRC, along with new efforts such as the new Request for Safety Assessment program for employees to report safety concerns and see them actively addressed, demonstrate TriMet’s serious commitment to safety. Furthermore, the addition of the Safety and Security Executive and some changes in reporting structures have further buttressed system safety and established it at the core of TriMet. ODOT recognizes that TriMet has many new initiatives underway that are intended to further improve how safety is managed, and ODOT will continue to observe progress on this front.

Because some assessment is described in the Overview subsection above, only topics requiring additional explanation are below:

Goals and Objectives: Although the SSPP lists goals and objectives, the responsibility for their accomplishment is not clearly written. TriMet is tracking goals and objectives, however. The

Safety and Security Executive engaged in a lengthy discussion with the reviewers about his visions for the future and his intent to revise the goals and objectives to be more fluid and responsive to current needs. This is discussed further in Finding of Non-Compliance 1.1.

Management Structure and SSPP Implementation: Safety personnel were recently moved from Operations to the new Safety, Security, and Environmental Department. All affected personnel interviewed agreed that this change has been very beneficial and has preserved the independence of internal safety oversight. While the SSPP description is accurate, the safety task matrix can be improved, as discussed in Finding of Compliance with Recommendation 1.1. Finding of Compliance with Recommendation 1.5 explains that the Ruby Junction Safety Committee has not met regularly or kept meeting minutes until recently.

Hazard Management Process: Although TriMet does not have a singular hazard tracking log, it appears to successfully examine hazards through many different sources and separate tracking logs. The new Request for Safety Assessment system, which allows employees to submit all severities of potential hazards, is a best practice and is clearly used by frontline employees and watched consistently by Safety personnel. No regularly-tracked trend reports are currently developed, but plans for a new Safety Management System program may incorporate some of this.

System Modification: Safety personnel described potential changes that are passed through the TCRC, such as replacing the emergency stop button on trains. The TCRC votes on changes. SOP changes pass through the TCRC in person or online. TriMet administers a comprehensive program for monitoring all safety implications associated with system modification and maintains extensive formal documentation in support of this program.

Safety Certification: The SSPP and the Portland-Milwaukie Safety & Security Certification Plan contain detailed information. ODOT examined Safety Certifiable Item Lists for Rockwood Station and Civic Center, and found documentation to be well-organized and designed. ODOT found the documentation to be of high quality. TriMet administers a comprehensive safety certification program and maintains extensive formal documentation in support of this program.

Safety Data Acquisition and Analysis: The SSPP appears to be complete in this area except that it does not explain how employee safety concerns are collected through the recently implemented Request for Safety Assistance process. While extensive data is gathered and analyzed, the SSPP does not describe how this data and related analysis are presented to the TCRC.

Accident/Incident Investigations: In addition to interviews, ODOT examined ACID inputs and accident investigation reports with supporting documentation presented to TCRC for six incidents from 2009, 2010, and 2011. All reports appear to contain relevant and complete information. TriMet could see additional benefits from its incident investigations by identifying trends or rule violations and targeting these actions using rule compliance checks.

Internal Safety Audits. TriMet's Safety staff work regularly with individuals from every department in the organization and are familiar with the varied duties and requirements of the

different jobs (e.g. operations, maintenance, etc.). TriMet internal safety audits reflect an appropriate level of oversight as well as an understanding by the auditor of issues to be checked and verified. TriMet relies on Internal Audit personnel or others to conduct any audit activities of the Safety function, so as to avoid any potential conflicts of interest. Some externally conducted internal audits are written in a different format, but cover the same information. All internal audits appear to be conducted on schedule and there appears to be no problem with agency participation in the internal safety audit program.

Configuration Management. Configuration management appears to be incorporated into the safety certification process and into all System Modifications via the TCRC. There is not currently a specific Configuration Management Plan for TriMet. The TCRC is the formal means of managing all configuration changes. Introduction of new Safety Measurement System programs may affect this process and result in formalization of configuration management activities.

Local, State, and Federal Requirements. The SSPP references TriMet’s Construction Safety Program document, which addresses the specific requirements of 49 CFR Part 659. Interviews with the SSES department and documentation provided indicate program implementation as required by the SSPP. However, the SSPP does not outline specific requirements, only the fact that governmental requirements exist. This is described further in Finding of Non-Compliance 1.2.

Hazardous Materials Programs. The SSPP details the Hazards Materials/Hazardous Communications Program. TriMet uses a formal process for procuring and handling hazardous materials and manages an online database of all materials on-site. Purchasing Card procedures also detail requirements. All of TriMet’s hazardous material program activities appear to be effective and appropriate.

Procurement Process: The procurement process appears to be well-integrated across departments. Procurement should continue to expand its use of Safety personnel expertise for specifications early to mid-way through the process, as Procurement has found this to be beneficial.

Associated Training and Certification Requirements

TriMet’s SSES does not administer safety-related training itself. Safety topics are integrated into job-specific training programs (e.g. Rail Operator training or forklift training specific to certain job classifications). While reviews of different training programs indicate that all safety-related training is well-integrated into overall job training, it is not separately described in the SSPP or separately tracked in a “safety-specific” training list or matrix by SSES. ODOT has included a Finding of Compliance with Recommendation that suggests creating a central listing of job-specific requirements for unique safety training.

Findings and Recommendations

Findings of Non-Compliance

1.1: The SSPP does not differentiate between the goals and objectives for Safety versus Transportation Operations, and it is not specific in the objectives to be achieved.

The goals and objectives listed on page 2 of the SSPP outline types of objectives but do not specify how they are to be achieved or their success is to be measured. Further, there are some goals and objectives for which responsibility may be placed on either Safety or Transportation Operations, or both. The new Safety & Security Executive was clear that he is in the process of establishing forward-looking safety goals and objectives as part of a comprehensive review of the Safety Department and that TriMet intends to update the SSPP after completing efforts to specify those goals and objectives.

To close this finding:

- Update the SSPP with specific and delegated goals and objectives as described above, and provide the updated SSPP to ODOT.

1.2: The SSPP does not contain general information on TriMet’s compliance with local, state, and federal requirements.

Part 659 requires the SSPP to outline how TriMet complies with applicable governmental requirements (other than those mandated by the FTA or ODOT). The SSPP contains sections regarding safety programs and related training for employees and contractors; in these sections it is stated that the governmental requirements exist, but these requirements are not outlined. While the SSPP should not state every specific code or federal requirement that could affect safety, it should note what bodies have regulations with which TriMet must comply, similar to how TriMet states that contractors must comply with FTA, Occupational Safety and Health Administration (OSHA), ODOT, and so on.

To close this finding:

- Revise the SSPP to outline local, state, and federal requirements with which TriMet must comply.

Findings of Compliance with Recommendation

1.1: The safety task matrix in the SSPP only assigns tasks as a “primary” or “oversight” responsibility for various departments; however, it does not assign “support” roles.

As required by Part 659, page 6 of the SSPP delineates SSPP implementation activities and responsibilities by department or function. However, numerous groups are assigned a “primary” role for some of the same tasks, which could create confusion regarding who is ultimately responsible. In some cases, designation in a “support” role or possibly a level higher than “primary” may be more appropriate.

To close this finding:

- Update the SSPP safety task matrix to make use of the “support” role designation for departments to assist in completing tasks, as appropriate, and provide the updated SSPP to ODOT.

1.2: Some Safety Specialists have not received professional credentials in safety certification and educational programs.

SSES management expressed the desire for all of its Safety Specialists to work toward attaining the status of Certified Safety Professional (CSP), Certified Industrial Hygienist (CIH), and/or National Transit Institute certification. Certification would introduce new or expanded skill sets to the department and bolster safety efforts organization-wide. While such credentials are not necessary to complete the work effectively, they can afford the agency benefits in increased knowledge and skill sets.

- Analyze whether any certifications should be required and/or if resources can be devoted to providing different types of certification for all Safety Specialists. Provide this analysis, the resulting conclusion, and a timeline for certification to ODOT.

1.3: Safety-related training that TriMet performs is not clearly described in the SSPP.

While the review indicated that TriMet is performing safety-related training in key areas (such as respirator fit testing, bloodborne pathogen training, and forklift training), it is unclear what standards/requirements are established for different employees and who is responsible for administering the different training programs. In some cases, TriMet uses contractors, and in others, it uses in-house staff to lead the training.

- Evaluate what would serve as the best means of tracking all safety-related training information to ensure that it is appropriately captured and that no employee misses training because the requirement is not clearly established. Provide this completed analysis to ODOT.
- Describe in the SSPP who is responsible for the various types of safety-related training, what training is required, and who must receive it (or reference a plan, policy or procedure that contains this centralized information). Provide the revised SSPP to ODOT.

1.4: The comprehensive and effective Accident Incident Database (ACID) is not designed to generate summary reports.

TriMet retains extensive information related to all accident and incident investigations using its ACID database; however, it is limited in some of its functionality. For example, it cannot generate summary reports of all accidents or incidents that took place during a set time period. It also cannot track trends.

- Evaluate if ACID can be modified to incorporate trend analysis and other reporting capabilities that may help Safety personnel in existing data analysis and/or the upcoming efforts to enhance system safety.

1.5: Until recently, the Safety Committee at Ruby Junction has not met regularly and has not kept records of all of its meetings.

TriMet has established a comprehensive safety committee program throughout the organization in which important safety issues are discussed, tracked, and closed. These committees bring together operating, maintenance, safety, and other personnel into a regular, professional forum to improve system safety. While the Elmonica Safety Committee meets regularly and maintains extensive documentation, this has not been the case at Ruby Junction until recent months.

To close this finding:

- Ensure that the Ruby Junction Safety Committee is meeting regularly and in the same capacity as the Elmonica Safety Committee. Provide ODOT with documentation of these meetings through the end of calendar year 2012.

List of Persons Interviewed

- Black, Craig. Environmental Health & Safety Specialist.
- Frank, James. Director of Procurement.
- Imondi, Ron. Manager of Purchasing.
- Gilbreath, Tommye. Manager of System Safety.
- Saporta, Harry. Safety & Security Executive.
- Sheets, Michael. Safety Specialist.
- Woodall, Brian. Contracts Manager.

List of Documents/Records Reviewed

- ACID Database Incident Reports for six Accidents/Incidents from 2009, 2010, and 2011.
- TriMet SSPP. October 2011.
- SOP 217: Urgent Review of Major Safety or Security Incidents. April 15, 2010.
- SOP 227: Reporting Employee Injuries. April 16, 2009.
- SOP 576: Accident/Incident Investigation. January 20, 2011.
- Rail Transportation Safety Alerts and Trainline bulletin samples.
- Station and Crossing Work Plan Summary. July 2011.
- Evaluation of Incident # 661004.
- Final Report, Train vs. Pedestrian, 1st Ave. Skidmore Fountain Platform.
- June 8, 2010, Uncoupling incident CAP.
- Uncoupling on Mainline, June 18, 2010, Investigation Report.
- Train Check samples.
- TriMet Internal Audit Department Management Action Plan Status Report FY 2010-11 as of June 30, 2011.
- Management Action Plan Status Report Memo. July 29, 2011.
- Safety Committee Training Agenda.
- "Be Seen. Be Safe." Safety awareness posting.
- "Riding Safely" PowerPoint.
- TriMet Contractor Safety Guide. July 2011.
- Maintenance of Way & Facilities Meeting Minutes samples.

- Rail Equipment Maintenance Safety Committee Meeting Minutes samples.
- TriMet Internal Rail Safety Audit Checklist samples.
- Internal Audit Report No. 09-01. December 2009.
- Internal Audit Report No. 08-09. August 2009.
- Internal Audit Report No. 09-08. August 2010.
- Elmonica Facility Self-Insured Annual Audit. Jan. 7, 2010.
- Ruby Junction Facility: Self- Insured- Annual Audit. Feb 17, 2010.
- Report of the APTA Peer Review Panel. June 2009.
- TCRC Documentation from nine meetings in 2009, 2010, and 2011, including:
 - o Agenda
 - o Minutes
 - o Sign-In Sheets
 - o Accident/Incident Reports
 - o Hazard Analyses
 - o Proposed System Changes
 - o SOP Actions
 - o Safety Recommendations
 - o TCRC Follow-Up Log
- Rail Equipment Maintenance Safety Committee Meeting Minutes 2009- 2011.
- Elmonica Safety Committee Meeting Minutes 2009-2011.
- TCRC Closed Master Follow-Up Action Log (multiple updates 2010-2011).TriMet Injury Spreadsheet/Database.
- Hazardous Communications Program System Safety Policy Revision 11.

2 - SECURITY AND EMERGENCY PREPAREDNESS

Overview

Public safety, emergency management, and system security are primary concerns that affect all levels of TriMet activities. Therefore, all TriMet personnel and appropriate contractors must always be mindful of promoting the safety and security of customers, employees, property and the public who come in contact with the TriMet MAX light rail system. The SEPP is the governing document for security and emergency management measures at TriMet. The SEPP identifies the tasks and requirements applicable to all levels of the TriMet organization and functional units. The SEPP also articulates TriMet's response to emergencies requiring coordination with multiple jurisdictions and organizations, and that their response is consistent with National Incident Management System (NIMS) standards; it also ensures that the response builds on industry best practices identified through drills and training protocols.

The goal of TriMet's SEPP is to ensure that the organization effectively manages day-to-day activities and is prepared to respond to any incident, regardless of size and scope, in a coordinated manner while minimizing system interruptions. The SEPP serves as an emergency response and security management tool to ensure that the agency provides an increased awareness of available resources and capabilities throughout its area of operation and improves overall readiness to support and/or manage community-wide emergencies or events as they are encountered.

TriMet focuses on security using technology and the environment to analyze and prevent crime, rather than reacting to it. They accomplish this by providing security awareness for all transit departments, customers and employees. They supplement awareness with the use of data collection and analysis to assess performance, identify problems, and design appropriate countermeasures. If done correctly, TriMet will be able to manage security activities by using thorough documentation and interagency cooperation.

The purpose of this review is to ensure that TriMet has formal mechanisms to identify security risks and emergency management in all departments and areas; to eliminate, minimize or control these risks; and to implement its SEPP at all levels of the organization.

Responsibility

The Safety & Security Executive is tasked with the responsibility to develop and implement programs to promote secure operations, to oversee and monitor compliance and maintenance of the SEPP, and to reduce or eliminate criminal incidents and acts of terrorism as well as the fear of those incidents. This position is also accountable to develop and implement programs to promote emergency management, conduct drills and exercises, and coordinate with local emergency response agencies.

The Manager of Emergency Management Safety & Security reports to the Safety & Security Executive for emergency preparedness matters. The Commander of the Transit Police Division also reports to that Executive for police and security matters.

Although authority by statute to deploy its own police resources was granted, TriMet opted in 1989 to contract with the City of Portland for policing. This partnership resulted in intergovernmental agreements with the cities of Portland, Gresham, Beaverton, Milwaukie, Tigard, Hillsboro, Troutdale, West Linn, Oregon City, and Lake Oswego and the counties of Multnomah, Clackamas, Washington, and the Port of Portland. TriMet incorporated these police officers and deputies within its TriMet Transit Police Division (TPD), although the officers remain employees of their respective departments. All officers assigned have full police jurisdiction so that they may respond to incidents throughout the transit system. Additional police officers and other emergency first responders who are not assigned to the transit detail receive transit-related familiarization training provided by TriMet. All police officers on duty at TriMet are exclusive to MAX and are selected by their departments to be assigned to this transit detail. Police officer deployment is augmented by contract security personnel who monitor platforms.

Evaluation Criteria

ODOT evaluated security and emergency preparedness activities almost exclusively based on the standards and benchmarks found in TriMet documents and as outlined in ODOT's program standards and procedures. As needed, additional reference sources, such as FTA guidance documents, APTA standards, and Department of Homeland Security (DHS) guidelines for terrorism advisories and training were utilized. The SEPP itself forms the criteria by which its implementation is evaluated.

The following is a description of the criteria used to conduct this review:

- 49 CFR Part 659
- FTA Recommended Best Practices for States Conducting Three Year Safety Reviews. March 2009.
- ODOT Program Standard. January 2010.
- TriMet System Safety Program Plan. October 2011.
- TriMet Security and Emergency Preparedness Plan. 2011.
- TriMet Standard Operating Procedures
- Security and Emergency Preparedness training curriculum
- Guidance document for DHS Homeland Security Advisory System (HSAS) and revised National Terrorism Advisory System (NTAS);
- Industry best practices for enforcement, emergency preparedness, and security for benchmarking

The review team conducted several interviews and document reviews, participated in a table-top drill and discussion on the Winter Emergency Operations Plan, and made site visits to review security and emergency preparedness activities in progress. The interviews consisted of discussions pertaining to TriMet's compliance with the SSO standards; SEPP development, review, and approval; threat and vulnerability processes; security and emergency preparedness training, which includes drills and exercises; internal and external security audits; current security concerns; CAP development and resolution; system emergency plans, policies and

procedures; document control policy to include access controls; security committees; and the process for security certification of extensions, new starts, and major construction.

General Assessment

The inherently open nature of public transportation systems, the quantities of people they transport each day, and the diverse and oftentimes heavily populated areas through which they operate make such systems viable targets for various criminal activities, including acts of terrorism. To meet this challenge, the TPD offers an extensive program of policing, contract security, and fare inspectors whose duty is to ensure the personal safety and security of all riders and employees, as well as the security of TriMet facilities and equipment.

TriMet holds quarterly security staff meetings with commanders to brief officers on security concerns. This process has many advantages; for example, multiple officers from various jurisdictions assigned to TriMet have firsthand knowledge of the transit environment, the sharing of intelligence throughout the region, and a corroborated and organized prosecution of offenders with the Transit Deputy District Attorney as it relates to the security of the transit system.

TriMet security and safety managers noted during this review that they were considering splitting the SEPP into two plans, one each for security and emergency preparedness. ODOT believes that TriMet could benefit from this configuration, which is found at other transportation properties and, if implemented properly, could enhance current practices. Having separate documents for security and emergency preparedness, respectively, would likely foster additional detail in each of the plans. TriMet is already ahead of some other transportation systems in that its Security/Police function and Emergency Preparedness Function, along with the manager of these two operations, are located in the same office space adjacent to one another.

Associated Training and Certification Requirements

Security and emergency preparedness training for all TriMet personnel is comprehensive; it covers standard and emergency operating procedures. These procedures provide for a disciplined and orderly environment even under adverse conditions. This is accomplished using meaningful and understandable rules and procedures, which are enforced with compliance monitoring by immediate supervisors and annual reinstruction. TriMet reviews these procedures periodically or as the need arises.

In conjunction with these standard operating and emergency operating procedures are familiarization tours of TriMet for all emergency response agencies that interface with the system. These tours promote cooperation and coordination pertaining to security incidents, situations requiring an emergency response, or other events that occur outside normal operating conditions.

Most TriMet job assignments are unique to transit and are not compatible with civilian sector job descriptions. Due to this uniqueness, most employees are trained on the job with a foreman, supervisor, or manager monitoring for compliance and efficiency. Upon demonstrating proficiency in specific job functions, the employee is deemed qualified and is released for normal duties. Said duties are monitored following basic organization principles and are

reinforced with annual reinstruction, job evaluations, and/or academic and performance based testing.

Active duty police personnel receive training commensurate with their assignments. All state-mandated training in reference to any police certification is performed by the department where the officers work and is maintained according to protocols established by their agency.

The following list contains brief descriptions of courses in which TriMet addresses security and emergency response issues.

- TriMet System Overview
- Job Specific Responsibilities Class
- Plans & Procedures Review - including Security Operating Procedures; Standard Operating Procedures; SEPP; TriMet Flood Plan; Hazardous Materials Introduction; Chemical, Biological, Radiological and Nuclear (CBRNE) familiarization; Winter Emergency Operations Plan; Earthquake Plan; and the Tornado and Windstorm Plan
- Federal Emergency Management Agency (FEMA) classes ICS 100, ICS 200, ICS 700, and ICS 800
- NIMS familiarization and National Response Plan (NRP) review
- Expanded FEMA & NIMS courses for all other TriMet personnel, to include: frontline managers, transit managers, maintenance workers, mid-level management, senior management, and dispatchers
- Familiarization program and tours with local emergency response agencies
- Fire/life safety program and meetings
- Continuity of Operations (COOP) training/planning
- Evacuation training/planning (from buildings, stations, LRVs, and for the elderly and disabled)
- Training/planning drills and exercises
- Numerous memorandums, handouts, and fliers for officers, employees, and passengers

TriMet conducts this training when applicable; otherwise it is provided by outside academic institutions to maintain quality and professionalism. SEPP training files are maintained by the Safety Department and/or the department where the employee is assigned.

Findings and Recommendations

Findings of Non-Compliance

2.1: The SEPP does not fully describe the process to inform ODOT of revisions to the SEPP, the process for initiating an SEPP review, who is responsible for the review, or the process to inform ODOT of plan revisions and for ODOT to review the plan.

Parts of the SEPP Policy Statement, Government Involvement, and Review Process sections do state that details of SSO coordination, the process for initiating an SEPP review, and related responsibility are described in the SSPP. However, the ODOT Program Standard and Part 659 require that this information be articulated in the SEPP.

To close this finding:

- Rewrite relevant sections of the SEPP to describe the process to inform ODOT of revisions to the SEPP, the process for initiating an SEPP review, who is responsible for the review, and the process to inform ODOT of plan revisions and for ODOT to review the plan.
- Provide the revised SEPP to ODOT.

Findings of Compliance with Recommendation

2.1: TriMet may benefit from reaching out to local businesses and vendors adjacent to their operations in order to extend a “ring” of security around system assets.

TriMet appears to have engaged employees and passengers as the “eyes and ears” of the system and has developed programs, such as “See Something, Say Something,” to assist with this function. However, businesses and vendors adjacent to the MAX system have a vested interest in TriMet operations and are usually a good source of information/intelligence, especially if trained properly. Expansion of the awareness program to include these stakeholders could improve security on the system.

To close this finding:

- TriMet should evaluate and consider a program to reach out to businesses and local vendors and teach their employees what may constitute suspicious behavior and how to properly report it to TPD. Those businesses and their employees are familiar with their own work environment and will recognize something out of the ordinary if properly trained. Offer those businesses a short, proactive security block of training to their employees to extend TriMet’s relationship with them and foster cooperation. Once trained, TriMet may develop a type of certification process which could be displayed by the business to help thwart certain forms of behavior adjacent to TriMet operations.
- Provide the completed evaluation to ODOT.

2.2: Some SOPs and blocks of training relating to security and system familiarization lack formalization and frequency of occurrence.

TriMet has a comprehensive set of SOPs and training blocks that are clearly worded. However, elements of formalization are missing, and more frequent performance of this training would better establish proficiency. The records of that training should be stored by the TPD Commander to ensure that all officers assigned to TPD are trained properly. TriMet should develop a minimum set of security training standards for those officers.

To close this finding:

- Develop a standard for security training needed by all TriMet personnel and ensure that it includes regular (such as annual) refresher training to reflect current operating conditions. Provide the standard to ODOT.
- Seek out transportation security-specific related training offered by outside institutions and/or send TriMet security personnel to “Train the Trainer” types of instruction so those

employees may be certified to instruct personnel at TriMet. Provide documentation of this process to ODOT.

List of Persons Interviewed

- Crebs, Michael. TPD Commander.
- Daniels, Kathy. Controlled Access Administrator, Safety & Security.
- McGuire, Michael. Manager, Emergency Management Safety & Security.
- Roberts, Tony. System Safety Officer.
- Saporta, Harry. Safety & Security Executive.

List of Documents/Records Reviewed

- TriMet Crime Statistics. January 2011 through August 2011.
- TriMet TPD SOPs.
- TriMet Threat Level Response & Homeland Security Advisory procedure.
- TriMet Fire/Life Safety Training (Familiarization).
- TriMet System Awareness for Transit Employees.
- TriMet Winter Emergency Operations tabletop/discussion & Orientation. Nov. 30, 2011.
- TriMet Security and Emergency Preparedness Plan. 2011.
- TriMet System Safety Program Plan. October 2011.
- TPD "Commanders Expectations for Transit Police Members." Oct. 4, 2010.
- TPD "Transit Police Priority of Effort." Oct. 4, 2010.
- Transportation Security Administration Baseline review of TriMet.

3 - RAIL OPERATIONS

Overview

This review of TriMet rail operations and associated training and certification programs fulfills the Part 659 requirement to review Element 13 of the SSPP, Rule Compliance, as well as Element 16, Training and Certification. This review is designed to evaluate TriMet compliance with these SSPP elements and to ensure there are appropriate processes in place at TriMet for: a) the review and update of rules and procedures; b) rule compliance and enforcement activities relative to TriMet train operations, particularly by TriMet Rail Supervisors; and c) control of train movement on the mainline and within yard limits.. This review also covers records of rule compliance and enforcement activities, and field observations of TriMet revenue operations and field supervision. This review area also covers the initial and refresher training programs for TriMet Rail Operators, Rail Supervisors, and Rail Controllers, and includes the appropriateness of the training programs, their maintenance and administration by TriMet managers, and a review of records to ensure that all required employee training is complete.

The general assets related to rail operations and associated training primarily consist of TriMet human capital – the Rail Operators, Rail Supervisors, Rail Controllers, and the managers who oversee these functions – as well as the processes described in the SSPP and the rules and procedures that govern TriMet operations, supervision, and control. At the time of the review, TriMet employed 152 Rail Operators, 26 Rail Supervisors, and 18 Rail Controllers. The TriMet Rule Book is dated June 2010; and the TriMet Standard Operating Procedures are updated on an ongoing basis.

TriMet Transportation Operations is the main group within the transit agency responsible for provision of passenger service, including MAX light rail, bus, and paratransit. The Director of Transportation Operations reports to TriMet's Chief Operating Officer. Light rail operations are split into two distinct groups within Transportation Operations: Rail Operations and Field Operations. The Manager of Rail Operations directly oversees Rail Controllers, Dispatchers, Operations Control Center (OCC) Leads, and two Assistant Managers. There is one Assistant Manager each at the Ruby Junction and Elmonica facilities. The Assistant Managers oversee Rail Operators as well as the Station Agents, who are responsible for scheduling Rail Operator work assignments. The Manager of Field Operations oversees two Assistant Managers, who in turn manage Lead Field Supervisors, Road Supervisors (bus operations only), and Rail Supervisors. Field Operations also employs five Fare Inspectors.

Responsibility

The main goal of any rail operations department within a transit agency is to deliver safe and reliable passenger service. TriMet Rail Operators are responsible for following established TriMet Rules, SOPs, Train Orders, and Special Instructions. Rail Supervisors are primarily responsible for ensuring that Train Operators are complying with such rules and procedures through Service Quality Rides and Observation Rides, and through everyday observation and reporting of rule compliance issues to appropriate TriMet managers. As of this review, the Field Operations Assistant Managers are generally responsible for reviewing the results of rule

compliance checks, though there is no formal policy or procedure describing how this must be accomplished. Field Operations uses an online database, ACID, to record accidents, incidents, near misses, and other hazards related to rule compliance and enforcement, but there is no written policy or procedure governing its usage relative to the rule compliance process. The Rail Operations Manager is responsible for taking appropriate corrective action in response to rule compliance issues; such action may involve working with Field Operations and Rail Operations Training to administer any further training or supervisory focus.

The managers of Rail Operations, Field Operations, and Rail Operations Training work together to review and update rules and procedures, and to develop Train Orders, Special Instructions, Train Lines, and other documents that guide operations. The TCRC, which includes representatives from all of the above-mentioned functional areas (plus others from various safety and maintenance groups) is ultimately responsible for reviewing and approving changes to TriMet's Rule Book and SOPs. The TriMet Manager of Communications, who reports directly to the Chief Operating Officer and sits on the TCRC, is responsible for updating, publishing, and distributing official changes to rules and procedures.

Initial and refresher training for Rail Operators, Rail Supervisors, and Rail Controllers is ultimately the responsibility of the Rail Operations Training group.

Associated Training and Certification Requirements

TriMet Rail Operations Training falls under a separate department: Rail Operations Support. The Manager of Operations Training oversees both rail and bus training. On the rail side, he oversees an Assistant Manager for Rail Operations Training, who in turn oversees three full-time and four part-time Training Supervisors. The Training Supervisors administer training programs to Rail Operations, Rail Supervisors, and Rail Controllers.

Initial and refresher training programs for Rail Operators, Rail Supervisors, and Rail Controllers are described in course outlines for each respective position. Each employee is required to undergo annual recertification in train operation in order to maintain familiarity with the physical characteristics of the system. Training Supervisors lead classroom instruction, though much of the initial training for Rail Supervisors and Rail Controllers is performed by subject matter experts outside of Rail Operations Training, such as Rail Operations and Field Operations personnel.

One of the full-time Training Supervisors is responsible for maintaining hard-copy training records. TriMet has taken steps in other rail system functions toward phasing out paper training records in favor of electronic recordkeeping, though this process had not begun with Rail Operations Training at the time of the review. The same Training Supervisor maintains a spreadsheet that lists all affected employees and their associated training and recertification requirements; the Rail Operations Training personnel use this information to work with Rail Operations and Field Operations to schedule required refresher training. The SSPP implies a separate and standalone recertification requirement for Rail Supervisors; however, according to Rail Operations Training managers, no such recertification exists. TriMet is apparently in the process of developing a standalone Supervisor recertification requirement, though an implementation timeline was not available at the time of the review.

Evaluation Criteria

Criteria used to conduct this evaluation included:

- 49 CFR Part 659.
- FTA Recommended Best Practices for States Conducting Three Year Safety Reviews. March 2009.
- ODOT Program Standard. January 2010.
- TriMet Rail Operation Rule Book. May 2010.
- TriMet System Safety Program Plan. October 2011.
- TriMet SOPs, Special Instructions, and Train Orders.

The ODOT review team interviewed TriMet managers from Rail Operations, Field Operations, and Rail Operations Training; reviewed a sample of completed Service Quality Rides and Observation Rides; reviewed a sample of employee training records; observed Rail Supervisors performing their duties in the field; observed train operations and general rule compliance from aboard MAX trains; and observed OCC operations and communications.

General Assessment

TriMet appears to have appropriate processes in place to ensure that changes to rules and procedures receive appropriate scrutiny by pertinent managers, including those from Rail Operations, Field Operations, and Rail Operations Training. The TCRC is comprised of representatives from all of these groups and must ultimately approve any changes to the TriMet Rule Book and to TriMet SOPs. Despite this, the process for initiating Special Instructions, Train Lines, and other documents used to convey rule or procedure changes on an interim basis is less clearly defined (see the associated findings below).

TriMet seems to have an appropriate rule and procedure enforcement program, through the Service Quality Rides and Observation Rides performed by Rail Supervisors. Rail Training Supervisors also occasionally observe operating rule compliance. The results of these rule compliance checks were readily available for review, and TriMet seems to have a good process to maintain such records. Less apparent is the responsibility to review the results of the various types of rule compliance checks, as well as the responsibility to perform trend analyses of such results and provide the analyses to the TCRC (further detailed in the associated findings below).

The Rail Operations Training program appears to be complete, and the contents of the training programs themselves are appropriate for both initial and refresher training for Rail Operators, Rail Supervisors, and Rail Controllers. Records were generally well-maintained and complete, and all of the employees from sample records appeared to be up-to-date in their certification requirements.

TriMet has a track access process whereby representatives from Rail Operations, Field Operations, and various maintenance functions meet regularly to review and approve requests to perform work in or near the light rail right-of-way (ROW). This meeting is meant to take place weekly, and requests are supposed to be submitted more than a week ahead of the scheduled

work; however, the deadlines established do not always appear to be followed (please see the associated finding below).

Findings and Recommendations

Findings of Non-Compliance

3.1: Transportation Operations and Operations Training have not been providing the TCRC with a trend analysis of all operational safety check activity for quarterly review, as specified by the SSPP.

The SSPP describes a process whereby the TCRC receives a trend analysis of all operational safety check activity on a quarterly basis. The objective in conducting trend analysis of all rule compliance activity is to ensure that the rule compliance program does not focus solely on individual occurrences and individual operators for disciplinary action; rather, by analyzing trends in overall rule compliance, TriMet managers are able to determine whether systematic problem areas exist that may otherwise seem minor in severity on an individual basis. Through such analysis, TriMet should be able to make appropriate adjustments to training and refresher programs, rules and procedures, Train Orders, Special Instructions, and the focus of supervisory activities. For example, Rail Supervisors may be assigned to monitor compliance with a particular rule in a certain “hot spot.” In addition to such adjustments, managers would be able to analyze the validity of the rule compliance check program and monitor whether Rail Supervisors are conducting such checks appropriately; for example, if no rule violations of any kind were found for an entire quarter’s worth of check forms, then Rail Supervisors are likely not recording low-level rule violations. Trend analysis of rule compliance is also integral to the TriMet Hazard Management Program.

At the time of the review, neither Rail Operations nor Field Operations were conducting trend analyses of the results of rule compliance checks in any formal, systematic manner. Additionally, it was not apparent who held the responsibility to conduct such analyses, though Field Operations, Rail Operations, and Rail Operations Training each have a stake in the rule compliance process. It would benefit TriMet to more clearly define the roles and responsibilities surrounding the trend analysis process.

To close this finding:

- Develop a new policy or procedure, or update an existing one, that clearly delineates the roles and responsibilities for reviewing the results of all rule compliance checks performed by TriMet personnel. Such a policy or procedure should identify who is responsible for conducting such analyses, the parameters of the analyses, and the associated process for review by TriMet management, including the TCRC.
- Provide this policy or procedure to ODOT.
- Provide documentation to ODOT demonstrating that TriMet is providing the trend analysis to the TCRC for quarterly review for the next four quarters.

3.2: Requests for right-of-way access permits are not being submitted according to the deadlines specified by TriMet.

According to conversations with TriMet employees involved in the track access process, the deadline established on the permit form is not consistently followed. The MAX Right-of-Way Access Request/Permit specifies that that each request must be submitted by 10:00 a.m. Monday, at least one week prior to the scheduled work. Personnel involved in reviewing and approving permits and for controlling maintenance operations asserted that permits are frequently issued for work just a day or two ahead of time. Such short notice does not allow much time to spot potential conflicts or to develop appropriate workarounds for maintenance and operations personnel, especially given the high volume of work being performed in and near the right-of-way at the time of the review. Though this issue does not constitute an acute safety hazard, ODOT expects that TriMet will follow its own written policies and procedures.

To close this finding:

- Take steps to ensure compliance with the established timelines for requesting track access permits.
- Provide ODOT with documentation of the steps taken to ensure compliance.

Findings of Compliance with Recommendation

3.1: TriMet does not have clear processes in place for Special Instructions and other documents used on an interim basis in the change/update process for rules and procedures.

During the review, ODOT determined that TriMet has a good process in place to facilitate the update of rules and procedures, as specified in SOP 002. However, other than lines in SOP 101 such as, “Special Instructions take precedence over Rules and Standard Operating Procedure while they are in effect,” there is no written policy or procedure specifying the important role of the Special Instruction in the rule and procedure update process. Special Instructions typically do supersede existing rules and procedures, though it is essential to ensure that such documents are subject to the same review and controls that govern the rulebook and SOPs. TriMet appears to take a more informal approach in the following ways:

- Not all important changes to rules and procedures are consistently communicated to employees in the form of Special Instructions; rather, some such changes come in the form of memoranda from managers, while others may appear in the form of the Train Lines newsletter published by Rail Operations Training.
- It is not clear exactly who is responsible for the development, review, approval, and promulgation of the Special Instructions and other ostensibly interim documentation associated with the rule/procedure change process. At the time of the review, Rail Operations, Field Operations, and Rail Operations Training each had a partial stake in the process, but none could claim full ownership.
- The existing SOP 002, Changes and Updates to Rule Books and SOPs, does not specify Special Instructions and their role as an interim document for communicating important changes to rules and procedures. As such, at the time of the review, TriMet was using documents other than and instead of Special Instructions to convey changes to rules and procedures, including simple memos and the Train Lines publication.
- SOP 001 describes TCRC roles and responsibilities relative to the review and approval of changes to rules and SOPs but does not specify whether TCRC must play any role in the

review of Special Instructions and/or other interim documents as part of the rule/procedure change process. At the time of the review, the TCRC was generally not reviewing Special Instructions as part of the rule/procedure change process.

- SOP 101 does not specify how long Special Instructions can remain effective before they must be incorporated into the rulebook or an SOP. ODOT received copies of a Special Instruction that became effective in 2005 and remains so; other Special Instructions appear to be at least several years old.

To close this finding:

- TriMet should take steps to clarify the use of Special Instructions and/or other documentation used to communicate changes to rules and procedures on an interim basis, and the roles and responsibilities of various TriMet employees, managers, and committees in their development, review, approval, and promulgation to affected employees.
- Provide ODOT with documentation of the steps taken to clarify the Special Instruction process.

3.2: The TriMet Hours of Service Policy does not reflect the APTA Standard for Train Operator Hours of Service that the rail transit industry developed in response to the NTSB's finding on this subject matter and the FTA's request that APTA address this critical issue.

TriMet's current Hours of Service (HOS) Policy and Procedures requires a minimum rest period of seven consecutive hours off duty within a 24-hour service day. Though TriMet has an effective process in place to ensure that its Rail Operators comply with its policy, the Federal Transit Administration determined that transit operating employee hours of service was a critical issue and funded an APTA effort to develop a Standard in response to an NTSB finding in which the NTSB stated that transit employees should have the opportunity to receive eight hours of uninterrupted sleep between shifts. The genesis of the APTA Standard is National Transportation Safety Board (NTSB) recommendation R-06-03:

Require transit agencies, through the system safety program and hazard management process if necessary, to ensure that the time off between daily tours of duty, including regular and overtime assignments, allows train operators to obtain at least eight hours of uninterrupted sleep.

The resultant APTA Standard for Train Operator Hours of Service addressed the NTSB's recommendation by stipulating a minimum of 10 consecutive hours between shifts, in order to allow for both eight hours of uninterrupted sleep and additional time for other off-duty activities. Although APTA standards are not regulatory requirements, the HOS Standard is deemed a "Mandatory Standard" that all rail transit agencies have agreed to fund and adopt, pursuant to the language contained in the approval documentation agreed to by all U.S. rail transit agencies. Throughout APTA's development and approval of this Standard, TriMet was provided with formal opportunities to help develop the Standard and to comment on or vote against the provisions of the Standard. APTA has no record of TriMet's disagreement with the provisions of

the Standard during the development and/or approval stages of the Standard. ODOT is aware that a five-year implementation window was built into the standard to account for negotiations with labor unions, and that TriMet has to date been unsuccessful in bringing the union on board with the provisions of the standard. However, ODOT will continue to press TriMet to ensure that the agency takes appropriate steps to move toward enacting the provisions contained in the standard, and will elevate this issue as needed.

To close this finding:

- Document the specific steps TriMet has taken to date to adopt the APTA HOS standard, and will continue to take, including upcoming negotiations, and target dates and milestones for implementation of the standard.
- Document, as indicated in the APTA Standard, TriMet's alternate practices that provide for an equivalent level of safety under the current program as the provisions described in the APTA Standard
- Provide documentation of these steps to ODOT.

3.3: The SSPP specifies non-existent refresher instruction and annual recertification for Rail Supervisors and Rail Controllers.

The SSPP specifies that "Rail Field Supervisors and controllers receive refresher instruction and are re-certified annually." Two sentences later, it requires that "both controllers and supervisors attend the annual recertification for Rail Operations." While Rail Supervisors and Rail Controllers do complete annual recertification in train operation ("Rail Operations"), the language in the SSPP seems to imply that there are separate, stand-alone recertification programs tailored to Supervisors and Controllers; however no such training existed at the time of the review. TriMet managers indicated that the transit agency was in the process of developing such recertification programs for Supervisors and Controllers, but were unable to provide a target date for completion.

To close this finding:

- Revise the SSPP to accurately reflect the recertification requirements for Supervisors and Controllers.
- Provide the revised SSPP to ODOT for review and approval.

3.4: TriMet does not have a process in place to verify that ground inspections are completed as required.

TriMet Rail Operators are required to complete a Ground Inspection before moving a train, as specified in the Rule Book (C 1.0) and in SOP 178. However, based on observations of Ground Inspections by Rail Operators and discussions with management, TriMet does not have a form or checklist for documenting completion of Ground Inspections. Further, TriMet does not have a process in place to monitor compliance with Ground Inspection requirements in any systematic way – either to ensure that the Ground Inspections are being performed, or that they are completed correctly and in accordance with the established procedure. At the time of the review,

TriMet was unable to provide ODOT with any Ground Inspection records or other documentation to show compliance with the Ground Inspection requirement.

To close this finding:

- Develop a mechanism by which Rail Operators and other personnel responsible for performing Ground Inspections document they have been completed, and provide documentation of this mechanism (such as a form or checklist) to ODOT.
- Develop a mechanism to evaluate compliance with Ground Inspection requirements in a systematic way, such as through direct observation of Ground Inspections by Rail Supervisors and reviews of completed Ground Inspection documentation, and provide documentation of this mechanism to ODOT.

List of Persons Interviewed

- Allison, Don. Manager, Rail Operations.
- Morgan, Allen. Manger, Operations Training.
- Stokes, Dan. Assistant Manager, Field Operations.
- Strickland, Jim. Assistant Manager, Rail Operations Training.
- Talbot, Hayden. Director, Transportation Operations.
- Rail Controllers.
- Rail Supervisors.
- Rail Operators.
- Training Supervisors.

List of Documents/Records Reviewed

- TriMet System Safety Program Plan. October 2011.
- TriMet SOP 101 – Train Orders, Special Instructions, and Verbal Instructions. March 15, 2004.
- Trainline: Bikes on MAX. July 1, 2009.
- TriMet SOP 002 – Changes and Updates to Rule Books and SOPs. Nov. 18, 2010.
- TriMet Light Rail Special Instructions (sample).
- MAX Right-Of-Way Access Request/Permit (sample).
- TriMet SOP 102 – Maintenance/Inspection Work On or Near Tracks. Nov. 19, 2009.
- TriMet SOP 103 – Right-of-Way Access Permits. Aug. 2, 2001.
- Hours of Service Policy and Procedures. April 6, 2000.
- TriMet Supervisor’s Service Quality Ride Report (sample).
- TriMet SOP 577 – Service Quality Rides/Observation Rides. July 21, 2011.
- Rail Supervisor Seniority (list).
- Memo: To TCRC Members, From Lyn Jansen, Subject: Transit Change Review Committee (TCRC), Date: 2011.
- Transit Change Review Committee Agenda (sample).
- TriMet SOP 001 – Transit Change Review Committee (TCRC) Responsibilities. April 15, 2010.
- Rail Operations (organizational chart). November 2011.
- Field Operations (organizational chart). November 2011.

- Tri-County Metropolitan Transportation District of Oregon Rail Operation Rule Book. May 2010.
- TriMet SOP 521 – Territory Assignments. Sept. 17, 2009.
- Initial Operator Training Schedule and Outline.
- Becoming a TriMet Rail Supervisor; Training Schedule for the 2011 1107 Class.
- Rail Controller Training Course Outline.

4 - DRUG AND ALCOHOL PROGRAM

Overview

The drug and alcohol program is intended to ensure that safety-sensitive employees are physically capable of performing their duties safely. This review is not intended as an exhaustive audit of all of the provisions of 49 CFR Parts 40 and 655. FTA conducts its own in-depth audits of drug and alcohol program compliance. The ODOT review is meant to evaluate whether the program is being administered in accordance with the TriMet SSPP and to review program compliance as it applies to the safe operation of the light rail system.

ODOT performed a similar review of the Portland Streetcar drug and alcohol program in May 2011. Since most Portland Streetcar safety-sensitive employees subject to the drug and alcohol program are actually TriMet employees, ODOT's review focused on TriMet's drug and alcohol program compliance. During that earlier review, ODOT did not identify any findings of non-compliance or issues warranting a recommendation; the program appeared to be well-administered and compliant with applicable requirements. As such, ODOT did not re-review all of the same aspects of the drug and alcohol program in the same calendar year; rather, a summary of the previous review is provided here.

Responsibility

Safety-sensitive employees of TriMet are subject to the Anti-Drug and Alcohol Misuse Policy (adopted Dec. 8, 2010). TriMet System Safety is responsible for the administration of the drug and alcohol testing program. The TriMet Designated Employer Representative runs the drug and alcohol program on a day-to-day basis and reports to the Manager of System Safety, who in turn reports to the Safety and Security Executive.

Evaluation Criteria

Criteria used to conduct this evaluation included:

- 49 CFR Part 659.
- FTA Recommended Best Practices for States Conducting Three Year Safety Reviews. March 2009.
- ODOT Program Standard. January 2010.
- TriMet Drug and Alcohol Misuse Policy.
- TriMet System Safety Program Plan. October 2011.

The review of the TriMet drug and alcohol program included discussions with the TriMet Designated Employer Representative and a review of a sample of TriMet employee testing records.

General Assessment

TriMet appears to have an appropriate and compliant drug and alcohol program in place. TriMet underwent a FTA Drug and Alcohol Program Compliance Audit in July 2010. The issues

identified in the Final Audit Report appear to have been appropriately addressed by TriMet. A letter from FTA to TriMet dated Feb. 14, 2011, indicates that TriMet is in compliance with federal drug and alcohol testing program requirements. The Designated Employer Representative Records keeps hard copies of records in a secured file cabinet. Based on a sample of records of 10 Rail Operators, 10 Rail Supervisors, and 10 Rail Controllers, drug and alcohol testing appears to be taking place in accordance with applicable requirements. Records appeared complete and well-maintained.

Findings and Recommendations

Findings of Non-Compliance

This review identified no findings of non-compliance.

Findings of Compliance with Recommendation

This review identified no findings of compliance with recommendation.

List of Persons Interviewed

- Taylor, Brooke. Designated Employer Representative.

List of Documents/Records Reviewed

- Sample of employee drug and alcohol testing records.
- Final Audit Report, FTA Drug and Alcohol Compliance Program. July 2010.
- USDOT Drug and Alcohol MIS Data Collection Forms from 2008, 2009, and 2010.
- February 2010 letter from FTA to TriMet indicating that TriMet's response to the July 2010 FTA Audit has resulted in compliant program.
- Hours of Service Policy and Procedures. April 2000.
- Resolution 10-12-60, Exhibit A – TriMet Anti-Drug and Alcohol Misuse Policy. Dec. 8, 2010.
- TriMet Drug and Alcohol Policy Updates. December 2010.
- Drug-Free Workplace handout, TriMet Human Resources Manual. November 1999.
- TriMet Prescription and Over-the-Counter Drug Use Policy. August 2010.
- TriMet Reasonable Suspicion Evaluation Incident Report.
- Supervisor's DOT Post-Accident Decision Model for Drug and Alcohol Testing.
- TriMet Memo Re: Resolution 10-12-60 of the Tri-County Metropolitan Transportation District of Oregon (TriMet) Adopting a Revised Anti-Drug and Alcohol Policy.

5 - VEHICLE MAINTENANCE

Overview

The purpose of this review was to assess the effectiveness and thoroughness of the maintenance of TriMet's LRV fleet. The assessment involved comparing completed preventive maintenance intervals with the prescribed intervals, analyzing the appropriateness of specified tasks in the preventive maintenance program, and observing employees performing preventive maintenance in order to evaluate quality.

The LRV fleet consists of 127 cars in total: 26 Type 1 cars built by Bombardier in 1983-1986, 52 Type 2 Siemens SD-600 cars built in 1995-1999, 27 Type 3 Siemens SD-660 cars built in 2002-2004, and 22 Type 4 Siemens S-70 cars built in 2008-2009. Type 1 cars are high-floor and single-articulated while Types 2, 3, and 4 are low-floor and double-articulated. Type 1 cars are 87 feet long versus 92 feet for Type 2 and 3 and 95 feet for Type 4. Type 1, 2, and 3 cars have an operating cab at each end while Type 4 cars have an operating cab at only one end; these cars always run as part of two-car trains. All cars are powered from an overhead contact wire via one pantograph per car. Each car has four pairs of plug doors per side.

The power trucks are the end trucks on all car types; Type 1 cars feature one direct current traction motor per powered truck while Types 2, 3, and 4 cars have two alternating current traction motors per powered truck. Type 1 cars use resistance control while the others are run using inverter control. All cars use dynamic braking on the motor trucks; Types 2, 3, and 4 also feature regeneration. In addition to dynamic braking, all car types use track brakes and friction brakes – spring applied/hydraulically released on the Type 1 cars and hydraulically applied on the Type 2, 3, and 4 cars. All wheels have friction braking; there are two track brakes per truck. Maximum acceleration and service braking rates are 3.0 mph/s.

Revenue vehicles are maintained at Ruby Junction and Elmonica shops. The Ruby Junction shop includes 11 car spaces, five of which are located over pits and one of which is equipped with a wheel truing machine. Ruby Junction also houses a truck shop, a rebuild shop for various components, offices, and a few other miscellaneous areas. Adjacent to the main building are an enclosed blow-down pit, an enclosed wash bay, and an open inspection pit. A separate building, Ruby Junction South, includes one car space each in its body and paint shops.

The Elmonica shop includes eight maintenance car spaces (four tracks), six of which are located over pits and one of which is equipped with a hoist. The fourth track is equipped with a wheel truing machine. The shop includes a work area for pantograph and air conditioning repair and rebuild, offices, and miscellaneous areas.

Preventive maintenance and repairs occur at both shops; cars are not assigned to either one. All heavy repairs, such as truck work, take place at Ruby Junction.

Responsibility

The Rail Equipment Maintenance (REM) department is the responsibility of two Managers, one for each shop, who report to the Director of Maintenance Operations. The department also includes seven Supervisors and seven Assistant Supervisors, 83 LRV Journeyists, 27 LRV Apprentices, 30 Helpers/Service Workers, two Janitors, and one Maintenance Management Information System (MMIS) Clerk. Twelve miscellaneous positions, including stores workers, complete the department.

Evaluation Criteria

Criteria used to conduct this evaluation included:

- 49 CFR Part 659.
- APTA Manual of Standards and Recommended Practices for Rail Transit Systems — Volume 1, Vehicle Maintenance and Inspection.
- FTA Recommended Best Practices for States Conducting Three Year Safety Reviews. March 2009.
- ODOT Program Standard. January 2010.
- TriMet System Safety Program Plan. October 2011.
- Type 1 LRV Preventive Maintenance Inspection Procedure.
- Type 2 LRV Preventive Maintenance Inspection Procedure.
- Type 3 LRV Preventive Maintenance Inspection Procedure.
- Type 4 LRV Preventive Maintenance Inspection Procedure.

Review activities included observation of an inspection, discussions with supervisors and mechanics, and assessments of inspection content, inspection records, configuration management, tool and equipment calibration, and training.

General Assessment

This review included the observation of a partial preventive maintenance (PM) inspection of one LRV; the tasks observed included inspection, adjustments, and tests on the trucks. Conversation with the inspectors indicated a good knowledge of the car and thorough training in their tasks. Another part of the review consisted of the review of PM inspection records to check for a proper interval between inspections and proper recording of inspection information. Configuration management of railcars was addressed by reviewing the Modification Status report for each series of cars. These reports list all outstanding modifications and indicate on which LRVs each modification has been completed. Calibration of tools and equipment was addressed by reviewing the calibration vendor's documentation.

One good idea that the reviewer observed was a podium at each inspection bay; the inspection paperwork was on a clipboard, and all of the inspection procedures were contained in a binder. Besides having all of the documentation the inspectors need, the arrangement makes it easy to ensure that the inspection procedures are up to date. Another innovation is a system which combines fall protection at the sides of inspection pits with steps into the cars. Since the door separation of the different car types is different, the steps have been designed to be moveable.

Associated Training and Certification Requirements

Initial training for rail equipment maintainers consists of an apprentice training program, which is conducted in accordance with the rules of the State of Oregon apprenticeship training program. The apprentice spends three years (the program was recently extended from two and a half years to three years) alternating between class work and on-the-job training. The apprentice must pass periodic written and practical tests to continue in the program. The minimum written test grade is 70 percent. While in the program, the apprentice spends time on all three shifts at both shops. Current TriMet employees have priority for entering the program, but outside applicants are also accepted. The TriMet training program may be among the best vehicle maintenance training program in the U.S. transit industry. Folders of apprentice training records contained organized sections on personal information, evaluations, self-study tests, written tests, and on-the-job training information.

The recurrent training program includes the LRV Operator course, a course specific to the Ruby Junction test track, medical-related courses such as first aid, and safety courses such as forklift and lockout/tagout. The training interval is either one or two years depending on the course.

Findings and Recommendations

Findings of Non-Compliance

5.1: A large number of inspections in 2011 were performed late, resulting in fewer inspections than should have been performed.

For the four LRVs for which inspection records were reviewed, the average interval between 4,500-mile inspections was over 9,200 miles, more than double what it was supposed to be. The corresponding figures for inspections at 9,000, 13,500, 27,000, and 40,500 miles were approximately 11,100, 20,100, 30,400, and 38,700 miles, respectively. Therefore, the intervals for the four lowest-mileage inspections (4,500, 9,000, 13,500, and 27,000) were, on average, more than 10 percent (a commonly accepted allowable variation) higher than the scheduled mileage inspection points. Of course, the tardiness of the 4,500-mile inspection is the most egregious because the actual intervals are the highest percentage over the nominal mileage. The inspection tasks on the 4,500-mile inspection are performed at that interval because it has been determined that, for safety and reliability reasons, the interval should not be longer. Therefore it is important to adhere to the schedule. No LRV had two 81,000-mile inspections, so the interval was not observed.

One of the managers explained that the department fell behind on inspections because of training for the newer Type 4 vehicles. Journeyists who were in class could not perform inspections. It seems clear that there was some sort of failure in planning additional time for the Type 4 training. This may have not been the sole cause for falling behind.

To close this finding:

- Regain acceptable inspection intervals and submit six months of inspection records to ODOT, showing completed inspections whose mileage points no more than 10 percent above the scheduled mileage inspection points.

5.2: Personnel are not entering the actual mileage on the vehicle inspection forms.

The mileage field was found blank on a large percentage of inspection records reviewed. The mileage should be recorded for every inspection. All fields should be completed on the inspection forms.

To close this finding:

- Regain compliance in completing vehicle inspection forms and prepare six months of records that show all fields, including the actual mileage, are completed. ODOT will close this finding upon verifying completeness of a randomly selected sample of the forms.

5.3: The Rail Equipment Maintenance recurrent training matrix shows many cells with no data or overdue dates.

The file, REM Annual Training Data Log.xlsm, is incomplete. TriMet should set time-based goals for obtaining dates for all cells in the matrix and for catching up on recurrent training.

To close this finding:

- Present time-based goals for completing the recurrent training matrix
- Present evidence to ODOT that the goals have been met and that the matrix is up-to-date.

5.4: There are many tools and pieces of equipment which do not have up-to-date calibration dates on the calibration log.

Some errant items may be retired due to loss or damage. Other items have been inspected, but their calibration dates are not on the log. These items should be removed from the calibration list, and the out-of-date items should be calibrated.

To close this finding:

- Present ODOT with an up-to-date calibration list that shows all tools and equipment in calibration.

Findings of Compliance with Recommendation

This review identified no findings of compliance with recommendation

List of Persons Interviewed

- Adams, Robert. Journeyist Mechanic.
- Blair, Daniel. Rail Equipment Manager.
- Bledsoe, James. Rail Equipment Supervisor.
- Branhart, Damian. Training/Engineering Supervisor.
- Francis, Jeffrey. Journeyman Mechanic.
- Grove, Mark. Rail Equipment Manager

List of Documents/Records Reviewed

- TriMet System Safety Program Plan. October 2011.
- Type 1 LRV Preventive Maintenance Inspection Procedure.
- Type 2 LRV Preventive Maintenance Inspection Procedure.
- Type 3 LRV Preventive Maintenance Inspection Procedure.
- Type 4 LRV Preventive Maintenance Inspection Procedure.
- Inspection records for cars 111, 211, 311, and 411 for the year 2011.
- Rail Equipment Maintenance Modification Status LRV Type 1.
- Rail Equipment Maintenance Modification Status LRV Type 2.
- Rail Equipment Maintenance Modification Status LRV Type 3.
- Rail Equipment Maintenance Modification Status LRV Type 4.
- Sample of tool calibrations documentation.
- Workforce Report. Nov. 30, 2011.
- Apprentice training folders.

6 – FACILITY SAFETY: SHOPS

Overview

This review covers the industrial safety of TriMet's two shop locations at Elmonica and Ruby Junction. In accordance with requirements for SSPP Element 14, Facilities and Equipment Inspections, the reviewer discussed shop maintenance procedures with various TriMet personnel and examined both shops for general employee safety and presence of hazards.

Both shops exist on opposite sides, though not at the terminus of, the Blue Line and have yards on approach to the shop doors. Ruby Junction is the larger shop and yard storage area. Maintenance personnel conduct body work and heavy repair at Ruby Junction, while interior and exterior cosmetic work, such as painting, and other lighter repair occur at Elmonica.

Both shops have a separate Rail Equipment Maintenance Safety Committee, which is supposed to meet monthly to discuss safety and hazardous condition concerns. The committees consist of a mix of Rail Equipment Maintenance personnel, Facilities Systems Maintenance employees, and System Safety representatives. Both committees are to conduct monthly safety inspections of their respective shop and store room areas. The committees produce a post-inspection memo listing any deficiencies; the committee then sends the memo to the appropriate Rail Maintenance Supervisor to delegate for corrective action. For Ruby Junction, the supervisor receives a checklist of the deficiencies which must be completed, signed, and returned to the committee.

Responsibility

All front-line rail equipment maintenance personnel are responsible for cleaning up their work areas and ensuring they do not create a hazardous situation for themselves or fellow employees. Each shop has a Facilities Systems Supervisor responsible for the physical plant side of the buildings, such as lighting. The Facilities Systems Supervisors report to the Facilities Systems Manager; she reports to the Facilities Management Director, who oversees all facilities (including passenger stations and all buildings) at a higher level. Ultimately, the Rail Maintenance Supervisor of each shop is responsible for daily facility safety and reporting to the Elmonica or Ruby Junction safety committees.

Evaluation Criteria

Criteria used to conduct this evaluation included:

- 49 CFR Part 659.
- FTA Recommended Best Practices for States Conducting Three Year Safety Reviews. March 2009.
- ODOT Program Standard. January 2010.
- TriMet System Safety Program Plan. October 2011.
- U.S. Occupational Safety and Health Administration Standard 1910.
- Recent facility Safety Committee inspections.

The reviewer made separate visits to Elmonica and Ruby Junction with a representative from the Safety department. The reviewer walked through the interior of all known shop and store room space with the respective Rail Maintenance Supervisor, Facilities Systems Supervisor, and other employees at each location. The group discussed potentially unsafe or hazardous conditions found during the review, the process for discovering and resolving unsafe or hazardous conditions in shops, and the interface with each respective Safety Committee.

General Assessment

Both shops were generally well organized and free of debris or tripping hazards, especially at Elmonica. Fire extinguishers were up to date, employees were able to access Material Safety Data Sheets (MSDS) on TriNet, and most basic safety and hazard issues were nonexistent. A few minor housekeeping issues were noted and remedied immediately:

- A small bottle of acetylene sat on the floor, unchained, in the dock area of Ruby Junction
- On the windowsill of a mezzanine at Ruby Junction North, a Pepsi bottle contained hydraulic fluid.
- Where chains were removed over two pits at Ruby Junction North, fall protection netting had only been half applied over the pit edge, with the rest flopping down.

Findings and Recommendations

Findings of Non-Compliance

This review identified no findings of non-compliance.

Findings of Compliance with Recommendation

6.1: There appears to be no process to expeditiously address hazardous conditions identified by the Ruby Junction Safety Committee.

A comparison of a Ruby Junction REM Safety Committee Inspection report published Oct. 25, 2011, to existing shop conditions on Nov. 30, 2011, showed that several items that could have been remedied immediately had still not been addressed. For example, a handheld grinder in the Unit Rebuild area with its guard removed had still not been taken out of service (in addition to a second grinder found) and a large blue barrel near a sink remained unlabeled. Personnel reported that tasks are typically assigned at the next Safety Committee meeting a full month later.

To close this finding:

- Create a process to more expeditiously delegate the resolution of deficiencies noted from Safety Committee inspections for both Ruby Junction and Elmonica shops. The process should include a way to immediately address simple deficiencies that can be quickly fixed. Present this plan or process to ODOT.

6.2: Several bottles containing liquids were unmarked on a work desk in Ruby Junction North.

It appeared that the bottles may have been marked at one time, but have since worn off due to regular use, grease, and paint.

To close this finding:

- Create an SOP or enforce an existing procedure that requires shop personnel to have bottles clearly marked. Present this SOP or evidence of reinforcement to ODOT.

6.3: Two instances were observed of fall protection netting not fully applied over the edges of maintenance pits.

In two locations (including Maintenance Bay 1) where railings had been removed, fall protection netting had been applied in part. However, half of the netting was not secured and flopped down, unusable.

- Remind shop personnel at Ruby Junction to fully apply netting when it is necessary to remove railings around maintenance pits. Provide evidence of this reminder, likely in the form of a bulletin or meeting minutes, to ODOT.

List of Persons Interviewed

- Bledsoe, James. Rail Maintenance Supervisor.
- Grove, Mark. Rail Maintenance Supervisor.
- Nordstrom, Wayman. Facilities Maintenance Supervisor.
- Parashos, Bill. Systems Supervisor.
- Ranney, David. Day Shift Assistant Supervisor.
- Roberts, Tony. System Safety Officer.
- Schwab, Chuck. Facilities Maintenance Supervisor.

List of Documents/Records Reviewed

- Elmonica Rail Equipment Maintenance Safety Committee Meeting Minutes. Oct. 19, 2011.
- TriMet Facilities Systems Maintenance Plan. 2011.
- TriMet Facility Inspection: Ruby Junction Shop and Storeroom. Oct. 25, 2011.
- TriMet System Safety Program Plan. October 2011.

7 – STATION MAINTENANCE

Overview

The review of station maintenance examines whether stations are being maintained appropriately and on time, documentation is completed and accurate, TriMet personnel are following internal processes, and that stations are generally free of hazards and safety concerns.

TriMet maintains 85 MAX stations spread throughout its tri-county service area. All stations are outdoors and at surface or aerial level, except Washington Park, which is in the 3.1-mile Robertson Tunnel.

TriMet performs quarterly preventive maintenance inspections of its stations. The electronic Facilities Maintenance Information System (FMIS) automatically produces work orders to conduct the inspections about four months ahead of the due date; due dates fall on the last days of March, June, September, and December. Journeyists have a “Facility Platform Inspections” form that identifies 30 elements of the stations and requests the inspector’s initials for each line item before signing and submitting to a supervisor. In the past couple years, TriMet has decided to go paperless with station inspections, so hard copies of the checklists are no longer kept on file. The Journeyist instead enters a completion date into the FMIS for the inspection and issues new work orders for any deficiencies that could not be corrected immediately during the inspection. The FMIS system, produced in-house by TriMet, is about one year old and replaces a transitional system called MicroMain; MicroMain was a transitional program that replaced a MAXIMO-type system in 2007.

Responsibility

Journeyists perform preventive maintenance inspections of stations and report back to Supervisors. Journeyists are based out of three shops, each of which has geographical service areas dividing the system’s MAX stations and bus shelters. The Facilities Systems Manager reports to the Director and manages the Supervisors. The Facilities Management Director oversees the station maintenance process from a higher level.

When deficiencies are found with station elements that other departments are responsible for, such as electronic message signs or map displays, those departments must perform the required maintenance. TriMet also hires contractors for elevator repair, fire sprinkler/extinguisher maintenance, sweeping, HVAC services, public address systems, some lighting, plowing, graffiti removal, plumbing, and roof repair (among many other non-stations related services). A plant mechanic or Facilities Systems Supervisor monitors contracts for completion.

Evaluation Criteria

Criteria used to conduct this evaluation included:

- 49 CFR Part 659.
- Facility Platform Inspections checklist

- FTA Recommended Best Practices for States Conducting Three Year Safety Reviews. March 2009.
- ODOT Program Standard. January 2010.
- TriMet Facilities Systems Maintenance Plan. 2011.
- TriMet System Safety Program Plan. October 2011.

During this review, ODOT discussed the preventive maintenance process with the Director, Facilities Management, while physically walking through a station and identifying elements of inspection. The reviewer observed several more stations for quality of maintenance and presence of hazards or potentially unsafe conditions. The reviewer also discussed documentation and the full maintenance process with the Director, Facilities Management, and Facilities Systems Manager. Finally, the reviewer examined records of 10 stations from the past year and the status of all work orders entered from July through November 2011.

General Assessment

All TriMet MAX stations observed appeared to be extremely well-maintained and free of hazardous or potentially unsafe conditions. Inspections were on time during the past year for all 10 stations whose records ODOT selected. Some inspections have been occurring rather early, sometimes four months before the due date – soon after the FMIS issues the inspection work order. In order to reduce confusion, the department very recently changed the FMIS to produce an inspection work order about three months rather than four months before the inspection due date.

Nearly all work orders to make repairs had been addressed as of this review and were completed very quickly.

However, the inspection documentation process is currently in a state of flux, now that the department is abandoning paper for fully electronic records. There is dissonance between existing written procedures and current practice; for example, the checklists no longer appear to be completed.

Findings and Recommendations

Findings of Non-Compliance

This review identified no findings of non-compliance.

Findings of Compliance with Recommendation

7.1: It is unclear whether inspectors are using the “Facility Platform Inspections” checklist to conduct preventive maintenance inspections of stations.

Since the recent departmental change to a paperless environment, Journeyists do not complete and file the inspection checklist that requests initials for each of 30 station elements as well as a final signature and date. Although the department has confidence that its Journeyists are doing a thorough job, and stations are well-maintained, there is no longer any control to ensure Journeyists check each of the required elements during an inspection.

To close this finding:

- Require submission of inspection checklists for scanning or filing, or create an electronic form or some other mechanism to record the results of all element checks performed during station preventive maintenance inspections. Provide evidence of this process to TriMet.

7.2: The Facilities Systems Maintenance Plan does not fully reflect current station preventive maintenance inspection practice.

Steps for using checklists, documenting results, or entering work orders into FMIS are not completely documented in the 2011 revision of the Facilities Systems Maintenance Plan. Page 7 has been updated to explain the FMIS and the preceding transition, but other sections remain outdated.

To close this finding:

- Update the Facilities Systems Maintenance Plan to fully reflect the step-by-step PM inspection process for stations, from the initial assignment of the inspection work order all the way through the completion of repair work orders issued as a result of the inspection.
- Remove outdated processes, such as the reference to MicroMain on page 11.
- State the intended frequency of station PM inspections.
- Provide the updated plan to ODOT.

List of Persons Interviewed

- Papadopoulos, Elizabeth. Facilities Systems Manager.
- Scott, Rockchild. Director, Facilities Management.

List of Documents/Records Reviewed

- Facility Platform Inspections checklist.
- TriMet Facilities Systems Maintenance Plan. 2011.
- TriMet System Safety Program Plan. October 2011.
- Records of all platform work completed from July 1, 2011, through Nov. 29, 2011.
- Records of all work orders/inspections from December 2010 through November 2011 for Beaverton Transportation Center, Sunset Transportation Center, Washington Park, Portland State University, Oak/SW 3rd, Expo Center, Mt. Hood, Lloyd Center/NE 11th, SE Powell, and E 181st stations.

8 - COMMUNICATIONS

Overview

This review examines maintenance of TriMet's radio and fiber optic networks and associated components. The MAX radio system is a non-trunked 800 Mhz system; it includes control center radios, railcar radios, mobile radios in maintenance and supervisor vehicles, and handheld units. It also includes the Robertson Tunnel system of leaky-wave antennas and bidirectional amplifiers.

TriMet has four fiber optic networks: the operations network used for most of the signal system and system-wide Supervisory Control and Data Acquisition (SCADA) and other functions (maintained by the Field Equipment Maintenance group); the closed circuit television (CCTV) network (televisions maintained by Field Equipment Maintenance, and fiber optic system maintained by Information Technology); the enterprise network used for office/business applications (maintained by the Information Technology group); and the separate Green Line (from SE Main Street to Clackamas Town Center) signal system maintained by the Signals Department.

TriMet plans to reconfigure the operations, CCTV, and enterprise networks into four geographical rings – North, East, South, and West – and change the system to Ethernet protocol. The two ends of each ring will terminate at two switches at Ruby Junction. The two switches will be connected, resulting in a full loop for each ring. The Green Line Siemens system will remain independent.

None of the communications components requires preventive maintenance. Some cleaning is required, and Uninterruptable Power Supply maintenance is performed. Otherwise, only corrective maintenance is performed.

Responsibility

The Field Equipment Maintenance Supervisor is responsible for communications equipment maintenance. He reports to the Maintenance of Way Operations Manager, who reports to the Director of Maintenance Operations.

Evaluation Criteria

Criteria used to conduct this evaluation included:

- 49 CFR Part 659.
- FTA Recommended Best Practices for States Conducting Three Year Safety Reviews. March 2009.
- ODOT Program Standard. January 2010.
- TriMet System Safety Program Plan. October 2011.

The review consisted of a discussion of the communications systems with the Field Equipment Maintenance Supervisor.

General Assessment

Given the nature of the electronic components used in communications systems, it is not unreasonable that no preventive maintenance is required. Also, no communications problems were reported to members of the review team. Finally, the upgrades that TriMet has planned — transforming the radio system to a P25 digital trunked system and reconfiguring the fiber optic networks with Ethernet protocol — will bring both of these systems to the state of the art.

Findings and Recommendations

Findings of Non-Compliance

This review identified no findings of non-compliance.

Findings of Compliance with Recommendation

This review identified no findings of compliance with recommendation.

List of Persons Interviewed

- Cummings, Terry. Field Equipment Maintenance Supervisor.

List of Documents/Records Reviewed

- CCTV Network Upgrade Logical Ring Layout. January 2010.
- TriMet System Safety Program Plan. October 2011.

9 - ELEVATORS

Overview

Elevators service Washington Park Station (two elevators at each end of the platform), Sunset Transportation Center (one elevator on each side platform), Hollywood/NE 42nd Avenue Station, NE 60th Avenue Station, and NE 82nd Avenue Station (one elevator on the center platform of each of the latter three stations). There is also one elevator each in Gresham and Sunset Transportation Center parking garages and two at Gateway Transportation Center.

A contractor performs the required inspections; the contract specifies that each elevator will receive maintenance inspections twice per month. In addition, the contractor is on call for repairs as needed. TriMet retains an elevator consultant to oversee the contractor's work and to perform the annual inspections required by state code.

Responsibility

The Director of Facilities Management is responsible for oversight of elevator maintenance. He reports to the Director of Maintenance Operations

Evaluation Criteria

Criteria used to conduct this evaluation included:

- 49 CFR Part 659.
- American Society of Mechanical Engineers A17.1 2004 Safety Code for Elevators and Escalators with Oregon Amendments.
- FTA Recommended Best Practices for States Conducting Three Year Safety Reviews. March 2009.
- ODOT Program Standard. January 2010.
- TriMet System Safety Program Plan. October 2011.

The elevator review consisted of an informal inspection of elevators, a review of elevator preventive maintenance records, and a review of the scope of work for the elevator maintenance contract.

General Assessment

The elevator maintenance records for 2011 showed that every elevator received its required maintenance each month with the exception of the two Gateway Transportation Center elevators in June. These two elevators had been under warranty in 2010. The required maintenance for these two elevators was one hour per month in the first half of 2011 and two hours per month in the second half of the year. Although the June maintenance should not have been missed, the anomaly does not justify a finding.

Elevators observed by the reviewer appeared to be in good working order.

Findings and Recommendations

Findings of Non-Compliance

This review identified no findings of non-compliance.

Findings of Compliance with Recommendation

This review identified no findings of compliance with recommendation.

List of Persons Interviewed

- Scott, Rockchild. Director of Facilities Management.

List of Documents/Records Reviewed:

- TriMet System Safety Program Plan. October 2011.
- Oversight consultant monthly reports for 2011.
- Scope of work of the elevator maintenance contract.

10 - MAINTENANCE OF WAY

Overview

TriMet's Maintenance of Way department incorporates several key functions, including Track, Signals, Overhead Contact System (OCS), and Substation maintenance functions. Maintenance of Way is responsible for critical light rail infrastructure across approximately 52 route miles. The group is responsible for the track structure and right-of-way on which MAX trains ride, the signaling equipment that ensures safe train spacing and routing, and the traction power switching and distribution equipment that powers MAX trains.

Responsibility

A Manager heads the Maintenance of Way Department; he has one Supervisor each in Track, Signals, OCS, and Substations (the Manager is also responsible for other areas, including fare and communications equipment, which are excluded from this section). Assistant Supervisors supplement the Supervisors in each area and extend supervision to additional shifts. Maintainers perform the inspection, maintenance, and repair functions critical to each functional area. Assistant Supervisors are typically drawn from the Maintainer ranks and are the highest-level union-represented personnel.

Substations maintenance is based in TriMet's Elmonica facility, while OCS maintenance is based at Ruby Junction. Signals and Track have offices at both locations, and Signals has an additional downtown work area.

Maintenance of Way has a pair of training Supervisors, and they are responsible for the bulk of the department's training efforts. In some maintenance disciplines, senior Maintainers who act as Assistant Supervisors within their particular area assist the Training Supervisors.

Much of this review is focused on inspections, tests, and preventive maintenance (collectively referred to as preventive maintenance hereafter), and the schedules, documentation, tracking, and practices associated with preventive maintenance. Maintenance of Way Supervisors and Assistant Supervisors, assisted by TriMet's MMIS database, are responsible for scheduling and monitoring preventive maintenance. Likewise, Supervisors and their Assistant Supervisors are responsible for monitoring and scheduling closeout of open corrective maintenance and deferred items.

Evaluation Criteria

Criteria used to conduct this evaluation included:

- 49 CFR Part 659.
- FTA Recommended Best Practices for States Conducting Three Year Safety Reviews. March 2009.
- ODOT Program Standard. January 2010.
- TriMet System Safety Program Plan. October 2011.
- Maintenance of Way maintenance plans.

- External guidelines from APTA and the Federal Railroad Administration (which are informative only, not binding on TriMet, and used only when TriMet rules or procedures were silent or possibly inappropriate).

This review included three means of assessment: interviews with Maintenance of Way management and supervision, examination of Maintenance of Way records and documentation, and observation of sample maintenance practices in the field.

General Assessment

Overall, the Maintenance of Way department and its subsidiary maintenance functions have appropriate maintenance programs that are well-documented and well-executed. This report highlights several areas where additional steps should be taken to improve existing programs, but does not recommend wholesale changes to Maintenance of Way activities.

Maintenance of Way has several means for monitoring and assessing internal compliance with its own preventive maintenance activities. Most activities are monitored and scheduled within a calendar month (though many maintenance intervals are longer, such as quarterly, semi-annual, annual, etc.), and Maintenance of Way Supervisors monitor schedule compliance during their daily activities. The Maintenance of Way Manager, in concert with Supervisors, monitors and assesses maintenance schedule compliance on at least a monthly basis. These monitoring and measuring activities are critical to the overall success of the department and to ensuring that any schedule issues are identified and addressed in a timely manner.

The Maintenance of Way department has several means of communication with its front-line personnel to discuss safety issues, job hazards, and work planning. This audit inquired about these communication programs and the extent to which supervision implements rules and procedures checks. Based on the interview results, it appears that there is some level of rules and procedures checks as part of Supervisors' and Assistant Supervisors' regular interaction with Maintainers. Likewise, there seems to be a mechanism by which rules and procedures issues, and other safety concerns, can be addressed and discussed in safety meetings and briefings. As noted in a finding below, it is not clear that this process is formalized or is well-described in the TriMet SSPP, either in Section J or elsewhere. This review also recommends that TriMet add description to its SSPP to fully document the generally good practices in place at Maintenance of Way.

Maintenance of Way has upgraded and significantly improved its departmental business plans and associated documentation since ODOT's last three-year review. Some documents are currently in revision or may need updates based on new equipment and pending organizational changes. Still, the plans overall are good tools for describing and regulating Track, Substation, OCS, and Signals activities. The effort and work that went into preparing the plans and keeping them up to date is apparent. Similarly, several departments have made significant improvements to testing and preventive maintenance documentation, including Signals (revised and expanded interlocking test protocols, and recent PDX2 interlocking test sheets), OCS (continued improvements to monthly and longer-term inspection forms), and Substations (an ambitious and wholesale revision of substation testing and inspection frequency, scope, and scheduling). These

efforts show the continued attention and improvement that supervisors put into their respective maintenance areas.

Associated Training and Certification Requirements

TriMet Maintenance of Way has a two-person training staff, which is supplemented by maintenance topic-specific personnel. The two Maintenance of Way Training Supervisors are responsible for nearly all Track, Signals, Substations, and OCS related instruction. TriMet's Maintenance of Way training programs are comprehensive and fairly extensive, and are based on detailed training requirements outlines. The training programs feature formal testing and quizzes, as well as solid programs to quantify and qualify on-the-job training and performance testing elements.

Maintenance of Way is working on several positive training initiatives that would help the department. The training team is working toward a more structured Track training program, which would more closely mirror the apprenticeship-based programs like those of Signals, OCS, and Substations. The training group is also working to identify and implement more training for incumbent personnel, to supplement the initial instruction that occupies much of training resources. For example, the Training Supervisors are working to design and execute confined-space safety training to address internal needs and TriMet safety objectives. While this review did not examine these efforts in extensive detail, ODOT's cursory review indicates they should be continued, if possible.

Findings and Recommendations

Findings of Non-Compliance

10.1: Track inspection records for summer and fall 2011 show numerous deferred visual/walking inspections.

Visual, walking track inspections are divided into approximately 48 segments (for Ruby Junction-based records); each segment is to be inspected twice a month per TriMet's standards. In the "speed sheets" MMIS records audited, each month had inspection segments marked as "deferred." These included nine out of 48 in one half of October 2011, eight in the first half of September, four in the first half of August, 11 in the second half of July, and four in the first half of June. Given that TriMet conducts visual track inspections half as frequently as most rail transit agencies (see ODOT audit finding from 2008), it is especially critical that each and every inspection be performed on-time and completely. Deferred inspections can result visual track inspections with intervals of a month or longer, which seems to be an unacceptably long interval.

To close this finding:

- TriMet Maintenance of Way should develop, implement, and submit to ODOT results of a more rigorous monitoring program for its visual track inspection preventive maintenance. The program should include pre- and/or post-inspection evaluations, based on the department's internal evaluation. The monitoring program must ensure that deferred inspections are identified closer to the schedule preventive maintenance time,

and that appropriate steps are taken to regain compliance with TriMet's twice-monthly schedules.

10.2: Some quarterly Signals tests are not documented as being completed.

The review team examined several monthly and quarterly Signals test forms, and found several quarterly inspection items that were not documented as completed. These included, for example, calendar year 2011 Gateway 3 power transfer, switch fouling, parallel fouling, and switch tests. This review understands that some such tests may have changed in frequency, while others (e.g., fouling tests) may not have been documented or completed.

To close this finding:

- Signals should reassess its existing test plans, identify any equipment for which testing frequency may have changed (e.g., electronic controller M3 switches), and update plans, test frequencies, and forms accordingly. Provide documentation of the assessment and associated updated plans, test frequencies, and forms to ODOT.
- Signals should determine why fouling tests on the subject forms were not completed, and implement an appropriate recovery plan to ensure they are completed timely in the future. Provide this plan to ODOT.

10.3: Substations preventive maintenance and testing is not consistently performed at the planned monthly interval.

This audit examined records for 66 scheduled monthly instances of preventive maintenance, which represented 2011 through the date of this review for seven traction power substations. Reviewers found a wide variance in inspection completion intervals for some locations. Of the 66 records reviewed, 18 had been completed 40 days or more from the last inspection (more than a third of the 30-day interval). An additional 17 records had an interval of less than 20 days since the last inspection.

The Substations section has taken on an ambitious, and seemingly workable, plan to conduct all inspections and preventive maintenance on a monthly basis, and to channel tasks from what were formerly quarterly and other longer-term inspections through those monthly intervals. This makes the type of inspection (Substations terms them PMs 1 through 12) fairly critical. For example, PM 1 has particular quarterly elements that PM 2 may not include. As such, it is important that the overall rhythm of PMs be preserved. Because this consolidated monthly preventive maintenance approach is somewhat new, it would be premature to judge whether the PMs 1 through 12 have occurred at the appropriate intervals. 2011 data for the seven substations sampled indicate that some substations receive the PMs in numeric order, while others did not receive all of the prescribed inspections. [One substation, for example received PMs 8, 5, 9, 10, 11, etc., and did not appear to receive PM 6 or PM 7 so far in 2011.]

To close this finding:

- Substations should devise, implement, and report on a more rigorous monitoring program for its preventive maintenance, and ensure that preventive maintenance is performed consistently and timely. TriMet should assemble six consecutive months of records of on-time preventive maintenance for ODOT review.

10.4: Substations transfer trip (or emergency power off) tests were not completed for two of the seven substations audited.

This review examined 2011 records (to date) for seven substations. Two of the substations sampled had not received transfer trip (emergency power off) inspections as of November.

To close this finding:

- Substations should either substantiate completed inspections for the two substations in question (60th and Parkrose) or detail how it will ensure that transfer trip tests are performed once per calendar year for all substations, in accordance with Substations' own procedures. Provide documentation of completed inspections and the process for ensuring completed inspections to ODOT.

Findings of Compliance with Recommendation

10.1: Section 2.1 of the Track Standards Manual does not identify who conducts the daily visual right-of-way inspection.

The Track Standards Manual, Section 2.1, references a daily right-of-way inspection. In order to clarify the scope and scale of this inspection, Maintenance of Way should detail who conducts it and how the personnel perform it. Based on ODOT's interviews, this process is likely completed by the sweep train Operator.

To close this finding:

- Maintenance of Way should specify the responsible party and procedural details in the daily right-of-way inspection section of the next Track Standards Manual revision. Provide the new manual to ODOT.

10.2: OCS repair items on inspection sheets are not initialed, signed, or otherwise checked off when entered into the MMIS system.

The OCS Assistant Supervisor responsible for MMIS input has a good process for reviewing, vetting, and entering OCS repair items. This process could be improved and better documented if individual repair items were marked on hard copies as entered into the MMIS system. This step would make it more clear on paper records that open issues have been addressed.

To close this finding:

- TriMet OCS should develop a system to mark repair items on inspection sheets as being entered into MMIS or otherwise addressed. Provide documentation of such a marking system to ODOT.

10.3: Maintenance of Way does not have time-based tolerances for inspection and test intervals.

Maintenance of Way has several key inspection and test intervals that are calendar-based, such as monthly or quarterly. Some existing maintenance plans, especially for Substations, do not seem to describe tolerances for such time-based intervals.

To close this finding:

- Maintenance of Way should submit an analysis of its time-based inspection intervals and determine which, if any, may require or benefit from a stated interval tolerance. Provide this analysis to ODOT.
- Maintenance of Way should develop and submit a plan for identifying and implementing such inspection interval tolerances, according to its internal analysis. Submit this plan to ODOT.

10.4: Substations does not have a field on its monthly inspection and preventive maintenance forms for notes on repairs needed and other miscellaneous comments.

Current Substations PM forms do not have a specific place for comments, repairs needed, and other free-form information. This may contribute to the very small amount of comments and maintenance information that Maintainers entered in the 66 records sampled during this assessment. Adding such an open comments field might encourage Maintainers to record more useful maintenance information. Maintainers do periodically enter maintenance information, including items needing repair, on MMIS tickets; however, few if any of these MMIS repair tickets were associated with specific preventive maintenance inspections in the sampled record set.

To close this finding:

- Substations should analyze the need for a comments field on its monthly preventive maintenance form and develop a plan to implement its findings as appropriate. Provide this analysis and an updated form to ODOT.

10.5: Supervisor signatures were missing from some Signals switch maintenance forms.

For several 2009 and 2010 switch maintenance sheets, Supervisor or Assistant Supervisor signatures were missing. While records overall indicate that supervision does review completed work, Signals (and Maintenance of Way overall) should ensure it has a consistent policy regarding Supervisor review and sign-off of maintenance forms. Some Signals forms, for example, have an area requiring Supervisor initials for switch location. An overall, higher-level

review and sign-off, perhaps one Supervisor signature per sheet or per form, might ease the overall process while preserving the existing supervisory review.

To close this finding:

- Maintenance of Way should examine its maintenance forms, in particular those used for Signals maintenance, and ensure that it has and implements a consistent policy for supervisory review and sign-off. TriMet might consider using a combination of tools, perhaps a stamp (e.g., “received” or “reviewed”) coupled with Supervisor signature, to show supervisory review and acceptance. Provide documentation of this process to ODOT.

10.6: Maintenance of Way preventive maintenance and inspection activities could benefit from a more complete description in the SSPP.

While the TriMet SSPP is generally good, the sections related to facilities maintenance and maintenance audits could be expanded. In particular, TriMet Safety and Maintenance of Way should collaborate to develop a more complete description of inspection, test, and preventive maintenance activities, and/or insert more specific references to the topic-specific maintenance plans for Track, Signals, Substations, and OCS.

To close this finding:

- TriMet Safety and Maintenance of Way should conduct a joint SSPP review, in particular of Sections H and I, and revise applicable sections to more completely describe and/or reference Maintenance of Way inspections, tests, and preventive maintenance. Provide the revised SSPP to ODOT.

10.7: Safety meetings and rules and procedures checks within Maintenance of Way are not fully described in the TriMet SSPP.

Based on interviews with several Maintenance of Way personnel, the department conducts ongoing safety meetings involving its Maintainers. The department also reports that it conducts some level of rules and procedures checks, as required under state safety oversight regulations (§659.19m). A review of the TriMet SSPP indicates that these processes could be more thoroughly described.

To close this finding:

- TriMet should revise its SSPP to better describe the Maintenance of Way safety meetings and briefings processes, and how they are conducted, tracked, recorded, and administered.
- TriMet should revise its SSPP to better describe how it ensures Maintenance of Way personnel comply with rules and procedures having a safety impact.
- Provide the revised SSPP to ODOT.

List of Persons Interviewed.

- Bell, Roger. Signals Assistant Supervisor
- Bounds, Keith. Signals Supervisor
- Ceciliani, John. OCS Supervisor
- Douglas, Le'Alys. MMIS Clerk
- Fontenot, Tim. Training Supervisor
- Galan, Chris. MMIS Clerk
- Hagel, Jack. Track Maintainer
- Keller, Tim. Substations Supervisor
- Kindig, Rick. Maintenance of Way Manager
- Messing, Ron. Signals Maintainer
- Poulivaati, Josh. OCS Maintainer
- Snyder, Tim. OCS Assistant Supervisor
- Williams, Butch. Track Maintainer
- Young, Steve. Training Supervisor

List of Documents/Records Reviewed

- Maintenance of Way Repair to Payroll Ratio report. Oct. 31, 2011.
- Maintenance of Way Training Boot Camp program outline. November 2011.
- Monthly, quarterly, and annual Signals completed test forms, for all locations that Ruby Junction-based forces are responsible. January 2009 through November 2011.
- OCS monthly inspection records for line segments COL1AE, COL3BW, COL4BW, COLSBE, and CO10AN. January through November 2011.
- OCS triennial inspection records for CO10AN, COL8CE, and COL1AW. January 2009 through November 2011.
- Overhead Contact System Maintenance. October 2006.
- Rail Maintenance Signals and Train Control Maintenance Standards. December 2009.
- Rail Maintenance Traction Power Substations Maintenance Standards.
- ROW Pending Work List (for Substations). Nov. 30, 2011.
- ROW Pending Work List (R6 Ruby – Track). Dec. 1, 2011.
- ROW Pending Work List (E6 Elmo – Track). Dec. 1, 2011.
- Signals relay testing data sheets. 2010.
- Strain Insulator Changeout, Yellow Line.
- Substation monthly preventive maintenance records and transfer trip tests for seven substations: 153rd, 60th, Buffalo, Parkrose, Rose Quarter, Springwater, and Washington Park. January through November 2011.
- TriMet System Safety Program Plan. October 2011.
- Track Access Training presentation/class.
- Track inspection speed sheets for all Ruby Junction-based twice-monthly inspections. January through November 2011.
- Track Standards Manual. 2011.
- Track switch quarterly inspection forms for switches 21A, 25A, 25C (all Hollywood), and 35C (Gateway). November 2010 through November 2011.
- TriMet Maintenance of Way Monthly Performance report. July 2011.

11 - STRUCTURES

Overview

TriMet's structures for the MAX system include 39 bridges, the 3.1-mile Robertson Tunnel (home of Washington Park Station), the box tunnel leading to the median of Interstate 84, and various retaining walls. The bridges are of various types of construction – mainly concrete, but also steel, cable, and timber.

TriMet owns most of the bridges on which its trains run. However, TriMet runs over several bridges owned by ODOT as well as the Steel Bridge owned by Union Pacific Railroad; TriMet receives copies of the inspection reports for those bridges. Three exceptions are the bridge over the downtown mall food court and the two bridges over Interstate 405. TriMet does not receive inspection reports for bridges over the MAX right-of-way.

TriMet's contractor inspects bridges on a two-year interval with the 21 east-side bridges inspected in even-numbered years and the 18 west-side bridges inspected in odd-numbered years. Portland City Center is the dividing area between east- and west-side bridges. Robertson Tunnel is to be inspected in five-year intervals; the latest inspection was scheduled to begin in December 2011. TriMet uses inspection intervals as recommended in the American Association of State Highway and Transportation Officials Manual for Inspection of Bridges. A contractor performs all TriMet structural inspections using Professional Engineers with structures inspection experience.

Responsibility

The structures inspection program is the responsibility of a Project Manager who reports to the Manager of Maintenance of Way Operations, who reports to the Director of Maintenance Operations. The contractor is responsible for conducting the inspections.

Evaluation Criteria

Criteria used to conduct this evaluation included:

- 49 CFR Part 659.
- American Association of State Highway and Transportation Officials Manual for Inspection of Bridges
- FTA Recommended Best Practices for States Conducting Three Year Safety Reviews. March 2009.
- ODOT Program Standard. January 2010.
- TriMet System Safety Program Plan. October 2011.

This review involved a discussion of TriMet's structures inspection program with the Project Engineer, a review of the latest bridge inspection report summaries and various bridge inspection reports, and site visits to the Foster Avenue, Johnson Creek, Flavel, and Clackamas Town Center bridges.

General Assessment

TriMet's program for structures inspections appears to be appropriate. The bridges visited were new bridges, and there appeared to be no problems with them. Other structures observed in a casual manner from aboard TriMet trains also showed no obvious signs of defective conditions.

The only concern related to inspection is that because TriMet does not own all of the bridges over and under which it runs, it does not inspect or receive inspection reports on those bridges.

Findings and Recommendations

Findings of Non-Compliance

This review identified no findings of non-compliance.

Findings of Compliance with Recommendation

11.1: Contractor bridge inspection reports include recommendations for structural maintenance that are not being completed.

TriMet should make arrangements to perform the repairs recommended by the inspection contractor either by TriMet or by a contractor.

To close this finding:

- Provide a schedule for performance of the recommended repairs to ODOT.

11.2: TriMet does not receive copies of bridge inspection records for three bridges over which TriMet runs, nor for bridges over the MAX right of way.

Without such inspection records, TriMet does not have written assurance that the three bridges it runs on but does not own – over the downtown mall food court and the two bridges over Interstate 405 – are safe for TriMet trains. The same condition exists for bridges under which TriMet trains run.

To close this finding:

- TriMet should obtain those inspection records for all bridges it does not own in order to ensure that those bridges are safe for TriMet operation. Additionally, TriMet should develop a formal process to ensure that it receives such inspection records. TriMet should provide copies of the inspection records to ODOT, as well as documentation of the process to ensure that the inspection records will continue to be obtained by TriMet moving forward.

List of Persons Interviewed

- Whipple, John. Project Engineer

List of Documents/Records Reviewed

- TriMet System Safety Program Plan. October 2011.
- Various Eastside Light Rail Bridge Inspection Reports. February 2011
- Executive Summary TriMet Eastside Light Rail Bridge Inspection. February 2011.
- Executive Summary TriMet Westside Light Rail Bridge Inspection. September 2011.

APPENDIX A: TABLE OF FINDINGS

The matrix beginning on the next page summarizes each finding from the review. The matrix also provides ODOT's recommended corrective action(s) to address each finding. Please note that these are only abbreviated summaries of each finding, and the full detail and context are available in the main body of this report.

TriMet must propose a CAP for each finding within 30 calendar days of receipt of this report. Each CAP must indicate the persons/areas responsible for carrying out the CAP and propose a target date for completion of the CAP.

Finding	Recommended Corrective Action	TriMet's Proposed CAP	Persons / Departments Responsible	Target Completion Date
1 – System Safety and Related Topics				
Findings of Non-Compliance				
1.1: The SSPP does not differentiate between the goals and objectives for Safety versus Transportation Operations, and it is not specific in the objectives to be achieved.	- Update the SSPP with specific and delegated goals and objectives as described above, and provide the updated SSPP to ODOT.			
1.2: The SSPP does not contain general information on TriMet's compliance with local, state, and federal requirements.	- Revise the SSPP to outline local, state, and federal requirements with which TriMet must comply.			
Findings of Compliance with Recommendation				
1.1: The safety task matrix in the SSPP only assigns tasks as a "primary" or "oversight" responsibility for various departments; however, it does not assign "support" roles.	- Update the SSPP safety task matrix to make use of the "support" role designation for departments to assist in completing tasks, as appropriate, and provide the updated SSPP to ODOT.			
1.2: Some Safety Specialists have not received professional credentials in safety certification and educational programs.	- Analyze whether any certifications should be required and/or if resources can be devoted to providing different types of certification for all Safety Specialists. Provide this analysis, the resulting conclusion, and a timeline for certification to ODOT.			

Finding	Recommended Corrective Action	TriMet's Proposed CAP	Persons / Departments Responsible	Target Completion Date
1.3: Safety-related training that TriMet performs is not clearly described in the SSPP.	<ul style="list-style-type: none"> - Evaluate what would serve as the best means of tracking all safety-related training information to ensure that it is appropriately captured and that no employee misses training because the requirement is not clearly established. Provide this completed analysis to ODOT. - Describe in the SSPP who is responsible for the various types of safety-related training, what training is required, and who must receive it (or reference a plan, policy or procedure that contains this centralized information). Provide the revised SSPP to ODOT. 			
1.4: The comprehensive and effective Accident Incident Database (ACID) is not designed to generate summary reports.	<ul style="list-style-type: none"> - Evaluate if ACID can be modified to incorporate trend analysis and other reporting capabilities that may help Safety personnel in existing data analysis and/or the upcoming efforts to enhance system safety. 			

Finding	Recommended Corrective Action	TriMet's Proposed CAP	Persons / Departments Responsible	Target Completion Date
1.5: Until recently, the Safety Committee at Ruby Junction has not met regularly and has not kept records of all of its meetings.	<ul style="list-style-type: none"> - Ensure that the Ruby Junction Safety Committee is meeting regularly and in the same capacity as the Elmonica Safety Committee. Provide ODOT with documentation of these meetings through the end of calendar year 2012. 			
2 – Security and Emergency Preparedness				
Findings of Non-Compliance				
2.1: The SEPP does not fully describe the process to inform ODOT of revisions to the SEPP, the process for initiating an SEPP review, who is responsible for the review, or the process to inform ODOT of plan revisions and for ODOT to review the plan.	<ul style="list-style-type: none"> - Rewrite relevant sections of the SEPP to describe the process to inform ODOT of revisions to the SEPP, the process for initiating an SEPP review, who is responsible for the review, and the process to inform ODOT of plan revisions and for ODOT to review the plan. - Provide the revised SEPP to ODOT. 			
Findings of Compliance with Recommendation				

Finding	Recommended Corrective Action	TriMet's Proposed CAP	Persons / Departments Responsible	Target Completion Date
2.1: TriMet may benefit from reaching out to local businesses and vendors adjacent to their operations in order to extend a "ring" of security around system assets.	<ul style="list-style-type: none"> - TriMet should evaluate and consider a program to reach out to businesses and local vendors and teach their employees what may constitute suspicious behavior and how to properly report it to TPD. - Provide the completed evaluation to ODOT. 			
2.2: Some SOPs and blocks of training relating to security and system familiarization lack formalization and frequency of occurrence.	<ul style="list-style-type: none"> - Develop a standard for security training needed by all TriMet personnel and ensure that it includes regular (such as annual) refresher training to reflect current operating conditions. Provide the standard to ODOT. - Seek out transportation security-specific related training offered by outside institutions and/or send TriMet security personnel to "Train the Trainer" types of instruction so those employees may be certified to instruct personnel at TriMet. Provide documentation of this process to ODOT. 			
3 – Rail Operations				
Findings of Non-Compliance				

Finding	Recommended Corrective Action	TriMet's Proposed CAP	Persons / Departments Responsible	Target Completion Date
<p>3.1: Transportation Operations and Operations Training have not been providing the TCRC with a trend analysis of all operational safety check activity for quarterly review, as specified by the SSPP.</p>	<ul style="list-style-type: none"> - Develop a new policy or procedure, or update an existing one, that clearly delineates the roles and responsibilities for reviewing the results of all rule compliance checks performed by TriMet personnel. Such a policy or procedure should identify who is responsible for conducting such analyses, the parameters of the analyses, and the associated process for review by TriMet management, including the TCRC. - Provide this policy or procedure to ODOT. - Provide documentation to ODOT demonstrating that TriMet is providing the trend analysis to the TCRC for quarterly review for the next four quarters. 			
<p>3.2: Requests for right-of-way access permits are not being submitted according to the deadlines specified by TriMet.</p>	<ul style="list-style-type: none"> - Take steps to ensure compliance with the established timelines for requesting track access permits. - Provide ODOT with documentation of the steps taken to ensure compliance. 			

Finding	Recommended Corrective Action	TriMet's Proposed CAP	Persons / Departments Responsible	Target Completion Date
Findings of Compliance with Recommendation				
3.1: TriMet does not have clear processes in place for Special Instructions and other documents used on an interim basis in the change/update process for rules and procedures.	<ul style="list-style-type: none"> - TriMet should take steps to clarify the use of Special Instructions and/or other documentation used to communicate changes to rules and procedures on an interim basis, and the roles and responsibilities of various TriMet employees, managers, and committees in their development, review, approval, and promulgation to affected employees. - Provide ODOT with documentation of the steps taken to clarify the Special Instruction process. 			

Finding	Recommended Corrective Action	TriMet's Proposed CAP	Persons / Departments Responsible	Target Completion Date
<p>3.2: The TriMet Hours of Service Policy does not reflect the APTA Standard for Train Operator Hours of Service that the rail transit industry developed in response to the NTSB's finding on this subject matter and the FTA's request that APTA address this critical issue.</p>	<ul style="list-style-type: none"> - Document the specific steps TriMet has taken to date to adopt the APTA HOS standard, and will continue to take, including upcoming negotiations, and target dates and milestones for implementation of the standard. - Document, as indicated in the APTA Standard, TriMet's alternate practices that provide for an equivalent level of safety under the current program as the provisions described in the APTA Standard. - Provide documentation of these steps to ODOT. 			
<p>3.3: The SSPP specifies non-existent refresher instruction and annual recertification for Rail Supervisors and Rail Controllers.</p>	<ul style="list-style-type: none"> - Revise the SSPP to accurately reflect the recertification requirements for Supervisors and Controllers. - Provide the revised SSPP to ODOT for review and approval. 			

Finding	Recommended Corrective Action	TriMet's Proposed CAP	Persons / Departments Responsible	Target Completion Date
3.4: TriMet does not have a process in place to verify that ground inspections are completed as required.	<ul style="list-style-type: none"> - Develop a mechanism by which Rail Operators and other personnel responsible for performing Ground Inspections document they have been completed, and provide documentation of this mechanism (such as a form or checklist) to ODOT. - Develop a mechanism to evaluate compliance with Ground Inspection requirements in a systematic way, such as through direct observation of Ground Inspections by Rail Supervisors and reviews of completed Ground Inspection documentation, and provide documentation of this mechanism to ODOT. 			
4 – Drug and Alcohol Program				
This review identified no Findings of Non-Compliance or Findings of Compliance with Recommendation.				
5 – Vehicle Maintenance				
Findings of Non-Compliance				

Finding	Recommended Corrective Action	TriMet's Proposed CAP	Persons / Departments Responsible	Target Completion Date
5.1: A large number of inspections in 2011 were performed late, resulting in fewer inspections than should have been performed.	- Regain acceptable inspection intervals and submit six months of inspection records to ODOT, showing completed inspections whose mileage points no more than 10 percent above the scheduled mileage inspection points.			
5.2: Personnel are not entering the actual mileage on the vehicle inspection forms.	- Regain compliance in completing vehicle inspection forms and prepare six months of records that show all fields, including the actual mileage, are completed. ODOT will close this finding upon verifying completeness of a randomly selected sample of the forms.			
5.3: The Rail Equipment Maintenance recurrent training matrix shows many cells with no data or overdue dates.	<ul style="list-style-type: none"> - Present time-based goals for completing the recurrent training matrix - Present evidence to ODOT that the goals have been met and that the matrix is up-to-date. 			
5.4: There are many tools and pieces of equipment which do not have up-to-date calibration dates on the calibration log.	- Present ODOT with an up-to-date calibration list that shows all tools and equipment in calibration.			
This review identified no Findings of Compliance with Recommendation.				
6 – Facility Safety: Shops				

Finding	Recommended Corrective Action	TriMet's Proposed CAP	Persons / Departments Responsible	Target Completion Date
This review identified no Findings of Non-Compliance.				
Findings of Compliance with Recommendation				
6.1: There appears to be no process to expeditiously address hazardous conditions identified by the Ruby Junction Safety Committee.	- Create a process to more expeditiously delegate the resolution of deficiencies noted from Safety Committee inspections for both Ruby Junction and Elmonica shops. The process should include a way to immediately address simple deficiencies that can be quickly fixed. Present this plan or process to ODOT.			
6.2: Several bottles containing liquids were unmarked on a work desk in Ruby Junction North.	- Create an SOP or enforce an existing procedure that requires shop personnel to have bottles clearly marked. Present this SOP or evidence of reinforcement to ODOT.			
6.3: Two instances were observed of fall protection netting not fully applied over the edges of maintenance pits.	- Remind shop personnel at Ruby Junction to fully apply netting when it is necessary to remove railings around maintenance pits. Provide evidence of this reminder, likely in the form of a bulletin or meeting minutes, to ODOT.			
7 – Station Maintenance				
This review identified no Findings of Non-Compliance.				

Finding	Recommended Corrective Action	TriMet's Proposed CAP	Persons / Departments Responsible	Target Completion Date
Findings of Compliance with Recommendation				
7.1: It is unclear whether inspectors are using the "Facility Platform Inspections" checklist to conduct preventive maintenance inspections of stations.	<ul style="list-style-type: none"> - Require submission of inspection checklists for scanning or filing, or create an electronic form or some other mechanism to record the results of all element checks performed during station preventive maintenance inspections. Provide evidence of this process to TriMet. 			
7.2: The Facilities Systems Maintenance Plan does not fully reflect current station preventive maintenance inspection practice.	<ul style="list-style-type: none"> - Update the Facilities Systems Maintenance Plan to fully reflect the step-by-step PM inspection process for stations, from the initial assignment of the inspection work order all the way through the completion of repair work orders issued as a result of the inspection. - Remove outdated processes, such as the reference to MicroMain on page 11. - State the intended frequency of station PM inspections. - Provide the updated plan to ODOT. 			
8 – Communications				
This review identified no Findings of Non-Compliance or Findings of Compliance with Recommendation.				

Finding	Recommended Corrective Action	TriMet's Proposed CAP	Persons / Departments Responsible	Target Completion Date
9 – Elevators				
This review identified no Findings of Non-Compliance or Findings of Compliance with Recommendation.				
10 – Maintenance of Way				
Findings of Non-Compliance				
10.1: Track inspection records for summer and fall 2011 show numerous deferred visual/walking inspections.	- TriMet Maintenance of Way should develop, implement, and submit to ODOT results of a more rigorous monitoring program for its visual track inspection preventive maintenance. The program should include pre- and/or post-inspection evaluations, based on the department's internal evaluation. The monitoring program must ensure that deferred inspections are identified closer to the schedule preventive maintenance time, and that appropriate steps are taken to regain compliance with TriMet's twice-monthly schedules.			

Finding	Recommended Corrective Action	TriMet's Proposed CAP	Persons / Departments Responsible	Target Completion Date
10.2: Some quarterly Signals tests are not documented as being completed.	<ul style="list-style-type: none"> - Signals should reassess its existing test plans, identify any equipment for which testing frequency may have changed (e.g., electronic controller M3 switches), and update plans, test frequencies, and forms accordingly. Provide documentation of the assessment and associated updated plans, test frequencies, and forms to ODOT. - Signals should determine why fouling tests on the subject forms were not completed, and implement an appropriate recovery plan to ensure they are completed timely in the future. Provide this plan to ODOT. 			

Finding	Recommended Corrective Action	TriMet's Proposed CAP	Persons / Departments Responsible	Target Completion Date
10.3: Substations preventive maintenance and testing is not consistently performed at the planned monthly interval.	- Substations should devise, implement, and report on a more rigorous monitoring program for its preventive maintenance, and ensure that preventive maintenance is performed consistently and timely. TriMet should assemble six consecutive months of records of on-time preventive maintenance for ODOT review.			
10.4: Substations transfer trip (or emergency power off) tests were not completed for two of the seven substations audited.	- Substations should either substantiate completed inspections for the two substations in question (60th and Parkrose) or detail how it will ensure that transfer trip tests are performed once per calendar year for all substations, in accordance with Substations' own procedures. Provide documentation of completed inspections and the process for ensuring completed inspections to ODOT.			
Findings of Compliance with Recommendation				

Finding	Recommended Corrective Action	TriMet's Proposed CAP	Persons / Departments Responsible	Target Completion Date
10.1: Section 2.1 of the Track Standards Manual does not identify who conducts the daily visual right-of-way inspection.	<ul style="list-style-type: none"> - Maintenance of Way should specify the responsible party and procedural details in the daily right-of-way inspection section of the next Track Standards Manual revision. Provide the new manual to ODOT. 			
10.2: OCS repair items on inspection sheets are not initialed, signed, or otherwise checked off when entered into the MMIS system.	<ul style="list-style-type: none"> - TriMet OCS should develop a system to mark repair items on inspection sheets as being entered into MMIS or otherwise addressed. Provide documentation of such a marking system to ODOT. 			
10.3: Maintenance of Way does not have time-based tolerances for inspection and test intervals.	<ul style="list-style-type: none"> - Maintenance of Way should submit an analysis of its time-based inspection intervals and determine which, if any, may require or benefit from a stated interval tolerance. Provide this analysis to ODOT. - Maintenance of Way should develop and submit a plan for identifying and implementing such inspection interval tolerances, according to its internal analysis. Submit this plan to ODOT. 			

Finding	Recommended Corrective Action	TriMet's Proposed CAP	Persons / Departments Responsible	Target Completion Date
10.4: Substations does not have a field on its monthly inspection and preventive maintenance forms for notes on repairs needed and other miscellaneous comments.	- Substations should analyze the need for a comments field on its monthly preventive maintenance form and develop a plan to implement its findings as appropriate. Provide this analysis and an updated form to ODOT.			
10.5: Supervisor signatures were missing from some Signals switch maintenance forms.	- Maintenance of Way should examine its maintenance forms, in particular those used for Signals maintenance, and ensure that it has and implements a consistent policy for supervisory review and sign-off. TriMet might consider using a combination of tools, perhaps a stamp (e.g., "received" or "reviewed") coupled with Supervisor signature, to show supervisory review and acceptance. Provide documentation of this process to ODOT.			

Finding	Recommended Corrective Action	TriMet's Proposed CAP	Persons / Departments Responsible	Target Completion Date
10.6: Maintenance of Way preventive maintenance and inspection activities could benefit from a more complete description in the SSPP.	<ul style="list-style-type: none"> - TriMet Safety and Maintenance of Way should conduct a joint SSPP review, in particular of Sections H and I, and revise applicable sections to more completely describe and/or reference Maintenance of Way inspections, tests, and preventive maintenance. Provide the revised SSPP to ODOT. 			
10.7: Safety meetings and rules and procedures checks within Maintenance of Way are not fully described in the TriMet SSPP.	<ul style="list-style-type: none"> - TriMet should revise its SSPP to better describe the Maintenance of Way safety meetings and briefings processes, and how they are conducted, tracked, recorded, and administered. - TriMet should revise its SSPP to better describe how it ensures Maintenance of Way personnel comply with rules and procedures having a safety impact. - Provide the revised SSPP to ODOT. 			
11 – Structures				
This review identified no Findings of Non-Compliance.				
Findings of Compliance with Recommendation				

Finding	Recommended Corrective Action	TriMet's Proposed CAP	Persons / Departments Responsible	Target Completion Date
11.1: Contractor bridge inspection reports include recommendations for structural maintenance that are not being completed.	- Provide a schedule for performance of the recommended repairs to ODOT.			
11.2: TriMet does not receive copies of bridge inspection records for three bridges over which TriMet runs, nor for bridges over the MAX right-of-way.	- TriMet should obtain those inspection records for all bridges it does not own in order to ensure that those bridges are safe for TriMet operation. Additionally, TriMet should develop a formal process to ensure that it receives such inspection records. TriMet should provide copies of the inspection records to ODOT, as well as documentation of the process to ensure that the inspection records will continue to be obtained by TriMet moving forward.			

APPENDIX B: LIST OF ACRONYMS

Accident Incident Database	ACID
American Public Transportation Association	APTA
Closed Circuit Television	CCTV
Corrective Action Plan	CAP
Department of Homeland Security	DHS
Facilities Maintenance Information System	FMIS
Federal Emergency Management Agency	FEMA
Federal Transit Administration	FTA
Internal Safety Audits	ISA
Light Rail Vehicle	LRV
Maintenance Management Information System	MMIS
Management Information System	MIS
Material Safety Data Sheet	MSDS
National Incident Management System	NIMS
Occupational Safety and Health Administration	OSHA
Operations Control Center	OCC
Oregon Administrative Rules	OAR
Oregon Department of Transportation	ODOT
Overhead Contact System	OCS
Preventive Maintenance	PM
Rail Equipment Maintenance	REM
Right-of-Way	ROW
Safety, Security, and Environmental Services	SSES
State Safety Oversight Procedure	SSOP
Security and Emergency Preparedness Plan	SEPP

Standard Operating Procedure	SOP
State Safety Oversight	SSO
State Safety Oversight Agency	SSOA
Supervisory Control and Data Acquisition	SCADA
System Safety Program Plan	SSPP
Threat and Vulnerability Assessment	TVA
Transit Change Review Committee	TCRC
Transit Police Division	TPD
Tri-County Metropolitan Transportation District of Oregon	TriMet
U.S. Department of Transportation	USDOT

APPENDIX C: GUIDANCE FORMS

Completed guidance forms used during this review begin on the next page.

**Oregon Department of Transportation
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SSPP Element # 1: Policy Statement and Authority for SSPP: A policy statement signed by the agency's chief executive that endorses the safety program and describes the authority that establishes the SSPP.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
1.1 Document Review	Review SSPP Policy Statement, ensuring: <ul style="list-style-type: none"> ✓ That it endorses the TriMet safety program; that it has the signature of the TriMet General Manager (GM), Executive Director (ED), or Chief Executive Officer (CEO); that it describes the authority that establishes the SSPP; and that it is dated. 	Yes	SSPP clearly includes this information.
1.2 Interviews with TriMet Senior Management	As appropriate, conduct a meeting with TriMet Senior Management to discuss: <ul style="list-style-type: none"> ✓ How the authority conferred in TriMet's policy statement to the Safety Department is reinforced with TriMet personnel during meetings, bulletins or other methods. ✓ How TriMet's safety policy is consistent with the commitment to safety expressed by the TriMet GM/ED/CEO and TriMet Senior Management. ✓ Whether safety is included as a regular topic at TriMet Board Meetings, and whether the TriMet Chief Safety Officer gives reports. ✓ The TriMet Safety Department's reporting relationship to the TriMet GM/ED/CEO, TriMet's Safety Committee Structure, and the participation of TriMet's Senior Management in this structure. ✓ Where in the organization safety decisions are made and the involvement of TriMet Senior Management in making them. ✓ The inclusion of safety activities and requirements in employee job descriptions and training programs at TriMet. ✓ The inclusion of safety responsibilities in job evaluations for managers, supervisors, and employees. ✓ The implementation of TriMet's internal safety audit process, to include a clearly defined scope, checklists, procedures, an effective findings resolution process, and annual certification of SSPP ✓ Efficiency and proficiency testing programs for operations and maintenance employees, and how these programs ensure compliance with safety-critical rules. ✓ TriMet's accident investigation program and its focus on cause finding and correction. 	Yes Yes Yes Yes Yes Yes Yes Yes Yes	The Manager of System Safety (Gilbreath) reports to the Safety & Security Executive (Saporta), who reports to the GM. Safety representatives attend numerous safety committees and accident review committees. The Manager of System Safety is on the Transit Change Review Committee, which the Safety & Security Executive chairs. Same reporting structure as above. Safety is reviewed, though not separately by the System Safety Department. See Element 13 for rule compliance from Operations side. Safety officers conduct ride-alongs. Both departments communicate to identify problem areas/personnel. Safety participates in accident review committees. Rule compliance checks on specific operations sometimes evolve from rule violations that cause accidents.

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SSPP Element # 2: Goals and Objectives: A clear definition of the goals and objectives for the TriMet safety program and stated management responsibilities to ensure that they are achieved.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
2.1 Document Review	Review the SSPP to: <ul style="list-style-type: none"> ✓ Ensure that it clearly defines the goals for the TriMet safety program. ✓ Ensure that it clearly identifies the objectives necessary for achieving the stated goals. ✓ Ensure that it identifies management responsibilities necessary to achieve all goals and objectives. ✓ Ensure that it includes a process for determining whether TriMet met its safety goals and objectives. 	Yes Yes Yes Yes	[SSPP content verification is secondary to ODOT's regular review and approval of SSPP.] Specifies types of objectives, but they are not specific in what is to be attained. Does not differentiate between goals and objectives for Safety versus Operations. The Safety & Security Executive verbally reported additional goals and objectives and that a efforts are underway to identify specific forward-looking goals and objectives. A dashboard exists on TriNet with statistics updated in real time.
2.2 Rules Review	TriMet goals should be reflected in the rule book. Usually there is a cover page with high level safety goals.	Yes	Safety rules incorporated throughout.
2.3 Records Review	<ul style="list-style-type: none"> ✓ Review documentation used to measure and track TriMet activity to meet the goals and objectives specified in the SSPP: <ul style="list-style-type: none"> ○ For example, if TriMet set a goal of reducing grade crossing collisions by 10%, has this been accomplished? Is it tracked and reported on? ✓ Review documentation used to report to the TriMet GM/ED/CEO or other TriMet Senior Managers regarding the safety performance of the agency (i.e., monthly or annual safety reports, quarterly viewgraph presentations, etc.). ✓ Make a determination regarding the adequacy of the safety information provided to TriMet's Executive Leadership. <ul style="list-style-type: none"> ○ Is TriMet's Executive Leadership receiving sufficient information to ensure that TriMet is meeting its safety goals and objectives? ○ Are rules violations and other key safety measurements being tracked and reported to TriMet's Executive Leadership? 	Yes Yes Yes Yes Yes	Safety is tracking incident data. Specific goals for reductions in certain types of incidents have not been set, but new processes are being implemented to address this. Information provided in regular reports to upper management. (see below) At Leadership Team meetings, major accidents and trends are discussed; Safety is a major topic. Safety provides monthly updates. Safety provides monthly updates and information from the TriNet dashboard, in addition to discussions of accidents and trends. Safety feels their comments are taken seriously; the Safety & Security Executive identified

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VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
			an hours of service problem, resulting in the General Manager demanding that departments work together to resolve it promptly.
2.4 Interviews with TriMet Safety Personnel	Meet with TriMet Chief of Safety and Safety Department representatives to: <ul style="list-style-type: none"> ✓ Review the goals and objectives and determine if those goals have been achieved. ✓ Obtain examples of how goals are evaluated (metrics/measures). ✓ Determine whether the stated goals and objectives should be revised. ✓ Determine whether management responsibilities are adequately identified for the goals and objectives. 	Yes Yes Yes Yes	See above re: specificity of goals. No metrics/measures are used. The Safety & Security Executive stated that he intends to revise the goals and objectives. The goals and objectives do not differentiate those for Safety versus Operations responsibilities.

Review completed by: Lynda Horst, Christopher Wallgren and James S. Young

Dates of Review: Nov. 28 through Dec. 1, 2011

Persons Interviewed:

- Gilbreath, Tommye. Manager, System Safety.
- Saporta, Harry. Safety & Security Executive.

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SSPP Element # 3: Overview of Management Structure: An overview of the management structure of TriMet, including: (i) an organization chart; (ii) a description of how the safety function is integrated into the rest of TriMet's organization; and (iii) clear identification of the lines of authority used by TriMet to manage safety issues.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
3.1 Document Review	<p>Review the SSPP and referenced/supporting procedures to:</p> <ul style="list-style-type: none"> ✓ Ensure that an organization chart is included that depicts the TriMet structure and the Safety Department's position within that structure. ✓ Ensure that an organization chart is provided specifically for the Safety Department. ✓ Ensure that a clear description is provided regarding how the Safety Department interfaces with the other TriMet departments, including TriMet's Safety Committee Structure, Executive Management Teams, Employee Safety Committees, Rules Committees, Hazard Committees, and other organizations and methods. <ul style="list-style-type: none"> ○ Make sure the SSPP and referenced/supporting procedures clearly describe the composition and structure of any TriMet committees devoted to safety issues, their roles and responsibilities, and a schedule for when meetings will be conducted. ✓ Ensure that clear lines of authority are established within the SSPP for the TriMet Safety Department to work with other TriMet departments and TriMet Executive Leadership to receive information, identify safety concerns, conduct internal audits and inspections, develop recommendations and corrective action plans to address safety concerns, track and verify the implementation of recommendations and corrective action plans, and report, on a regular basis, to the TriMet's Executive Leadership. 	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>Included, however the safety task matrix includes most tasks as the primary responsibility for multiple departments; some should be made secondary.</p> <p>Also, although the SSPP describes safety-related committees, it should explain how Safety interfaces with other departments such as maintenance or human relations. It should explain the safety responsibilities and roles of the different departments or how they support System Safety.</p> <p>Not complete. See above.</p>
3.2 Rules Review	<p>Review any existing rules or operating procedures related to Safety Committees, Rules Committees, Hazard Management Committees, Inter-Departmental Task Forces, etc. to ensure that they have been updated to reflect current practices and distributed to appropriate personnel.</p>	N/A	<p>There are not specific rules that govern the committees' work.</p>

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VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
3.3 Records Review	Review records to:		
	✓ Ensure that the organization chart accurately depicts both TriMet's organization and the organization of the Safety Department.	Yes	A new chart exists.
	Perform other records review activities to:		
	✓ Review agendas and minutes from committee meetings led by the Safety Department to verify that they took place and that they followed the requirements specified in rules or procedures or the SSPP.	Yes	TCRC documentation confirms extensive work in these areas.
	✓ Review agendas and minutes from committee meetings led by the other TriMet departments to verify that they took place and that the Safety Department participated.	Yes	
	✓ Review memos, reports, and interdepartmental task force records to assess the Safety Department's activities to support interdepartmental coordination regarding safety issues and concerns.	Yes	
	Randomly select 3 major issues confronting TriMet over the last year, and assess the level of Safety Department involvement in each of them.		
	✓ Is there evidence (i.e., meeting minutes, hazard analysis documents) that the Safety Department was consulted and involved?	Yes	TCRC meetings include detailed documentation related to the investigation and review of every applicable incident. Clear and comprehensive information is retained electronically. Tracking logs follow investigation through closure.
✓ Is there evidence (i.e., meeting minutes, review of CAP) that the Safety Department contributed to resolution of the issue?	Yes		
Review the Safety Department's resources and personnel to make an assessment regarding the resources devoted to safety and if they are adequate.			
✓ What is the current level of personnel resources devoted to rail transit safety issues, both in the Safety Department and in other TriMet departments	Yes	The level is sufficient for now, but personnel expressed the possible need for additional employees in several departments when the Portland-Milwaukie extension opens.	
		Yes	There are two individuals in Capital Projects (with a third opening for New Starts/construction), two in D&A, and three operational Safety Specialists, in addition to the departmental Manager and the Executive. There have been reductions in clerical support staff.
✓ If Safety Department resources have been reduced or personnel		Yes	No, however it appears that employee resources are not

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VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
	<p>reorganized, has TriMet conducted a safety resource allocation assessment?</p> <ul style="list-style-type: none"> ✓ What are the qualifications of Safety Department staff? ✓ Is the Safety Department able to maintain schedules for plan updates and key activities, such as internal audits and accident investigations? ✓ Does the Safety Department have personnel resources allocated to support interdepartmental coordination on safety issues and concerns? ✓ Have the TRIMET's Safety Department's personnel and resources been cut or increased disproportionately with the TRIMET's overall budget over the last three (3) years? 	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>being used as best as they could; some upper-level personnel are forced to perform clerical work such as reconciling Procurement Card billing or printing/organizing documents. A clerical position used to exist, and its resurrection could alleviate this issue. Safety management agreed that it would benefit TriMet to fund more Safety employee enrollment in TSI courses and to be appropriately certified.</p> <p>Lists are being updated about six times per year.</p> <p>Not specifically. A resurrected clerical position would help.</p> <p>No. See above.</p>
3.4 Interviews with TriMet Safety Personnel	<p>Meet with TriMet Chief of Safety and Safety Department representatives to:</p> <ul style="list-style-type: none"> ✓ Discuss the organization used by TriMet to integrate the safety function into TriMet operations and maintenance activities. ✓ Discuss the standing of the TriMet Chief of Safety in comparison with the heads of other TriMet departments. ✓ Solicit opinions from TriMet safety personnel regarding the effectiveness of the organization, requesting a few examples of how this organization has worked to resolve identified safety issues. ✓ Discuss the current staffing and funding of TriMet's Safety Department. <ul style="list-style-type: none"> ○ How has it changed over the last three (3) years? ○ Is it adequate? ○ Are there specific needs that the TriMet Safety Department cannot meet due to limitations in personnel or resources? 	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>Involvement in interdepartmental committees (Safety Committees: two rail equipment maintenance, two Maintenance of Way, and one Rail Transportation; also accident review committee and TCRC) is frequent.</p> <p>The standing of Safety has reportedly improved drastically since it was removed from Operations and split into SSES about one year ago.</p> <p>See Goals and Objectives guidance form for specific examples.</p> <p>The level is sufficient for now, but personnel expressed the need for additional employees in several departments when the Portland-Milwaukie extension opens. Also it appears that employee resources are not being used as best as they could; some upper-level personnel</p>

**Oregon Department of Transportation
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SSPP Element # 3: Overview of Management Structure: An overview of the management structure of TriMet, including: (i) an organization chart; (ii) a description of how the safety function is integrated into the rest of TriMet's organization; and (iii) clear identification of the lines of authority used by TriMet to manage safety issues.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
			are forced to perform clerical work such as reconciling Procurement Card billing or printing/organizing documents. A clerical position used to exist, and its resurrection could alleviate this issue.

Review completed by: Lynda Horst, Christopher Wallgren and James S. Young

Dates of Review: Nov. 28 through Dec. 1, 2011

Persons Interviewed:

- Gilbreath, Tommye. Manager, System Safety.
- Saporta, Harry. Safety & Security Executive.

**Oregon Department of Transportation
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SSPP Element # 4: SSPP Control and Update Procedure: The process used to control changes to the SSPP, including: (i) specifying an annual assessment of whether the SSPP should be updated; and (ii) required coordination with the oversight agency, including timeframes for submission, revision and approval.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
4.1 Document Review	Review the SSPP to: <ul style="list-style-type: none"> ✓ Ensure that it describes the process for an annual SSPP assessment and update. ✓ Ensure that it describes the process for coordinating with the oversight agency, including timeframes for submission, revision and approval. ✓ Ensure that it contains a distribution and change control process. 	Yes Yes Yes	SSPP contains this information.
4.2 Records Review	Review records to: <ul style="list-style-type: none"> ✓ Verify that all SSPP revisions have been submitted to the oversight agency according to the approved process and timeframes by reviewing past correspondence and records. ✓ Verify that the annual review process is being implemented according to the approved process specified in the SSPP: <ul style="list-style-type: none"> ○ Review responsibility ○ Internal timeframes ○ Comprehensiveness ○ Sign-offs 	Yes Yes	ODOT confirmed this. The SSPP has been updated more frequently than required due to New Starts/other projects. Changes are submitted to the Transit Change Review Committee.
4.3 Interviews with TriMet Safety Personnel	Discuss the SSPP review and update process with representatives from TriMet's Safety Department to ensure that they understand the requirements and are implementing them.	Yes	

Review completed by: Lynda Horst, Christopher Wallgren and James S. Young

Dates of Review: Nov. 28 through Dec. 1, 2011

Persons Interviewed:

- Gilbreath, Tommye. Manager, System Safety.

**Oregon Department of Transportation
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SSPP Element # 5: SSPP Implementation Activities and Responsibilities: A description of specific activities required to implement the system safety program, including: (i) tasks to be performed by TriMet safety function, by position and management accountability, specified in matrices and/or narrative format; and (ii) safety-related tasks to be performed by other TriMet departments, by position and management accountability, specified in matrices and/or narrative format.

VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
5.1 Document Review	Review the SSPP to: <ul style="list-style-type: none"> ✓ Ensure that the SSPP accurately lists the safety-related activities necessary for the TriMet Safety Department to effectively implement the safety program in a matrix or narrative format. ✓ Ensure that each activity is assigned to a specific position with management accountability. ✓ Ensure that the SSPP accurately lists the safety-related activities to be performed by other TriMet departments to effectively implement the safety program in a matrix or narrative format. ✓ Ensure that each activity for the other TriMet departments is assigned to a specific position with management accountability. 	Yes Yes Yes Yes	In general, the SSPP addresses the critical activities. Proposed changes to the safety program may enhance this in the future. Included, however the safety task matrix includes most tasks as the primary responsibility for multiple departments; some should be made secondary. Although the SSPP describes safety-related committees, it should explain how Safety interfaces with other departments such as maintenance or human relations as well as the roles of those departments. See above.
5.2 Records Review	Pick, at random, 3 activities performed by the safety function and 3 activities performed by other TriMet departments, and collect and review documents to: <ul style="list-style-type: none"> ✓ Verify that the safety-related activities are being performed. ✓ Verify that identified positions are carrying out the safety-related tasks assigned in the SSPP. ✓ Verify management accountability for the performance of the safety-related activities. ✓ If serious or potentially serious deficiencies are found, expand the review to include additional and/or related activities. 	Yes Yes Yes N/A	Extensive TCRC documentation indicates that issues of all sizes are being addressed appropriately by Safety. Involvement of other departments in TCRC indicates agency-wide adoption of Safety department requirements/practices.
5.3 Interviews with TriMet Safety Personnel	<ul style="list-style-type: none"> ✓ Verify through interviews of TriMet safety personnel that identified positions are carrying out the safety-related tasks assigned to them in the SSPP. ✓ Ask Safety Department representatives to identify any challenges that they experience in carrying out the safety-related tasks as specified in the SSPP. 	Yes Yes	This occurs mainly through the numerous interdepartmental safety committees that Safety representatives are assigned to. See the guidance form for Element 3, Management Structure, regarding the need for a clerical position and the new position opening for New Starts.

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SSPP Element # 5: SSPP Implementation Activities and Responsibilities: A description of specific activities required to implement the system safety program, including: (i) tasks to be performed by TriMet safety function, by position and management accountability, specified in matrices and/or narrative format; and (ii) safety-related tasks to be performed by other TriMet departments, by position and management accountability, specified in matrices and/or narrative format.

VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
5.4 Interviews with Other TriMet Personnel	<ul style="list-style-type: none"> ✓ Verify through interviews of other TriMet personnel that identified positions are carrying out the safety-related tasks assigned to them in the SSPP. ✓ In interviews, ask the TriMet representatives to identify any challenges that they experience in carrying out the safety-related tasks as specified in the SSPP. 	<p align="center">Yes</p> <p align="center">Yes</p>	<p>Addressed in area-specific reviews.</p>
5.5 Field Observations	<p>Pick at random 3 activities performed by other TriMet departments and observe their performance in the field.</p> <ul style="list-style-type: none"> ✓ Make a determination regarding whether the observed practices comply with the TriMet SSPP and referenced or supporting rules and procedures. 	<p align="center">Yes</p>	<p>Please see the guidance forms and the report sections for Element 13 regarding observations of operations and supervision, and Element 15 regarding observations of maintenance work.</p>

Review completed by: Lynda Horst, Christopher Wallgren and James S. Young

Dates of Review: Nov. 28 through Dec. 1, 2011

Persons Interviewed:

- Gilbreath, Tommye. Manager, System Safety.

**Oregon Department of Transportation
Guidance for Three-Year Safety and Security Review of TriMet**

SSPP Element # 6 Hazard Management Process: A description of the process used by TriMet to implement its hazard management program, including activities for: (i) hazard identification; (ii) hazard investigation, evaluation and analysis; (iii) hazard control and elimination; (iv) hazard tracking; and (v) requirements for on-going reporting to the oversight agency regarding hazard management activities and status.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
6.1 Document Review	<ul style="list-style-type: none"> ✓ Review the SSPP and any supporting/referenced procedures to ensure that it contains an adequate description of TriMet's hazard management process, including requirements for on-going reporting to the SSO agency. ✓ Review TriMet's hazard management process against FTA's <i>Hazard Management Process Clarification Letter</i> of September 6, 2007 to ensure that all elements of this letter are addressed. 	Yes	This section of the SSPP is complete.
			Yes
6.2 Rules Review	Review any rules related to the reporting and evaluation of hazards and determine if they have been updated to reflect current conditions and distributed to appropriate TriMet personnel.	N/A	
6.3 Records Review	Review records to: <ul style="list-style-type: none"> ✓ Ensure that TriMet is identifying hazards through the sources described in the SSPP. Sources may include, but are not be limited to: <ul style="list-style-type: none"> ○ Reports and complaints from passengers through contact with customer service, field personnel, or management personnel; ○ Data mining of agency control center logs and maintenance management information systems; ○ Monitoring of special orders and speed restrictions; ○ Reports from operators and supervisors; ○ Review of Unusual Occurrence Reports; ○ Monthly or quarterly safety statistics reports; ○ Internal audits performed by the Safety Department personnel; ○ Facility inspections conducted by the Safety Department; ○ Rules Compliance Program, including results from efficiency/proficiency testing; ○ Results from the SSO agency Three-Year Safety Review; and ○ Results from accident investigations and trend analysis of minor incidents and near-misses. ✓ Verify that the Safety Department maintains a mechanism to capture and track identified hazards through analysis and resolution. 	Yes	TCRC records indicate extensive review and management of hazards. Hazards are entered on the TCRC log and the Request for Safety Assessment log. Safety Department tracks corrective actions through closure and regularly monitors open items/issues. Hazard ratings are incorporated into TCRC log.
			Yes

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SSPP Element # 6 Hazard Management Process: A description of the process used by TriMet to implement its hazard management program, including activities for: (i) hazard identification; (ii) hazard investigation, evaluation and analysis; (iii) hazard control and elimination; (iv) hazard tracking; and (v) requirements for on-going reporting to the oversight agency regarding hazard management activities and status.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
<i>Records Review Cont.</i>	<ul style="list-style-type: none"> ✓ Verify that identified hazards are being evaluated according to the methods established in the SSPP. ✓ Ensure that the SSO agency is being notified of identified hazards as specified in the Program Standard and SSPP. ✓ Verify that the appropriate entities are performing hazard evaluation/categorization activities (Safety Committee, Director of Safety, etc.) ✓ Verify that CAPs are being developed to address identified hazards and that the CAPs include the individual or department responsible for implementation and a schedule for completion. ✓ Verify that the Safety Department follows-up on outstanding CAPs developed to mitigate or resolve hazards. 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p>	<p>identified from Internal Safety Audits. It does track the employee injury database and the resolution of items in the new Request for Safety Assessment process. See above.</p> <p>Tri-met works with ODOT on hazard resolution, as appropriate.</p>
6.4 Interviews with TriMet Safety Personnel	<p>Have Safety Department personnel describe the process used to report, evaluate, assess and resolve hazards.</p> <ul style="list-style-type: none"> ✓ Ask Safety Department personnel to provide examples of how hazards that have been identified by other TriMet departments and reported to them for analysis. ✓ Review how the Safety Department assessed these hazards and ask for the status of activities implemented/performed to address them. ✓ Ask the Safety Department how they monitor other departments to ensure that hazards are being reported to the Safety Department as required. 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p>	<p>The new Request for Safety Assessment (RSA) process has generated a large amount of interest from employees across TriMet departments, and its use has resolved numerous safety issues.</p> <p>The System Safety Manager assesses or delegates the RSAs for evaluation.</p> <p>Safety routinely discusses hazards as part of safety committees. Safety provided the safety committees with hazard identification training.</p>
6.5 Interviews with Other TriMet Personnel	<p>As applicable, during reviews of Operations and Maintenance functions, assess the following:</p> <ul style="list-style-type: none"> ✓ Whether TriMet has an appropriate process for employees to report safety hazards in the workplace ✓ If applicable, whether any employee-identified safety hazards during the 	<p align="center">Yes</p> <p align="center">Yes</p>	<p>The new Request for Safety Assessment function appears to be very effective.</p> <p>Verified multiple examples of TriMet addressing and</p>

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SSPP Element # 6 Hazard Management Process: A description of the process used by TriMet to implement its hazard management program, including activities for: (i) hazard identification; (ii) hazard investigation, evaluation and analysis; (iii) hazard control and elimination; (iv) hazard tracking; and (v) requirements for on-going reporting to the oversight agency regarding hazard management activities and status.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
	<p>past 12 months have been addressed through the hazard management process, and the status of any CAPs developed.</p> <ul style="list-style-type: none"> ✓ If operations or maintenance management personnel have a process to periodically evaluate hazards that are resolved at the local department level to determine if there is a trend that requires Safety Department notification. ✓ If applicable, for hazards that should be reported to the Safety Department, operations management personnel report the initial short-term mitigation actions to the Safety Department and then meet to determine longer-term corrective actions. ✓ If applicable, CAPs are being tracked or have been implemented. 	<p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>effectively closing hazards identified through RSAs.</p> <p>There are no regularly-tracked trend reports currently being developed, but new a Safety Management System program being discussed may incorporate some of this.</p>

Review completed by: Lynda Horst, Christopher Wallgren and James S. Young

Dates of Review: Nov. 28 through Dec. 1, 2011

Persons Interviewed:

- Gilbreath, Tommye. Manager, System Safety.
- Saporta, Harry. Safety & Security Executive.

**Oregon Department of Transportation
Guidance for Three-Year Safety and Security Review of TriMet**

SSPP Element # 7 System Modification: A description of the process used by TriMet to ensure that safety concerns are addressed in modifications to existing systems, vehicles, and equipment, which do not require formal certification but which may have safety impacts.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
7.1 Document Review	Review SSPP and referenced or supporting procedures to ensure that a process is in place for addressing safety issues and concerns in system modifications.	Yes	Section M of the SSPP addresses this.
7.2 Rules Review	Review any rules regarding safety-related provisions to be addressed in system modifications and determine if they have been updated to reflect current conditions and distributed to appropriate TriMet personnel.	N/A	
7.3 Records Review	<p>Review any documentation that proves the TriMet Safety Department was involved in assessing at least two (2) system modifications over the last three (3) years prior to their placement in revenue service (i.e., emails, meeting minutes, sign-offs, inspection checklists, etc.)</p> <ul style="list-style-type: none"> ✓ Verify that this process was consistent with SSPP requirements and included an evaluation of potential hazards the modification could pose to the system. ✓ Verify that these hazards were addressed. ✓ Verify that any changes made as a result of a system modification are now reflected in final as-built drawings for the facility and/or specifications for the vehicle and/or equipment. ✓ Verify that TriMet's configuration management process has been followed to address system modification. 	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>TriMet maintains extensive documentation for Safety reviews of system modifications. TCRC is the forum for Capital Projects to bring in projects for approval and for the review of safety impacts on operation and maintenance.</p> <p>All SOP changes go through the TCRC.</p> <p>Other reviewers conducted field audits during this Triennial Review.</p> <p>The configuration management process appears to have been followed.</p>
7.4 Interviews with TriMet Safety Personnel	<p>Conduct interviews with TriMet Safety Department representatives to discuss their role in ensuring that safety concerns are addressed in system modifications.</p> <ul style="list-style-type: none"> ✓ Be sure to have them identify any specific activities they perform, such as participation in testing and inspections, receipt of sign-off inspection sheets from the field, observations performed at work sites, etc. 	Yes	A Safety representative discussed the recent need to replace the emergency mushroom button. Safety will present proposal to the Transit Change Review Committee and have a vote and to determine if it requires new rules, procedures, training, etc.
7.5 Interviews with Other TriMet Personnel	Conduct an interview with TriMet personnel who managed a recent system modification to assess the role of the TriMet Safety Department addressing and resolving safety concerns regarding the modification.	Yes	See above. Also met with personnel responsible for construction/modification to stations.
7.6 Inspections and Measurements	Conduct an inspection of three (3) system modification projects (i.e., station improvement, vehicle upgrade, etc.). Determine if the modification meets the specifications or project requirements, and if any unauthorized modifications were performed.	No	Did not review at this level of detail.

**Oregon Department of Transportation
Guidance for Three-Year Safety and Security Review of TriMet**

Review completed by: Lynda Horst, Christopher Wallgren

Dates of Review: Nov. 28 through Dec. 1, 2011

Persons Interviewed:

- Gilbreath, Tommye. Manager, System Safety.

**Oregon Department of Transportation
Guidance for Three-Year Safety and Security Review of TriMet**

SSPP Element # 8 Safety Certification: A description of the safety certification process required by TriMet to ensure that safety concerns and hazards are adequately addressed prior to the initiation of passenger operations for New Starts and subsequent major projects to extend, rehabilitate, or modify an existing system, or to replace vehicles and equipment.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
8.1 Document Review	Review the SSPP and any referenced or supporting procedures to ensure that a process has been established for safety certification for New Starts and major projects to extend, rehabilitate, or modify the existing system or to replace vehicles and equipment.	Yes	The SSPP contains detailed information about Tri-Met's Safety Certification process. Also reviewed Portland-Milwaukie Safety & Security Certification Plan.
8.2 Rules Review	Review any rules related to safety certification and determine if they have been updated and distributed to TriMet personnel.	N/A	
8.3 Records Review	<p>Review documentation to determine if New Starts and major projects undertaken by TriMet:</p> <ul style="list-style-type: none"> ✓ Address safety certification management, including organizational authority and responsibilities. ✓ Address the controls used to maintain effective communication and liaison with TriMet project staff throughout the life of the project. ✓ Identify the process used to verify and document conformance with safety and security requirements during design, construction, testing, and operational readiness. ✓ Are overseen and approved by FTA and its Project Management Oversight Consultants (PMOCs). <p>If a formal safety and security certification program plan has been written for a specific project, review it to verify consistency with SSPP.</p> <ul style="list-style-type: none"> ✓ Is the certification program being administered by the transit agency or a contractor? ✓ Was a PHA performed? ✓ Are hazards being addressed as per the process defined in the safety certification program plan? ✓ Is the hazard management process identified in the safety certification program plan consistent with the SSPP? ✓ Has a certification committee been created? ✓ Has a certifiable items list been created? ✓ How are federal, state, and local agencies involved? This includes the SSO agency and emergency responders. 	<p>Yes</p>	<p>Portland-Milwaukie Safety & Security Certification Plan. Contains detailed information.</p> <p>Also reviewed SCILs for Rockwood Station and Civic Drive. Extremely well-organized and well-designed safety documentation.</p> <p>TriMet maintains extensive documentation in support of all recommended areas listed on this guidance form.</p>

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SSPP Element # 8 Safety Certification: A description of the safety certification process required by TriMet to ensure that safety concerns and hazards are adequately addressed prior to the initiation of passenger operations for New Starts and subsequent major projects to extend, rehabilitate, or modify an existing system, or to replace vehicles and equipment.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
	<ul style="list-style-type: none"> ✓ Have all designs been reviewed, stamped and sealed by a licensed Professional Engineer? ✓ Are design changes and Non-Conformance Reports (NCRs) analyzed for safety impacts? Have these been thoroughly documented? ✓ Have training programs been updated as necessary and have all employees been trained? ✓ Has a testing program been developed and administered? ✓ Have emergency drills and simulations been performed involving local emergency responders? ✓ Is the GM/CEO required to formally sign and certify the project complete and safety for operations? 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p>	
8.4 Interviews with TriMet Safety Personnel	Conduct interviews with safety department personnel to determine how the department has been involved in the certification of TriMet New Starts and major projects.	Yes	Safety department has dedicated staff due to TriMet's extensive growth.
8.5 Interviews with Other TriMet Personnel	Conduct interviews with TriMet project staff involved in New Starts and major projects to discuss how safety concerns were addressed and the level of interaction with the Safety Department.	Yes	Safety department is well integrated into the process.

Review completed by: Christopher Wallgren

Dates of Review: Nov. 30, 2011

Persons Interviewed:
- Sheets, Michael.

**Oregon Department of Transportation
Guidance for Three-Year Safety and Security Review of TriMet**

SSPP Element # 9 Safety Data Collection and Analysis: A description of the process used to collect, maintain, analyze, and distribute safety data, to ensure that the safety function within TriMet receives the information necessary to support implementation of the system safety program.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
	<p>failures, accidents/incidents involving fatalities and/or injuries, accidents/incidents resulting in property damage, and accident/incidents resulting in environmental damage.</p> <ul style="list-style-type: none"> ✓ The safety data is supplied by and collected from all departments including Operations, Legal, Claims Management, and Maintenance as appropriate. ✓ The data collected is then analyzed and, if necessary, incorporated into TriMet's hazard identification and resolution process. ✓ The data collected and the resulting analyses are made available to all TriMet departments for use in planning their safety-related activities. ✓ Monthly or quarterly reporting regarding the results of the safety data analysis is provided to TriMet's Executive Leadership as appropriate. <p>The SSPP may establish a regular cycle of safety data analysis and reporting for internal and/ or external distribution. Verify that the analysis and distribution process is being implemented as described.</p> <ul style="list-style-type: none"> ✓ Timeframe for generation. ✓ Distributed to required parties. 	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>Information is shared with appropriate groups, as necessary.</p> <p>Hazard scoring is incorporated into the incident tracking logs.</p> <p>The SSPP references these key elements.</p>
9.4 Interviews with TriMet Safety Personnel	<p>Interview Safety Department representatives to discuss how safety data is collected, analyzed and distributed throughout TriMet.</p> <ul style="list-style-type: none"> ✓ Ask the representatives to explain how they receive safety-related information from other departments, including the operations and maintenance departments. ✓ Ask the Safety Department representatives to provide examples of how information received from the operations and maintenance departments was used to support safety data collection and analysis activities. ✓ Ask TriMet Safety Department representatives to explain how they collect information on derailments and rules violations in TriMet's yard. ✓ Ask the TriMet Safety Department how it ensures the quality and integrity of collected safety data. ✓ Ask TriMet Safety Department representatives to explain how TriMet reports to FTA's National Transit Database (NTD). 	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>TriMet Safety personnel explained these items.</p>

**Oregon Department of Transportation
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SSPP Element # 9 Safety Data Collection and Analysis: A description of the process used to collect, maintain, analyze, and distribute safety data, to ensure that the safety function within TriMet receives the information necessary to support implementation of the system safety program.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
9.5 Field Observations	✓ Ask a Safety Department representative to review and demonstrate the automated systems used by TriMet to report, analyze and track safety data.	Yes	Demonstration of TriNet safety dashboard, of ACID, and the injuries database.
	✓ Ask a Safety Department representative to review and demonstrate the process for reporting to FTA's NTD.	Yes	Discussed reporting but did not review. Specific Safety staff members are assigned the duty of entering National Transit Database data.

Review completed by: Lynda Horst, Christopher Wallgren

Dates of Review: Nov. 28 through Dec. 1, 2011

Persons Interviewed:

- Gilbreath, Tommye. Manager, System Safety.
- Saporta, Harry. Safety & Security Executive.

**Oregon Department of Transportation
Guidance for Three-Year Safety and Security Review of TriMet**

SSPP Element # 10 Accident/Incident Investigations: A description of the process used by TriMet to perform incident notification, investigation and reporting, including: (i) notification thresholds for internal and external organizations; (ii) investigation process and references to procedures; (iii) the process used to develop, implement and track corrective actions that address investigation findings; (iv) reporting to internal and external organizations; and (v) coordination with the oversight agency.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
10.3 Records Review	<p>Randomly select at least five (5) accidents involving an injury or fatality to the SSO agency during the past 24 months and determine if:</p> <ul style="list-style-type: none"> ✓ The accident was reported to the SSO agency as specified in the Program Standard, and the final written report on the accident was delivered to the SSO agency as specified in the Program Standard. ✓ The accident was investigated in compliance with the Accident Investigation Procedures reviewed and approved by the SSO agency. ✓ Verify timeline of accident notifications and to whom the notifications were made. ✓ Ensure that the final investigation report identified: <ul style="list-style-type: none"> ○ Each item covered by the investigation. ○ The investigation findings of the most probable cause. ○ Underlying contributing causes. ○ A CAP to addresses the identified causes and that it minimize the incident from recurring. ○ A schedule for implementing the CAP, which has been completed or is being monitored on an on-going basis. <p>For the last 12 months, review the NTD reports filed with FTA by TriMet and compare them with TriMet records and notifications to the SSO agency:</p> <ul style="list-style-type: none"> ✓ Identify any discrepancies in reporting. <p>For the last 36 months, review the notifications filed with NTSB by TriMet and compare them with TriMet notifications to the SSO agency:</p> <ul style="list-style-type: none"> ✓ Identify any discrepancies in reporting. <p>Review accident reports from incidents occurring in TriMet 's rail yard:</p> <ul style="list-style-type: none"> ✓ What are the most commonly occurring incidents? ✓ What corrective actions have been developed to address them? ✓ Are any special monitoring programs in place to review yard accidents? 	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>No</p> <p>No</p> <p>No</p>	<p>Reviewed ACID database inputs and accident investigation reports and supporting documentation presented to TCRC for 6 incidents/accidents from 2009, 2010, and 2011. All reports appear to contain relevant information.</p> <p>Information appears to be complete and consistent.</p> <p>Did not review yard accidents specifically. There were no reported major trends in yard accidents.</p>

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SSPP Element # 10 Accident/Incident Investigations: A description of the process used by TriMet to perform incident notification, investigation and reporting, including: (i) notification thresholds for internal and external organizations; (ii) investigation process and references to procedures; (iii) the process used to develop, implement and track corrective actions that address investigation findings; (iv) reporting to internal and external organizations; and (v) coordination with the oversight agency.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
10.4 Interviews with TriMet Safety Personnel	Interview Safety Department representatives and discuss: <ul style="list-style-type: none"> ✓ Past issues with the SSO agency receiving accident reports on-time and what has been done to address them. ✓ Coordination of investigation process with the SSO agency. ✓ Submission to the SSO agency of all supporting reports and documentation that comprise the full accident investigation report. ✓ Familiarity of operations personnel responsible for responding to accidents with TriMet's accident investigation process requirements. ✓ Any other problems or issues with this process. 	Yes Yes Yes Yes Yes	No issues were noted. ODOT is satisfied with the investigation process. ACID database appears to serve as a good resource. Operations is involved through the Operations Safety Committee and TCRC.

Review completed by: Lynda Horst, Christopher Wallgren

Dates of Review: Nov. 28 through Dec. 1, 2011

Persons Interviewed:

- Gilbreath, Tommye. Manager, System Safety.

**Oregon Department of Transportation
Guidance for Three-Year Safety and Security Review of TriMet**

SEPP/SSPP Element # 11 System Security and Emergency Management Program: A description of the process used to develop an approved, coordinated schedule for emergency management program activities, which include: (i) meetings with external agencies; (ii) emergency planning responsibilities and requirements; (iii) process used to evaluate emergency preparedness, such as annual emergency field exercises; (iv) after action reports and implementation of findings; (v) revision and distribution of emergency response procedures; (vi) familiarization training for public safety organizations; and (vii) employee training.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
11.1 Document Review	<ul style="list-style-type: none"> ✓ Review SSPP/SEPP to ensure that it addresses the requirements specified in the State’s Program Standard and 49 CFR Part 659. ✓ Review TriMet’s Emergency Operation Plan (EOP) and procedures to assure consistency with SSPP. ✓ Review the SEPP to ensure that it includes a policy statement and is endorsed by the Chief Executive ✓ Review the SEPP to ensure that the introduction of System Security & Emergency Preparedness are introduced ✓ Review the TriMet SEPP to ensure that management authority is identified and that any government involvement is detailed in the plan ✓ Review the SEPP to ensure the TriMet operating environment is explained ✓ Verify that the SEPP identifies the goals and objectives of the plan ✓ Verify these documents include a description of the transit agency’s activities with external emergency response agencies to support emergency planning and response. ✓ Verify SSPP, SEPP & EOP procedures clearly define TriMet personnel roles and responsibilities. ✓ Review the TriMet SEPP to determine that all capabilities and practices are identified ✓ Verify SSPP, SEPP & EOP, and procedures include a process for evaluating emergency drills and exercises. <ul style="list-style-type: none"> ○ Verify this process is linked to the hazard management process requirements of the SSPP. ✓ Verify SSPP, SEPP & EOP procedures require the development of after action reports for all real-life emergencies and practice drills and exercises. 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p>	<p>A finding of non-compliance was discovered concerning this requirement regarding detail on the relationship between TriMet and the SSOA.</p>

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SEPP/SSPP Element # 11 System Security and Emergency Management Program: A description of the process used to develop an approved, coordinated schedule for emergency management program activities, which include: (i) meetings with external agencies; (ii) emergency planning responsibilities and requirements; (iii) process used to evaluate emergency preparedness, such as annual emergency field exercises; (iv) after action reports and implementation of findings; (v) revision and distribution of emergency response procedures; (vi) familiarization training for public safety organizations; and (vii) employee training.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
	<ul style="list-style-type: none"> ✓ Review SSPP, SEPP & EOP procedures to verify that they include a description of the processes used to train local emergency responders. ✓ Verify SSPP, SEPP & EOP procedures clearly document how and to whom updated emergency response procedures will be distributed. 	Yes Yes	
11.2 Rules Review	<p>Review any rules related to emergency response and determine if they have been updated to address current conditions and distributed to appropriate TriMet personnel.</p> <p>Verify when EOP & SEPP procedures were last reviewed and revised.</p> <ul style="list-style-type: none"> ✓ Determine who was involved in the review and revision process (safety, security, emergency responders, operations, maintenance, committees, contractors, the SSO agency, etc.)? ✓ Determine if revisions were evaluated to ensure they would not create new hazards or system risks? <p>Verify SSPP, SEPP & EOP procedures define how often drills, table-tops, and field exercises will be performed.</p>	Yes Yes Yes Yes	Attended winter Emergency Operation Plan discussion for this purpose.
11.3 Records Review	<ul style="list-style-type: none"> ✓ Verify that a drill/exercise schedule has been created and followed: <ul style="list-style-type: none"> ○ When was the last one performed? ○ Was an after action report developed? ○ Was the after action report used to make changes to the TriMet's EOP and/or procedures? If so, have these changes been communicated to TriMet personnel? ✓ Review training programs to verify they contain training curriculums for emergency response procedures and activities appropriate for each job classification. ✓ Review training programs to verify frequency of employee emergency response training and if this frequency is consistent with SSPP requirements. ✓ Verify that security data is collected, maintained and updated. 	Yes Yes Yes Yes	<p>ODOT attended a drill during the on-site review period.</p> <p>See report section for a related finding.</p> <p>Same as above.</p>

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VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
Records Review <i>continued</i>	<ul style="list-style-type: none"> ✓ Randomly select six (6) employees from the following safety sensitive job classifications and review their training records to verify who has been trained and that training has been properly documented: <ul style="list-style-type: none"> ○ Train Operators ○ Train Supervisors ○ Train Controllers ○ Power and Support Controllers ○ Other OCC Employees 	Yes	
	<ul style="list-style-type: none"> ✓ Verify the process through which emergency responders and other outside agencies are involved in TriMet's emergency planning. <ul style="list-style-type: none"> ○ Contact local emergency response agency liaisons to verify that they have received familiarization training and that they participate in the emergency planning with TriMet. 	Yes	
	<ul style="list-style-type: none"> ✓ Review past documentation to verify that drill outcomes and evaluations were incorporated into response plans and procedures as appropriate. 	Yes	
	<ul style="list-style-type: none"> ✓ Review records and documentation for the past 12 months to determine if: <ul style="list-style-type: none"> ○ TriMet has held periodic Fire Life Safety meetings with police and fire departments in the applicable TriMet jurisdictions. ○ Emergency response agency familiarization activities have occurred as scheduled. ○ Corrective actions have been implemented. 	Yes	
	<ul style="list-style-type: none"> ✓ Verify SSPP, SEPP & EOP procedures define Threat and Vulnerability Identification, Assessment, and Resolution. 	Yes	TriMet uses the Transportation Security Administration Baseline Review for this purpose. At the time of the review, TriMet was scheduled to perform this function in early 2012.
	<ul style="list-style-type: none"> ✓ Review documentation to determine that current security conditions are reviewed, analyzed and updated 	Yes	
	<ul style="list-style-type: none"> ✓ Review the SEPP to determine if an up-to-date system description, scope of the program, organizational structure and management of the 	Yes	

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SEPP/SSPP Element # 11 System Security and Emergency Management Program: A description of the process used to develop an approved, coordinated schedule for emergency management program activities, which include: (i) meetings with external agencies; (ii) emergency planning responsibilities and requirements; (iii) process used to evaluate emergency preparedness, such as annual emergency field exercises; (iv) after action reports and implementation of findings; (v) revision and distribution of emergency response procedures; (vi) familiarization training for public safety organizations; and (vii) employee training.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
	security program at TriMet.		
11.4 Interviews with TriMet Safety/ Security/ Emergency Management Personnel	Interview TriMet Safety, Security, and/or Emergency Management personnel (as applicable) to discuss TriMet's emergency planning, training, and drill/exercise program. <ul style="list-style-type: none"> ✓ Ask for an overview of this process. ✓ Ask for specific examples of coordination with emergency response agencies on emergency planning and drill/exercises. ✓ Ask the representatives to describe the biggest challenges they face in coordinating or supporting TriMet's emergency planning process. 	Yes Yes Yes Yes	
11.5 Interviews with Other TriMet Personnel	<ul style="list-style-type: none"> ✓ Conduct random interviews of transit personnel to verify they are familiar with TriMet's emergency response procedures. ✓ Conduct random interviews of transit personnel to verify that they have received training. ✓ Conduct interview of transit personnel to determine that SEPP management activities occur. Including responsibilities, functions, and any committees that address concerns in security ✓ Conduct interviews with transit personnel to determine if the SSPP, SEPP & EOP are implemented and evaluated. (verify that a implementation schedule is being used) 	Yes Yes Yes Yes	

Review completed by: Michael Crowther

Dates of Review: Nov. 28 through Dec. 1, 2011

Persons Interviewed:

- Crebs, Michael. TPD Commander.
- McGuire, Michael. Manager, Emergency Management Safety & Security
- Saporta, Harry. Safety & Security Executive.

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SSPP Element # 12 Internal Safety Audits: A description of the process used to ensure that planned and scheduled internal safety audits are performed to evaluate compliance with the SSPP, including: (i) identification of departments and functions subject to review; (ii) responsibility for scheduling reviews; (iii) process for conducting reviews, including the development of checklists and procedures and issuing of findings; (iv) review of reporting requirements; (v) tracking the status of implemented recommendations; and (vi) coordination with the oversight agency.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
12.1 Document Review	<p>Verify that SSPP includes a description of the processes used by the transit agency to perform internal safety audits.</p> <ul style="list-style-type: none"> ✓ Verify this process is consistent with Part 659 and the SSO agency's requirements. ✓ Verify SSPP identifies what departments and functions are subject to review. ✓ Verify SSPP clearly defines roles and responsibilities for performing the internal safety audits. ✓ Verify this process is fully endorsed by the GM/CEO. ✓ Verify the internal safety audit process and any findings are tied to the hazard management process defined in the SSPP. ✓ Verify internal safety audit process findings are analyzed to determine if they pose a hazard. ✓ Verify the SSPP includes a description of the process used to document and communicate internal safety audit results to appropriate personnel and departments, as well as the SSO agency. ✓ Verify the SSPP and/or referenced or supporting procedures require that CAPs be developed, documented, and implemented to address internal safety audit findings and concerns. 	Yes (to all below)	<p>Section G of the SSPP discusses TriMet's internal safety audit process.</p> <p>Safety department conducts all Internal Safety Audits (ISAs) except those which would be considered a "self audit." Internal Audit, Exclusions Coordinator, or Safety Certification staff members conduct ISAs from time to time.</p> <p>Completed ISAs demonstrated compliance with TriMet and FTA requirements. Completed ISAs include corrective actions and information related to how corrective actions will be closed out.</p> <p>Some ISAs completed by personnel from outside of Safety are more detailed and written in a different format.</p>
12.2 Rules Review	If applicable, review any rules related to the conduct of TriMet 's internal safety audit process and determine if they have been updated to reflect current conditions and distributed to appropriate TriMet personnel.	Yes (to all below)	Internal Safety Audits may cover new rules, where applicable.

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VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
12.3 Records Review	Review TriMet documents/records to determine if: <ul style="list-style-type: none"> ✓ A Three-Year Internal Safety Audit Schedule was developed and submitted to the SSO agency. ✓ Internal safety audit procedures have been developed and submitted to the SSO agency for each audit area. ✓ The internal safety audits have been performed as scheduled and following the procedures submitted to the SSO agency. ✓ The scope of audit activities includes the required elements specified in the SSO agency Program Standard and in 49 CFR Part 659. ✓ Internal safety audits have been properly documented and include references for documents and activities reviewed, criteria for evaluation, and notes to support findings and recommendations. ✓ An Annual Report has been submitted to the SSO agency for each of the last three (3) years documenting the results of the internal safety audit process. ✓ The Annual Report is accompanied by a letter from the GM/CEO, stating TriMet's compliance status with its SSPP and corrective actions for elements determined not to be in compliance. ✓ Corrective actions to address findings from the internal safety audit process were scheduled and implemented. 	Yes	A schedule has been developed. TriMet has kept ODOT apprised of all ISA activities before, during, and after ISAs are conducted. All reporting has been conducted on-time.

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VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
12.4 Interviews with TriMet Safety Personnel	Interview TriMet Safety Department representatives to determine: <ul style="list-style-type: none"> ✓ The internal safety audit process assesses implementation of TriMet's SSPP, including the use of field verification methods to verify the condition of infrastructure and rules compliance activities. ✓ TriMet's internal safety audit process adequately addresses interdepartmental and interagency communication issues. ✓ The interdepartmental and interagency communications process and requirements are clearly defined in detail. ✓ Any deviations from the approved procedure, identified during an internal safety audit or by any other means, are brought to the attention of management. ✓ There is a process in place for addressing and overcoming non-responsiveness of other TriMet departments in responding to internal safety audit findings. ✓ How various department managers subject to audit support the ISA process ✓ Assess the level of effort devoted to supporting the RTA's internal safety audit process. ✓ Determine how required expertise for auditing specific functions, such as track or signal inspection, is provided to ensure the rigor and quality of the internal safety audit. 	Yes	TriMet's Safety staff work regularly with individuals from every department in the organization and are familiar with the different duties and requirements of the different jobs (e.g. operations, maintenance, etc.). ISAs reflect an appropriate level of check as well as an understanding by the auditor of issues to be checked and verified. All ISAs appear to be conducted on schedule, and there appears to be no problem with agency participation in the ISA program.

Review completed by: Christopher Wallgren

Dates of Review: Nov. 30, 2011

Persons Interviewed:

- Gilbreath, Tommye. Manager, System Safety.

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- Saporta, Harry. Safety & Security Executive.

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SSPP Element # 13 Rules Compliance: A description of the process used by TriMet to develop, maintain, and ensure compliance with rules and procedures having a safety impact, including: (i) identification of operating and maintenance rules and procedures subject to review; (ii) techniques used to assess the implementation of operating and maintenance rules and procedures by employees, such as performance testing; (iii) techniques used to assess the effectiveness of supervision relating to the implementation of operating and maintenance rules; and (iv) process for documenting results and incorporating them into the hazard management program			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
13.1 Document Review	<ul style="list-style-type: none"> ✓ Review SSPP to verify that contents include TriMet's processes for developing, maintaining and ensuring compliance with operating and maintenance rules and procedures having a safety impact. ✓ Verify that the SSPP lists or references all operating and maintenance rules and procedures subject to review. ✓ Verify that the SSPP identifies all techniques used by TriMet to assess effective implementation of, and compliance with, operating and maintenance rules with safety impacts. ✓ Verify that the SSPP identifies how supervisors are evaluated to assess their effectiveness in overseeing implementation of, and compliance with, operating and maintenance rules with safety impact. ✓ Verify that the SSPP specifies that concerns identified through TriMet's rules compliance programs are reported to the Safety Department for inclusion in the hazard management process. 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p>	[SSPP content verification is secondary to ODOT's regular review and approval of SSPP.]
13.2 Rules Review	<p>Review the status of TriMet 's operating and maintenance rules and procedures:</p> <ul style="list-style-type: none"> ✓ When was the last time the operating rulebook was reviewed and revised? ✓ Is TriMet keeping to the review/revision schedule specified in the SSPP and/or referenced and supporting procedures? ✓ Have all operators and other necessary personnel been given a copy of the most current rulebook as specified in the SSPP? ✓ Determine how many operating bulletins are issued each year and how the TriMet Safety Department is involved in the review, approval and dissemination of these bulletins. ✓ How long to do operating bulletins typically stay in effect? Does TriMet have a process in place to review operating bulletins to determine when they should be incorporated into the rulebook? 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p>	<p>Rule Book revised in May 2010. Rule now calls for annual review, indicated in the SSPP and in SOP 002.</p> <p>TriMet uses Train Orders that last through the end of the service day. If an issue lasts longer than a day, it is turned into a Special Instruction; Special Instructions are subject to little managerial scrutiny – see associated finding.</p> <p>The process for Memos, Special Instructions, etc., is not clearly described in the TCRC SOP.</p> <p>Train Lines and Safety Bulletins are the responsibility of</p>

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VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
	<ul style="list-style-type: none"> ✓ Does the TriMet Safety Department conduct assessments to evaluate safety-related impacts to rules changes and bulletins? ✓ Has the SSO agency received a copy of the current operating rulebook and current versions of the most germane maintenance procedures? <p>Review agendas and minutes from Rules Committee meetings to verify that they took place as specified in SSPP or supporting rules/procedures.</p> <ul style="list-style-type: none"> ✓ Assess level of involvement of the Safety Department in supporting the TriMet's Rules Committee. ✓ Confirm that a thorough review was conducted as specified in the SSPP. 	<p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>the Training Department, though these are different than rule changes that would go through the TCRC; the lines are somewhat blurred, however – see report and associated finding regarding Special Instructions. The Safety & Security Executive leads the TCRC.</p>
13.3 Records Review	<ul style="list-style-type: none"> ✓ Review documentation to verify that TriMet performs ride-alongs and other formal observations of train operators as specified in the SSPP. ✓ Review documentation to verify that operations employees are evaluated based on their performance during unannounced observations to determine their compliance with safety rules, procedures, and/or practices. <ul style="list-style-type: none"> ✓ Review past accident records to verify if any accidents were caused by a failure to follow operating rules and procedures. <ul style="list-style-type: none"> ○ If so, verify what steps were taken to correct these issues (i.e., employee retraining, suspension, dismissal, etc.). 	<p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>The results of rule compliance checks go to the Training Department . Field Operations is responsible for conducting the reviews. Operations has access, but their access to the results is optional. OCC automatically generates an email for issues like red signal violations, and Field Operations will notify Rail Operations of check ride issues.</p> <p>Field Operations management gets hard copies of results; it is their responsibility to enter them into the electronic records database.</p> <p>Per the SSPP, there is an accident review committee that determines preventability, and Rail Operations deals with discipline. TriMet has a “progressive discipline” process, which seems appropriate.</p>

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VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
	<ul style="list-style-type: none"> ✓ Review documentation to verify that supervisors are citing operating and maintenance personnel for rule violations. <i>If there is no record of employees being disciplined for failing to follow a rule or procedure, then the supervisor is not likely performing these activities appropriately.</i> ✓ Randomly select six (6) employees from the following safety sensitive job classifications: <ul style="list-style-type: none"> ○ Train Operators ○ Supervisors ○ Train Controllers ✓ Review the selected employees' "time on duty" records prepared during a three- month period in the past 18 months to determine if they complied with the minimum rest requirements specified by TriMet . 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p>	<p>Operator time on duty records are kept electronically; Supervisor and Controller records are kept manually.</p> <p>IT has developed a monitoring report that is issued regularly that shows any Hours of Service (HOS) violations.</p> <p>The Station Agent is responsible for assigning work; the electronic tool does not allow for violations of the existing HOS policy.</p> <p>The "personal service day" starts at the time the person reports to work, rather than an individual calendar day.</p>
13.4 Interviews with TriMet Safety Personnel	<ul style="list-style-type: none"> ✓ Interview TriMet Safety Department representatives to determine when rules and procedures were last reviewed and revised. ✓ Conduct interviews with TriMet Safety Department representatives to discuss their role in ensuring that safety concerns are addressed in TriMet's rules compliance program. <ul style="list-style-type: none"> ○ Do Safety Department representatives support any rules 	<p align="center">Yes</p> <p align="center">Yes</p>	<p>Safety leads the TCRC, which reviews and approves all rule and procedure changes.</p>

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VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
	<ul style="list-style-type: none"> ○ compliance activities? ○ Do they receive reports from TriMet’s operations department regarding the performance of rules checks, assessments, and testing? ○ Are hazards identified from the rules compliance process and reported to the TriMet Safety Department and managed through the hazard management process? ○ Discuss process used to review and update rules and to review and issue operating bulletins. ○ Determine if TriMet has experienced any challenges in implementing this process or keeping to its review schedule. 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p>	Trend analysis of rule checks is specified in the SSPP, but not currently performed by Rail or Field Operations.
13.5 Interviews with Other TriMet Personnel	<ul style="list-style-type: none"> ✓ Interview operations supervisory staff to determine how they monitor employee compliance with rules and procedures. ✓ Interview operations supervisory staff to determine their familiarity with rules and procedures. ✓ If possible, perform random interviews of operators to verify how often they receive training on rules and procedures and how the transit agency monitors their compliance with rules and procedures. 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p>	TriMet uses both Service Quality Rides (SQRs) and Observation Rides. Training Supervisors do Observations Rides; field Supervisors do SQRs, which are a subset of the Observation Rides. All rides are recorded in ACID database; reports are generated. Rail Supervisor appeared knowledgeable of rules and procedures.
13.6 Field Observations	<ul style="list-style-type: none"> ✓ At random, select several operating procedures and ride the system to verify that these rules are being followed (such as performing station announcements, look-back procedures, or end of line vehicle inspections, etc.). 	<p align="center">Yes</p>	No significant issues noted during observation rides.

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VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
13.7 Inspections and Measurements	✓ Conduct a random sample inspection of transit operators to determine if they are carrying their rulebook, if they have the proper safety equipment in their cabs, and if their radios are functioning.	Yes	No issues noted.
	✓ Accompany line management personnel during compliance checks and assess how these checks are conducted and ensure that final reporting matches the findings in the field.	Yes	

Review completed by: Robert Kogan

Dates of Review: Nov. 28 through Dec. 1, 2011

Persons Interviewed:

- Stokes, Dan. Assistant Manager, Field Operations.
- Allison, Don. Manager, Rail Operations
- Talbot, Hayden. Director, Transportation Operations
- Morgan, Allen. Manger, Operations Training
- Strickland, Jim. Assistant Manager, Rail Operations Training
- Rail Controllers
- Rail Supervisors
- Rail Operators
- Training Supervisors

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SSPP Element # 14 Facilities and Equipment Inspections (shops and stations): A description of the process used for facilities and equipment safety inspections, including: (i) identification of facilities and equipment subject to regular safety-related inspection and testing; (ii) techniques used to conduct inspections and testing; (iii) inspection schedules and procedures; and (iv) description of how results are entered into the hazard management process.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
14.1 Document Review	<ul style="list-style-type: none"> ✓ Review TriMet 's SSPP and/or referenced and supporting procedures to: <ul style="list-style-type: none"> ○ Ensure that they identify the facilities and equipment subject to regular safety-related inspection and testing. ○ Ensure that they identify the techniques used to conduct the inspections and testing. ○ Ensure that they include or reference inspection schedules and procedures. ○ Ensure that they provide a description of how results from the inspections are entered into TriMet's hazard management process. ✓ Review the transit agency's "Facilities Maintenance Plan" and/or "System Operations and Maintenance Plan" to ensure it specifies general categories and inspection requirements of safety-related facilities and equipment. 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p>	<p>In SSPP and in Facilities Systems Maintenance Plan (FSMP). FSMP should be referenced in SSPP.</p> <p>In Facilities Systems Maintenance Plan</p> <p>Does not specify frequency for passenger station inspections. Station PMIs are not mentioned in the SSPP.</p> <p>For stations, the FSMP should describe the full inspection process, including use of a checklist.</p> <p>For maintenance facilities, the SSPP and/or the FSMP should discuss the role of each shop Safety Committee in completing monthly inspections.</p> <p>See above.</p>
14.2 Rules Review	Review any rules related to facilities and equipment inspections and determine if they have been updated and distributed to TriMet personnel.	No	
14.3 Records Review	<ul style="list-style-type: none"> ✓ Review the safety inspection schedules, checklists, and procedures to be used to inspect facilities and equipment and ensure that they are consistent with the SSPP and referenced/supporting procedures. ✓ Review checklists to be used by inspectors to ensure that items to be inspected are listed and include safety-related characteristics. ✓ Review the inspection procedures and verify that testing and measurement criteria for facilities and equipment are included and to verify the use of machine guarding and appropriate hazardous materials storage. ✓ Review the inspection procedures for maintenance facilities and shops 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p>	<p>See above.</p> <p>Yes (stations).</p> <p>Confirmed that machine guarding and hazardous materials storage is checked during monthly Safety Committee inspections.</p> <p>PPE, MSDS, equipment inspections, and housekeeping</p>

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VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
Records Review <i>continued</i>	<p>to verify that compliance with personal protective equipment (PPE), Material Safety Data Sheets (MSDS), inspections of equipment, housekeeping inspections, inspection to verify industrial hygiene, conduct of fire drills, and facilities evacuation plans are required.</p> <ul style="list-style-type: none"> ✓ Review past documentation to verify that inspections are being performed and documented according to the SSPP and referenced/supporting procedures. <ul style="list-style-type: none"> ○ Is an inspection report developed? ○ Is this report provided to Safety Department for review? ✓ Verify audit checklists include an examination of tools and test equipment used by the mechanics and ensure test equipment and measurement devices are properly calibrated according to the transit system's QA procedures and if the mechanic has available to them the necessary tools denoted in the "Maintenance Manuals" to perform the required tasks. ✓ Verify that if hazardous conditions are identified, are they analyzed according to hazard management process and tracked until mitigated. ✓ Verify that the hazard tracking log or some similar tracking mechanism includes facilities and equipment hazards found during the transit agency's inspections. ✓ Check a sampling of hazards identified during inspections to ensure they are immediately reported, documented, and tracked through resolution. ✓ Check a sampling of "Corrective Action Plans" to determine timeliness of resolution and ensure follow-up activities are performed, hazard resolution has taken place, and a measure of the effectiveness of implemented hazard controls has taken place. ✓ Randomly select one (1) aerial station, one at-grade station, and one (1) subway station (if applicable) and review the corresponding fire 	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>N/A</p>	<p>are covered, but not fire drills and evacuations.</p> <p>Safety Committees for shops include a Safety representative on inspection walk-throughs; a memo is produced for the shop supervisor.</p> <p>Station PMIs involve entry of work orders into the FMIS and Safety is not involved. Safety does conduct its own station audits as part of the ISA process.</p> <p>Tool calibration is covered in Vehicle Maintenance section.</p> <p>See Safety report section discussing the need for a tracking log.</p> <p>See above.</p> <p>Deficiencies identified during station inspections receive individual work orders; they are closed out rather quickly. Deficiencies identified during shop Safety Committee inspections are noted on a memo/checklist for the shop supervisor, but their resolution is not yet tracked or expeditiously addressed (see report).</p> <p>A contractor automatically handles fire alarm and sprinkler inspections annually.</p>

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SSPP Element # 14 Facilities and Equipment Inspections (shops and stations): A description of the process used for facilities and equipment safety inspections, including: (i) identification of facilities and equipment subject to regular safety-related inspection and testing; (ii) techniques used to conduct inspections and testing; (iii) inspection schedules and procedures; and (iv) description of how results are entered into the hazard management process.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
	alarm and fire sprinkler system inspection, testing, and maintenance records to determine if: <ul style="list-style-type: none"> ○ The required annual fire alarm inspections and fire sprinkler system inspections were performed during the past year as specified in the referenced procedure. ○ The inspections were properly documented and noted discrepancies were corrected in a timely manner. ○ Other inspections, testing, and maintenance were performed as specified in the referenced procedure. ○ The inspections, testing, or maintenance were properly documented and noted discrepancies were corrected in a timely manner 		
14.4 Interviews with TriMet Safety Personnel	Interview Safety Department representatives to review the inspections they perform in TriMet 's shops and facilities: <ul style="list-style-type: none"> ✓ Ask these representatives to explain the activities they perform during these inspections and the conditions under which they perform them. ✓ Ask these representatives to describe the process through which corrective actions are developed, implemented and tracked to address findings from the inspections. Interview Safety Department representatives to review the accident and injury rates at TriMet's maintenance shops and facilities. <ul style="list-style-type: none"> ✓ Discuss the most significant shop safety issues and what is being done to address them. Ask if the State EPA has conducted an audit of the facilities and if they found any problems. <ul style="list-style-type: none"> ✓ If so, what corrective actions were taken by the transit agency? 	Yes Yes Yes Yes Yes N/A	Safety Committees for shops include a Safety representative on inspection walk-throughs; a memo is produced for the shop supervisor. Safety conducts its own station audits as part of the ISA process. Covered in Safety Data Analysis and Acquisition

**Oregon Department of Transportation
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SSPP Element # 14 Facilities and Equipment Inspections (shops and stations): A description of the process used for facilities and equipment safety inspections, including: (i) identification of facilities and equipment subject to regular safety-related inspection and testing; (ii) techniques used to conduct inspections and testing; (iii) inspection schedules and procedures; and (iv) description of how results are entered into the hazard management process.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
14.5 Interviews with Other TriMet Personnel	<ul style="list-style-type: none"> ✓ Randomly select employees and ask if they are familiar with TriMet's PPE requirements, location of MSDSs, facilities evacuation plan, and when the last fire drill was conducted. <ul style="list-style-type: none"> ○ Verify that answers are consistent with OSHA requirements and the SSPP and/or referenced or supporting procedures. 	<p align="center">Yes</p> <p align="center">Yes</p>	Selected an employee to look up MSDS on TriNet for a liquid substance found; employees appeared to be wearing proper PPE
14.6 Field Observations	<ul style="list-style-type: none"> ✓ If possible, observe an inspection of one of the audited facilities/equipment elements to ensure that they are conducted in accordance with the SSPP and the TriMet 's checklists. ✓ If possible, attend a shop safety or toolbox meeting to ensure that they are conducted as denoted in the approved SSPP. ✓ Verify if OSHA "Right to Know" poster is posted. ✓ Ask for their lost time injury rate and compare to industry standards. ✓ Verify that the OSHA injury/illness log is posted or on file. ✓ Verify spill containment and waste water reclamation process are in place to prevent environmental damage. 	<p align="center">Yes</p> <p align="center">N/A</p> <p align="center">Yes</p>	<p>ODOT reviewer, along with Safety representative and shop supervisors, conducted inspections of Ruby Junction and Elmonica.</p> <p>General safety data was discussed during reviews of Safety topics, including Safety Data Analysis and Acquisition.</p>
14.7 Inspections and Measurements	<ul style="list-style-type: none"> ✓ Randomly check fire extinguisher tag dates, exit sign illumination, shop housekeeping, and other safety related items from the checklist noted above for compliance. ✓ Verify use of machine guarding and appropriate hazardous materials storage. ✓ Select five (5) different items on the list of equipment that requires calibration, review their documentation, and inspect the equipment to determine if: <ul style="list-style-type: none"> ○ The selected items have a calibration label firmly affixed stating the date the item was last calibrated and the date the item is due for calibration. ○ The selected items are properly inventoried, stored, distributed for use, and calibrated with certified standards at 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p>	<p>Compliant. See report for housekeeping observations.</p> <p>Two handheld grinders were missing guards. An employee took them out of service immediately. Calibration of tools was recent. See Vehicle Maintenance report section for information on the calibration tracking log.</p>

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SSPP Element # 14 Facilities and Equipment Inspections (shops and stations): A description of the process used for facilities and equipment safety inspections, including: (i) identification of facilities and equipment subject to regular safety-related inspection and testing; (ii) techniques used to conduct inspections and testing; (iii) inspection schedules and procedures; and (iv) description of how results are entered into the hazard management process.

VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
	the prescribed intervals.		

Review completed by: James S. Young

Dates of Review: Nov. 30, 2011

Persons Interviewed:

- Bledsoe, James. Rail Maintenance Supervisor.
- Grove, Mark. Rail Maintenance Supervisor.
- Nordstrom, Wayman. Facilities Maintenance Supervisor.
- Papadopoulos, Elizabeth. Facilities Systems Manager.
- Parashos, Bill. Systems Supervisor.
- Ranney, David. Day Shift Assistant Supervisor.
- Roberts, Tony. System Safety Officer.
- Schwab, Chuck. Facilities Maintenance Supervisor

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SSPP Element # 15 Maintenance Audits and Inspections (Vehicles, Tunnel & Structures, Elevators, Communications): A description of the maintenance audits and inspections program including identification of the affected facilities and equipment, maintenance cycles, documentation required, and the process for integrating identified problems into the hazard management process.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
15.1 Document Review	<ul style="list-style-type: none"> ✓ Verify that the SSPP provides a description of TriMet's maintenance audits and inspection program, including identification of the affected facilities and equipment to be audited/inspected, maintenance cycles, and required documentation. ✓ Review the transit agency's SSPP to identify referenced plans, such as "Original Equipment Manufacturer (OEM) Recommendations," "Fleet Management Plan," "Facilities Maintenance Plan," and/or "System Operations and Maintenance Plan." <ul style="list-style-type: none"> ○ Review the identified plans to verify the specific facilities and equipment are included in their maintenance program and that they are consistent with items to be audited. ✓ Verify that a process has been created (and documented in the SSPP) to integrate concerns identified during maintenance audits and inspections into the transit agency's hazard management process. 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">No</p>	<p>[SSPP content verification is secondary to ODOT's regular review and approval of SSPP.] SSPP has very little detail about maintenance programs.</p> <p>See Hazard Management guidance form and Safety report section.</p>
15.2 Rules Review	<ul style="list-style-type: none"> ✓ Is a list available regarding the most current versions of (and updates to) the RTA's maintenance procedures for activities having a safety-impact? ✓ Review any rules related to maintenance audits and inspections and determine if they have been updated and distributed to TriMet personnel. ✓ Review documentation to verify that TriMet performs observations of maintenance employees as specified in the SSPP and/or supporting procedures and that they are evaluated based on their performance during unannounced observations to determine their compliance with safety rules, procedures, and/or practices. 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">No</p>	<p>A list was not available.</p> <p>Safety rules, including PPE, and Training SOPs are distributed.</p>
15.3 Records Review	<ul style="list-style-type: none"> ✓ Conduct a general review of maintenance records and documentation to verify that maintenance is being performed and documented. <ul style="list-style-type: none"> ○ Does the system use Maximo or a similar electronic system? ✓ Randomly select a sample of the vehicle fleet, structures, elevators/escalators, and communications and review the 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p>	<p>MMIS</p>

**Oregon Department of Transportation
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SSPP Element # 15 Maintenance Audits and Inspections (Vehicles, Tunnel & Structures, Elevators, Communications): A description of the maintenance audits and inspections program including identification of the affected facilities and equipment, maintenance cycles, documentation required, and the process for integrating identified problems into the hazard management process.

VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
Records Review <i>continued</i>	<p>maintenance records for those elements for the past year. Check to see that:</p> <ul style="list-style-type: none"> ○ The preventive maintenance (PM) performed was consistent with the transit agency’s maintenance program; ○ The PMs were conducted on schedule; ○ The proper type of PM was conducted according to the maintenance cycles promulgated in the maintenance program. <p>✓ Randomly select a sample of the vehicle fleet, structures, elevators/escalators, and communications equipment and check failure (or repair order, for structures) history and hazard tracking log for the previous three years. Note if a correlation between the PM maintenance cycle and corrective action/hazard reports exist in possible PM procedural deficiencies.</p> <p>✓ Review corrective action and failure records for a sample of the vehicle fleet, elevators/escalators, and communications, and note repetitive failures that might indicate mechanic error and/or training requirement, ineffective procedure, and/or material deficiencies.</p> <p>✓ Review “Maintenance Manuals”, “Preventive Maintenance Checklists”, “Inspection Records”, “Original Equipment Manufacturer Recommendations (OEM)” if available, “Corrective Maintenance Records”, “Operational QA/QC Program”, and other documented information and/or procedures, guidelines, etc. Randomly cross check documents for consistency, i.e. document control.</p> <ul style="list-style-type: none"> ○ Verify all documentation has dates, approvals, and control numbers. ○ Verify that documentation is available for all identified maintenance elements. ○ Verify that the documentation is current, consistent with each other, readily available to end users, and written and 	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>No</p> <p>No</p> <p>Yes</p>	<p>Yes</p> <p>No. See report for details.</p> <p>Yes</p> <p></p> <p></p> <p></p> <p>LRV Preventive Maintenance Inspection Procedures lack approvals, control numbers, and proper page dating.</p>

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SSPP Element # 15 Maintenance Audits and Inspections (Vehicles, Tunnel & Structures, Elevators, Communications): A description of the maintenance audits and inspections program including identification of the affected facilities and equipment, maintenance cycles, documentation required, and the process for integrating identified problems into the hazard management process.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
Records Review <i>continued</i>	<p>illustrated for the intended users.</p> <ul style="list-style-type: none"> ✓ Review the methodology by which the transit agency manages maintenance information/records (MMIS), whether electronically or manually. ✓ Verify that the MMIS is available to supervisors and mechanics responsible for maintenance and inspection. ✓ Review past documentation to verify that safety concerns and hazards identified from maintenance audits and inspections are being fed into TriMet’s hazard management process. ✓ Ensure that the appropriate checklists, i.e. (“<i>Inspection Card</i>”) include item inspected, type inspection performed, date of inspection, mechanic performing inspection, responsible supervisor, supervisor and mechanic approval signature, that all items associated with the type inspection have been properly inspected, and that deficient items have been properly documented and/or repaired. 	<p>Yes</p> <p>Yes</p> <p>No</p> <p>Yes</p>	<p>Manual PM checklists are retained; information is also entered into MMIS.</p> <p>MMIS is available to all.</p> <p>See Hazard Management guidance form and report section.</p> <p>Forms are not always complete (e.g., mileage missing).</p>
15.4 Interviews with TriMet Safety Personnel	<p>Interview representatives from the Safety Department to determine:</p> <ul style="list-style-type: none"> ✓ How they coordinate with TriMet’s maintenance functions to ensure that inspections and audits are being performed as required for safety-critical systems, transit vehicles, tunnel ventilation and flood control, elevators, escalators, and communications. ✓ How they receive assurances that these safety-critical systems are inspected/tested and/or serviced on a scheduled, periodic basis. ✓ How they receive assurances that, if an inspection were to indicate that a safety-critical system failed or was found to be in an out of tolerance condition, operations would be restricted to maintain safety until such time as an appropriate remedial action has been completed. ✓ Any independent inspections/audits performed by Safety Department representatives. 	No	See Safety & Related Topics report section and guidance forms.

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SSPP Element # 15 Maintenance Audits and Inspections (Vehicles, Tunnel & Structures, Elevators, Communications): A description of the maintenance audits and inspections program including identification of the affected facilities and equipment, maintenance cycles, documentation required, and the process for integrating identified problems into the hazard management process.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
15.5 Interviews with Other TriMet Personnel	<ul style="list-style-type: none"> ✓ Randomly interview maintenance personnel, including both supervisors and mechanics, to verify that they have available the most current maintenance procedures and that they understand and have been properly instructed on using the information. ✓ Ask these personnel if they have access to the testing and measurement equipment or devices that may be specified by inspection and testing procedures. ✓ Ask these personnel if they know of any immediate safety concerns or hazards that are the result of poor maintenance activities. ✓ Interview maintenance supervisors to verify how they communicate these issues to TriMet's Safety Department and other departments. <ul style="list-style-type: none"> ○ Note if their responses are consistent with what is stated in the SSPP and referenced/supporting procedures. 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p>	<p>Journeyists have received training and procedures.</p> <p>Testing and measuring equipment is available.</p> <p>None had safety concerns.</p> <p>Supervisors communicate these issues through their supervisors</p>
15.6 Field Observations	<ul style="list-style-type: none"> ✓ Observe at least one (1) routine maintenance audit or inspection to verify how the process is being implemented. 	Yes	Process is acceptable.
15.7 Inspections and Measurements	<ul style="list-style-type: none"> ✓ Pick one (1) maintenance element at random and field review a sampling of the most recent completed preventive maintenance reports (PMs), and, through visual inspection, to the extent possible, whether the required maintenance procedure was completed. <ul style="list-style-type: none"> ○ This is best done by using the "Preventive Maintenance Checklist" with each item on the list correlated with a specific procedure. Note any areas from the checklist that simply say "checked," "tightened," or "tested" without specific readings. These items should be noted as deficiencies if specific readings are supposed to be noted in the maintenance documentation. ✓ Using contractor services, in-house personnel, or FRA-certified vehicle inspectors, select and inspect at least one (1) vehicle from each of TriMet's vehicle fleets to determine if TriMet is maintaining its vehicles properly and adequately. 	<p align="center">No</p> <p align="center">Yes</p>	<p>A vehicle inspection, though brief and involving only one vehicle, indicated adequate maintenance.</p>

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Review completed by: Dennis Womack-Kalla

Dates of Review: Nov. 28 through Dec. 1, 2011

Persons Interviewed:

- Adams, Robert. Journeyist Mechanic.
- Blair, Daniel. Rail Equipment Manager.
- Bledsoe, James. Rail Equipment Supervisor.
- Branhart, Damian. Training/Engineering Supervisor.
- Francis, Jeffrey. Journeyman Mechanic.
- Grove, Mark. Rail Equipment Supervisor.

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SSPP Element # 15 Maintenance Audits and Inspections (Track, Power, and Signals): A description of the maintenance audits and inspections program including identification of the affected facilities and equipment, maintenance cycles, documentation required, and the process for integrating identified problems into the hazard management process.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
15.1 Document Review	<ul style="list-style-type: none"> ✓ Verify that the SSPP provides a description of TriMet’s maintenance audits and inspection program, including identification of the affected facilities and equipment to be audited/inspected, maintenance cycles, and required documentation. ✓ Review the transit agency’s SSPP to identify referenced plans, such as “Original Equipment Manufacturer (OEM) Recommendations,” “Fleet Management Plan,” “Facilities Maintenance Plan,” and/or “System Operations and Maintenance Plan.” <ul style="list-style-type: none"> ○ Review the identified plans to verify the specific facilities and equipment are included in their maintenance program and that they are consistent with items to be audited. ✓ Verify that a process has been created (and documented in the SSPP) to integrate concerns identified during maintenance audits and inspections into the transit agency’s hazard management process. 	Yes	<p>[SSPP content verification is secondary to ODOT’s regular review and approval of SSPP.]</p> <p>ODOT recommends that further information be added to SSPP. See related findings in report regarding both the maintenance program and safety meetings within Maintenance of Way.</p>
15.2 Rules Review	<ul style="list-style-type: none"> ✓ Is a list available regarding the most current versions of (and updates to) the RTA’s maintenance procedures for activities having a safety-impact? ✓ Review any rules related to maintenance audits and inspections and determine if they have been updated and distributed to TriMet personnel. ✓ Review documentation to verify that TriMet performs observations of maintenance employees as specified in the SSPP and/or supporting procedures and that they are evaluated based on their performance during unannounced observations to determine their compliance with safety rules, procedures, and/or practices. 	Yes	<p>ODOT recommends that TriMet formalize rules / procedures checks programs for Maintenance of Way, with additional program description in SSPP. See related finding in report.</p>

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SSPP Element # 15 Maintenance Audits and Inspections (Track, Power, and Signals): A description of the maintenance audits and inspections program including identification of the affected facilities and equipment, maintenance cycles, documentation required, and the process for integrating identified problems into the hazard management process.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
15.3 Records Review	<ul style="list-style-type: none"> ✓ Conduct a general review of maintenance records and documentation to verify that maintenance is being performed and documented. <ul style="list-style-type: none"> ○ Does the system use Maximo or a similar electronic system? ✓ Randomly select three (3) audited system elements (3 each in Track, Power, & Signals) and review the maintenance records for those elements for the past year. Check to see that: <ul style="list-style-type: none"> ○ The preventive maintenance (PM) performed was consistent with the transit agency’s maintenance program; ○ The PMs were conducted on schedule; ○ The proper type of PM was conducted according to the maintenance cycles promulgated in the maintenance program. ✓ Randomly select three (3) audited system elements and check failure history and hazard tracking log for the previous three years. Note if a correlation between the PM maintenance cycle and corrective action/hazard reports exist in possible PM procedural deficiencies. ✓ Review corrective action and failure records for three (3) audited systems and note repetitive failures that might indicate mechanic error and/or training requirement, ineffective procedure, and/or material deficiencies. ✓ Review “Maintenance Manuals”, “Preventive Maintenance Checklists”, “Inspection Records”, “Original Equipment Manufacturer Recommendations (OEM)” if available, “Corrective Maintenance Records”, “Operational QA/QC Program”, and other documented information and/or procedures, guidelines, etc., as applicable. Randomly cross check documents for consistency, i.e. document control. <ul style="list-style-type: none"> ○ Verify all documentation has dates, approvals, and control numbers. ○ Verify that documentation is available for all identified maintenance elements. 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">N/A</p> <p align="center">Yes</p> <p align="center">Yes</p>	<p>Maintenance practices and standards are generally appropriate.</p> <p>Several findings in the report are related to Maintenance of Way documentation completeness, and relative to some particular Substations, Signals, and Track elements, regarding frequency and completeness of inspections. See related findings in the report regarding Supervisor signoffs and completeness of MMIS entries.</p> <p>See Hazard Management guidance form and report section regarding tracking logs.</p>

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SSPP Element # 15 Maintenance Audits and Inspections (Track, Power, and Signals): A description of the maintenance audits and inspections program including identification of the affected facilities and equipment, maintenance cycles, documentation required, and the process for integrating identified problems into the hazard management process.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
	<ul style="list-style-type: none"> ○ Verify that the documentation is current, consistent with each other, readily available to end users, and written and illustrated for the intended users. ✓ Select a minimum of four separate sections of overhead catenary and review the relevant maintenance inspection records to determine if: <ul style="list-style-type: none"> ○ The required monthly and annual inspections were performed during the past 12 months as required by the referenced procedure. ○ The inspections were properly documented and noted discrepancies were corrected in a timely manner. ✓ Review TriMet track inspection reports for at least two (2) separate two-month periods during the last three (3) years to determine if: <ul style="list-style-type: none"> ○ All mainline tracks, yard leads, and transfer tracks were inspected as specified in TriMet’s SSPP, track standards, and supporting procedures. ○ The required inspections were properly documented and noted defects were corrected in a timely manner. ✓ Review TriMet geometry car inspection reports for at least two (2) separate two-month periods during the last three (3) years to determine if: <ul style="list-style-type: none"> ○ All mainline tracks were inspected quarterly and all yard leads and transfer tracks were inspected annually by a geometry car. ○ The required inspections were properly documented and noted defects were corrected in a timely manner. ✓ Review TriMet rail defect reports during the last three (3) years to determine if: <ul style="list-style-type: none"> ○ All mainline tracks were inspected biennially by a device capable of detecting internal flaws in the running rails. ○ The required inspections were properly documented and noted defects were corrected in a timely manner. 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">No</p> <p align="center">Yes</p>	<p align="center">See above and report section.</p> <p align="center">See above and report section.</p> <p align="center">See above and report section.</p>

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SSPP Element # 15 Maintenance Audits and Inspections (Track, Power, and Signals): A description of the maintenance audits and inspections program including identification of the affected facilities and equipment, maintenance cycles, documentation required, and the process for integrating identified problems into the hazard management process.				
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)	
Records Review <i>continued</i>	✓ Review the methodology by which the transit agency manages maintenance information/records (MMIS), whether electronically or manually.	Yes	See above and report section.	
	✓ Verify that the MMIS is available to supervisors and mechanics responsible for maintenance and inspection.	Yes		
	✓ Verify that the MMIS tracks inspection and maintenance cycles, failure reports, out of service equipment, materials, corrective action items, and other related maintenance tracking items, etc.	Yes		
	✓ Review past documentation to verify that safety concerns and hazards identified from maintenance audits and inspections are being fed into TriMet's hazard management process.	Yes		See Hazard Management guidance form and report section.
	✓ Review random sampling of three (3) system elements and ensure that the appropriate checklists, i.e. ("Inspection Card") include item inspected, type inspection performed, date of inspection, mechanic performing inspection, responsible supervisor, supervisor and mechanic approval signature, that all items associated with the type inspection have been properly inspected, and that deficient items have been properly documented and/or repaired.	Yes		See above and report section.
15.4 Interviews with TriMet Safety Personnel	Interview representatives from the Safety Department to determine:	Yes	Reviewed as part of performance reports, audit discussions with MOW, et al.	
	✓ How they coordinate with TriMet's track and systems maintenance functions to ensure that inspections and audits are being performed as required for safety-critical systems, such as track, train control, How they receive assurances that these safety-critical systems are inspected/tested and/or serviced on a scheduled, periodic basis.	Yes		
	✓ How they receive assurances that, if an inspection were to indicate that a safety-critical system failed or was found to be in an out of tolerance condition, operations would be restricted to maintain safety until such time as an appropriate remedial action has been completed.	Yes		
	✓ Any independent inspections/audits performed by Safety Department representatives.	Yes		

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SSPP Element # 15 Maintenance Audits and Inspections (Track, Power, and Signals): A description of the maintenance audits and inspections program including identification of the affected facilities and equipment, maintenance cycles, documentation required, and the process for integrating identified problems into the hazard management process.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
15.5 Interviews with Other TriMet Personnel	<ul style="list-style-type: none"> ✓ Randomly interview maintenance personnel, including both supervisors and mechanics, to verify that they have available the most current maintenance procedures and that they understand and have been properly instructed on using the information. ✓ Ask these personnel if they have access to the testing and measurement equipment or devices that may be specified by inspection and testing procedures. ✓ Ask these personnel if they know of any immediate safety concerns or hazards that are the result of poor maintenance activities. ✓ Interview maintenance supervisors to verify how they communicate these issues to TriMet’s Safety Department and other departments. <ul style="list-style-type: none"> ○ Note if their responses are consistent with what is stated in the SSPP and referenced/supporting procedures. 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p>	Conducted on-site inspections and discussions with personnel from Signals, Track, OCS, and Substations.
15.6 Field Observations	<ul style="list-style-type: none"> ✓ Observe at least one (1) routine maintenance audit or inspection to verify how the process is being implemented. 	Yes	Conducted at least one in each area audited.
15.7 Inspections and Measurements	<ul style="list-style-type: none"> ✓ Pick one (1) maintenance element at random and field review a sampling of the most recent completed preventive maintenance reports (PMs), and, through visual inspection, to the extent possible, whether the required maintenance procedure was completed. <ul style="list-style-type: none"> ○ This is best done by using the “<i>Preventive Maintenance Checklist</i>” with each item on the list correlated with a specific procedure. Note any areas from the checklist that simply say “checked,” “tightened,” or “tested” without specific readings. These items should be noted as deficiencies if specific readings are supposed to be noted in the maintenance documentation. ✓ Using contractor services, in-house personnel, or FRA-certified track inspectors, perform detailed visual and dimensional inspections/measurements of sample sections of mainline track, switches, crossovers, and turnouts to determine if the selected components are in compliance with TriMet’s track standards. 	<p align="center">Yes</p> <p align="center">Yes</p>	<p>See related findings regarding form completeness and inspection frequency.</p> <p>Observations (not measurements) were made.</p>

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SSPP Element # 15 Maintenance Audits and Inspections (Track, Power, and Signals): A description of the maintenance audits and inspections program including identification of the affected facilities and equipment, maintenance cycles, documentation required, and the process for integrating identified problems into the hazard management process.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
	<ul style="list-style-type: none"> ✓ Using contractor services, in-house personnel, or FRA-certified signal inspectors, perform detailed inspections of selected mainline train control and signal systems and components to ensure that they are being maintained to TriMet's standards. ✓ Using contractor services or in-house personnel, inspect a minimum of three (3) separate overhead catenary system segments to determine if they are in compliance with TriMet standards. Also, inspect a minimum of three (3) Traction Power Substations to determine if they are in compliance with TriMet standards. 	<p>N/A</p> <p>Yes</p>	<p>Observations (not measurements) were made.</p>

Review completed by: Daniel Hauber

Dates of Review: Nov. 28 – Dec. 1, 2011

Persons Interviewed:

- Bell, Roger. Signals Assistant Supervisor
- Bounds, Keith. Signals Supervisor
- Cecilian, John. OCS Supervisor
- Douglas, Le'Alys. MMIS Clerk
- Fontenot, Tim. Training Supervisor
- Galan, Chris. MMIS Clerk
- Hagel, Jack. Track Maintainer
- Keller, Tim. Substations Supervisor
- Kindig, Rick. Maintenance of Way Manager
- Messing, Ron. Signals Maintainer
- Poulivaati, Josh. OCS Maintainer
- Snyder, Tim. OCS Assistant Supervisor
- Williams, Butch. Track Maintainer
- Young, Steve. Training Supervisor

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SSPP Element # 16 Training and Certification Program for Employees and Contractors: A description of the training and certification program for employees and contractors, including: (i) categories of safety-related work requiring training and certification; (ii) a description of the training and certification program for employees and contractors in safety-related positions; (iii) process used to maintain and access employee and contractor training records; and (iv) process used to assess compliance with training and certification requirements.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
16.1 Document Review	<p>Verify that, in the SSPP and referenced or supporting procedures, TriMet has established a program to ensure that employees and contractors are qualified to perform their job duties in compliance with established rules and procedures.</p> <ul style="list-style-type: none"> ✓ Verify that the SSPP and referenced or supporting procedures describe the categories of safety-related work requiring training and certification. ✓ Verify that the SSPP and referenced or supporting procedures describe the training and certification program for employees and contractors in safety-related positions. ✓ Verify that the SSPP and referenced or supporting procedures describe the process used to maintain and access employee and contractor training records. ✓ Verify that the SSPP and referenced or supporting procedures describe the process used to assess compliance with training and certification requirements. 	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>[SSPP content verification is secondary to ODOT's regular review and approval of SSPP.]</p> <p>See SSPP sections J and K.</p> <p>The SSPP states that records are the responsibility of respective departments, though not much detail is offered relative to how these records must be kept or accessed. Operations Training and Rail Equipment Maintenance records appeared complete and up to date.</p>
16.2 Rules Review	<ul style="list-style-type: none"> ✓ If applicable, review any rules related to the training and certification program for employees and contractors and determine if they have been updated and distributed to TriMet personnel. ✓ How does TriMet ensure that updated rules and bulletins are addressed in TriMet initial, remedial, and refresher training? ✓ How does TriMet ensure that updated maintenance procedures are addressed in initial, remedial, and refresher training courses provided for maintenance personnel? 	<p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>There is a lack of a clear process for Special Instructions and other interim changes to rules and procedures. See associated finding.</p>
16.3 Records Review	<ul style="list-style-type: none"> ✓ Through a records review: <ul style="list-style-type: none"> ○ Verify that a process for maintaining and accessing employee and contractor training records is in place. ○ Verify that categories of safety-related work requiring training and certification have been identified. ○ Verify that employee and contractor job classifications requiring initial and refresher training and certification have been 	<p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>Records for Operators, Supervisors, Controllers , and Rail Equipment Maintenance maintainers, and MOW employees appeared complete and up to date.</p>

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SSPP Element # 16 Training and Certification Program for Employees and Contractors: A description of the training and certification program for employees and contractors, including: (i) categories of safety-related work requiring training and certification; (ii) a description of the training and certification program for employees and contractors in safety-related positions; (iii) process used to maintain and access employee and contractor training records; and (iv) process used to assess compliance with training and certification requirements.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
Records Review <i>continued</i>	<ul style="list-style-type: none"> identified. ○ Verify that TriMet has processes in place to assess compliance with its training and certification requirements. ○ Verify that corrective actions taken to discipline employees and contractors for failure to follow established procedures once trained and certified are established and consistent. ✓ Review training programs to verify: <ul style="list-style-type: none"> ○ That training records are maintained appropriately. ○ That training consists of classroom and hands-on training, as appropriate. ✓ Verify that contractor training requirements are specified in contract documents. <ul style="list-style-type: none"> ○ Review documents and verify that requirements are being met. ✓ Randomly select at least six (6) TriMet employees in each of the following classifications: <ul style="list-style-type: none"> ○ Train Operator ○ Operation Control Center (OCC) Supervisor ○ Line Supervisor ○ Yard Supervisor (if applicable) ○ Track Inspector ○ Vehicle Maintainer ○ Signals Mechanic ○ Power/OCS Mechanic ✓ Review training and recertification records for the above employees for 	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>N/A</p> <p>Yes</p>	<p>Training Supervisors are responsible for ensuring that Operations Training requirements are up to date; this is done through a tracking spreadsheet. The tracking log for Rail Equipment maintainers was not complete; see related finding in report. The security training program lacks formalization.</p> <p>See above and respective report sections for notes on records.</p> <p>Reviewed sample of records for 10 Train Operators, 10 Rail Supervisors, 10 Rail Controllers, and of several Rail Equipment maintainers. Yard Supervisor position does not exist at TriMet. Security records should be formalized and maintained by TPD (see report for details).</p>

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SSPP Element # 16 Training and Certification Program for Employees and Contractors: A description of the training and certification program for employees and contractors, including: (i) categories of safety-related work requiring training and certification; (ii) a description of the training and certification program for employees and contractors in safety-related positions; (iii) process used to maintain and access employee and contractor training records; and (iv) process used to assess compliance with training and certification requirements.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
	the past three (3) years to determine if: <ul style="list-style-type: none"> ○ The employee has completed the initial training program and refresher and remedial training as necessary. ○ The course content was appropriate and adequate to meet training and recertification requirements. ○ The employee has been recertified at the correct frequency and currently meets the criteria to operate a vehicle or perform maintenance work. 	Yes Yes Yes	
16.4 Interviews with TriMet Safety Personnel	Conduct interviews with representatives from the Safety Department to: <ul style="list-style-type: none"> ✓ Determine the structure of TriMet employee training – is there a central Training Department? Do individual departments train their own employees? ✓ Assess the role of safety in supporting and evaluating TriMet’s training needs and programs. ✓ Verify that training programs are reviewed and revised as necessary to ensure accuracy and relevance to current operations and maintenance. ✓ Verify the implementation of any training and recertification provided to employees directly by the Safety Department, if applicable. 	Yes Yes Yes Yes	Rail Operations Training is separate from Rail Operations and Field Operations. The Training group falls under Operations Support. Rail Equipment Maintenance provides an apprenticeship program from initial training and refresher training on specific items. MOW has two employees dedicated to training. Security training is provided within TPD or by external academic institutions. TriMet assigns a Safety representative to take part in discussions of training and certification programs for Rail Operations and Field Operations personnel.
16.5 Interviews with Other TriMet Personnel	Conduct interviews with representatives of the Training Department (and/or other departments responsible for administering training) to: <ul style="list-style-type: none"> ✓ Determine the expertise of the trainers. ✓ Determine the extent and types of training offered by the Training Department (if applicable). ✓ Determine if budget constraints have prevented training. ✓ Determine how changes to training programs are communicated to the Safety Department prior to their implementation. 	Yes Yes Yes Yes	TriMet has qualified Training Supervisors who directly administer Rail Operations Training programs. For Rail Equipment Maintenance, maintainers enter an apprenticeship program that complies with State of Oregon requirements. Security training exists but lacks formalization (see report).

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Review completed by: Michael Crowther, Daniel Hauber, Robert Kogan, and Dennis Womack-Kalla

Dates of Review: Nov. 28 through Dec. 1, 2011

Persons Interviewed:

- Branhart, Damian. Training/Engineering Supervisor.
- Crebs, Michael. TPD Commander.
- Daniels, Kathy. Controlled Access Administrator, Safety & Security
- Fontenot, Tim. MOW Training Supervisor
- Morgan, Allen, Manger, Operations Training
- Strickland, Jim, Assistant Manager, Rail Operations Training
- Talbot, Hayden, Director, Transportation Operations
- Young, Steve. MOW Training Supervisor
- Training Supervisors

**Oregon Department of Transportation
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SSPP Element # 17 Configuration Management and Control: A description of the configuration management control process, including: (i) the authority to make configuration changes, (ii) process for making changes, and (iii) assurances necessary for all involved departments to be formally notified.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
17.1 Document Review	<ul style="list-style-type: none"> ✓ Verify that the SSPP and/or referenced and support procedures provide a description of TriMet's configuration management control process. ✓ Verify that this process includes: <ul style="list-style-type: none"> ○ the authority to make configuration changes, ○ process for making changes, and ○ assurances necessary for all involved departments to be formally notified. ✓ Verify that a "<i>Configuration Management Plan (CMP)</i>" or similar document has been established by TriMet to guide its program. 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p>	<p>Section P of the SSPP describes this process.</p> <p>All changes go through and are approved in TCRC.</p> <p>There is not currently a specific CMP for TriMet. The TCRC is the formal means of managing all configuration changes. Introduction of new SMS programs may affect this process and result in formalization of CM activities.</p>
17.2 Rules Review	Review any rules related to TriMet's Configuration Management and Control process and determine if they have been updated and distributed to TriMet personnel, if applicable.	N/A	
17.3 Records Review	<ul style="list-style-type: none"> ✓ Verify the "<i>Configuration Management Plan</i>" includes as a minimum the following: <ul style="list-style-type: none"> ○ A baseline system configuration process. ○ A tracking mechanism for the evolution of the system through its life cycle. ○ An Interface process or an attendant "Interface Coordination Document" that defines this process and responsibilities. ○ Methods used to track configuration control changes, such as engineering change requests (ECRs), engineering change notices (ECNs), field modification instructions (FMIs), etc. ○ The establishment of a Configuration Control Board (CCB) or similar organization to review change requests and ensure that all departments within the agency that are affected by the proposed change are represented. ○ Roles, responsibilities and authority for configuration control activities for all departments including their involvement on the 	Yes	<p>The TCRC is the body that oversees all changes.</p> <p>Configuration Management appears to be incorporated into the Safety Certification Process and into all System Modifications via the TCRC.</p> <p>TCRC reviews and approves all configuration changes.</p>

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SSPP Element # 17 Configuration Management and Control: A description of the configuration management control process, including: (i) the authority to make configuration changes, (ii) process for making changes, and (iii) assurances necessary for all involved departments to be formally notified.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
Records Review <i>continued</i>	<ul style="list-style-type: none"> ○ Configuration Control Board. ○ Integration of the Configuration Control Board with the functional organization. ○ Classification of configuration control changes and coordination activities. ○ The configuration management process is coordinated with the System Modification Review and Approval Process and the Safety and Security Certification Process. ✓ If applicable, randomly select two (2) safety critical changes that were executed in the last 12 months to ensure documentation was properly updated to include at a minimum: <ul style="list-style-type: none"> ○ As-built drawings ○ As-built specifications ○ Interface control documentation ○ Rules, procedures and policies ○ Training documents ○ Operations and maintenance manuals ✓ Review RTA training curriculums and materials related to configuration management to assess how the RTA trains pertinent employees on this topic, as applicable. ✓ If applicable, randomly select an ECR, ECN and FMI and verify that: <ul style="list-style-type: none"> ○ Proper forms were used. ○ Forms were properly circulated by the CCB. ○ Change was reviewed and approved by the CCB. ○ Change was reviewed and approved by the General Manager. ○ Change was circulated to the proper departments for execution. 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p>	<p>TCRC minutes include information about station modifications, introduction of a new button in LRV cabs, and other safety-critical changes.</p>
17.4 Interviews with TriMet Safety Personnel	<p>Interview Safety Department representatives to assess their knowledge of TriMet's configuration management process and the activities they perform to support this process.</p> <ul style="list-style-type: none"> ✓ Verify that TriMet personnel have access to TriMet's configuration 	Yes (to all)	Safety is involved extensively in the TCRC process.

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SSPP Element # 17 Configuration Management and Control: A description of the configuration management control process, including: (i) the authority to make configuration changes, (ii) process for making changes, and (iii) assurances necessary for all involved departments to be formally notified.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
	<p>management system and document control program.</p> <ul style="list-style-type: none"> ✓ Verify that TriMet Safety Department personnel provide appropriate review and sign-off of updated documents prepared by other TriMet departments. ✓ Verify that the TriMet Safety Department follows TriMet's configuration management process in updating its own documents and plans. ✓ Verify that configuration changes are assessed for potential hazards through TriMet's hazard management process as appropriate. 		
17.5 Interviews with Other TriMet Personnel	<ul style="list-style-type: none"> ✓ Interview individuals that have been identified as having responsibility in the "<i>Configuration Management Plan</i>" and/or "<i>Interface Control Document</i>" to verify their understanding of the plans and how they coordinate with the TriMet's Safety Department on configuration management issues. ✓ Interview other pertinent TriMet managers, as applicable, to verify that they are properly following the Configuration Management Plan. ✓ As appropriate, request a demonstration of the configuration management and document control system. 	Yes (to all)	There is active involvement from key departments in TriMet on the TCRC.
17.6 Field Observations	<ul style="list-style-type: none"> ✓ Verify that operating manuals, rule books, and other documents are current during three-year review site visits 	Yes	Entire ODOT team conducted field reviews. Any discrepancies are noted in the appropriate section of the review.

Review completed by: Christopher Wallgren

Dates of Review: Nov. 28 through Dec.1, 2011

Persons Interviewed:

- Gilbreath, Tommye. Manager, System Safety.
- Saporta, Harry. Safety & Security Executive.

**Oregon Department of Transportation
Guidance for Three-Year Safety and Security Review of TriMet**

SSPP Element # 18 Local, State and Federal Requirements: A description of the safety program for employees and contractors that incorporates the applicable local, state, and federal requirements, including: (i) safety requirements that employees and contractors must follow when working on, or in close proximity to, TriMet controlled property; and (ii) process for ensuring the employees and contractors know and follow the requirements.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
18.1 Document Review	<ul style="list-style-type: none"> ✓ Verify that the SSPP and referenced/supporting procedures include a description of the safety program for employees and contractors that includes applicable local, state, and federal requirements. ✓ Verify that the SSPP and referenced/supporting procedures include safety requirements that employees and contractors must follow when working on, or in close proximity to, rail transit agency controlled property. ✓ Verify that the SSPP and referenced/supporting procedures include a process for ensuring the employees and contractors know and follow the requirements. 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p>	The SSPP should include general information on TriMet's compliance with federal, state and local compliance. It should also contain information on which groups perform what training (where not already noted) and who tracks the training information.
18.2 Rules Review	If applicable, review any rules related to local, state and federal requirements and determine if they have been updated and distributed to TriMet personnel.	Yes	Rule Book is up-to-date and incorporates safety rules based on various regulatory requirements.
18.3 Records Review	<ul style="list-style-type: none"> ✓ Verify that the transit agency's employee and contractor safety programs incorporate all elements required by local, state or federal law. ✓ Verify that the safety requirements that employees and contractors must follow when working on, or in close proximity to transit agency controlled property, are in place. ✓ If the agency has ever had a problem with complying with local, state, or federal requirements, review past documentation to verify how the issue was handled and resolved by the agency (if applicable). ✓ Verify construction projects have specific procedures in place to ensure worker protection and public safety, if applicable. ✓ Verify that implementation of these procedures is the responsibility of the contractor organization performing the work and the transit agency. ✓ Verify the transit agency's operating and maintenance safety rules and procedures are included in construction contracts to bind contractors and employees to fulfilling their roles and responsibilities safely. ✓ Verify that the transit agency has a process in place for ensuring employees and contractors know and follow safety rules and 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">N/A</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p>	<p>The Construction Safety Program requires all contractors' safety programs to "comply with all applicable Federal, State, and local safety codes and standards." It lists the various agencies.</p> <p>TriMet complies with federal, state, and local requirements, but detailed information is not currently contained in the SSPP or one central location.</p> <p>Safety Department audits compliance.</p> <p>Contractors' employees must also undergo contractor / ROW safety training.</p>

**Oregon Department of Transportation
Guidance for Three-Year Safety and Security Review of TriMet**

SSPP Element # 18 Local, State and Federal Requirements: A description of the safety program for employees and contractors that incorporates the applicable local, state, and federal requirements, including: (i) safety requirements that employees and contractors must follow when working on, or in close proximity to, TriMet controlled property; and (ii) process for ensuring the employees and contractors know and follow the requirements.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
	<p>procedures.</p> <ul style="list-style-type: none"> ✓ Verify appropriate forms of disciplinary action are taken consistently to correct employees and contractors who have not followed established safety rules and procedures. 	No	
18.4 Interviews with TriMet Safety Personnel	Interview TriMet Safety Department representatives to discuss the local, state and federal requirements addressed by TriMet in this section of the SSPP.	Yes	Safety handles only bloodborne pathogen training and respiration-fitness training. The Red Cross handles CPR. Training records are maintained by different parties within TriMet or by contractors performing the training. SSPP does not clearly describe specific safety training requirements or “owners’ of such training, as this can be dynamic.
18.5 Interviews with Other TriMet Personnel	<p>If applicable, interview TriMet personnel responsible for ensuring that local, state, and federal requirements are followed to verify the administration and implementation of the following:</p> <ul style="list-style-type: none"> • OSHA Right to Know regulations • Penalties for employees and contractors who fail to comply with applicable laws and regulations 	No No No	

Review completed by: Lynda Horst, Christopher Wallgren

Dates of Review: Nov. 28 through Dec. 1, 2011

Persons Interviewed:

- Gilbreath, Tommye. Manager, System Safety.

**Oregon Department of Transportation
Guidance for Three-Year Safety and Security Review of TriMet**

SSPP Element # 19 Hazardous Materials Programs: A description of the hazardous materials program including the process used to ensure knowledge of and compliance with the program requirements.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
19.1 Document Review	Verify that the SSPP and/or referenced and supporting procedures contain a description of the hazardous materials program, including the process to ensure knowledge of and compliance with the program requirements.	Yes	Section R of the SSPP details the Hazards Materials / Hazardous Communications Program.
19.2 Rules Review	Review any rules related to TriMet’s hazardous materials program and determine if they have been updated and distributed to TriMet personnel, if applicable.	No	
19.3 Records Review	<ul style="list-style-type: none"> ✓ Verify that a hazardous materials (HazMat) program is documented in a hazardous materials plan or procedure. ✓ Verify that the transit agency has developed an OSHA or state equivalent compliant HazMat program (if applicable). ✓ Verify that the program includes a process to familiarize the employees with the hazards presented by materials used in the work place and the Employee Safety Program. ✓ Verify the program assigns roles and responsibilities to specific departments and personnel for reviewing and approving materials used or to be purchased and used on transit agency property. ✓ Verify that follow-up activities are performed to verify field use of approved materials to ensure that safe and proper use, handling, storage, and disposal methods are employed. ✓ Verify that MSDS for all chemicals and other materials that are currently used, or that are being considered for purchase and use are reviewed and approved prior to chemical purchase. ✓ Verify that hazardous materials discharge/spill reports for incidents that occurred during the past three (3) years have been prepared and filed. ✓ Verify that all MSDS are available to all personnel who work with hazardous materials. 	<p>Yes</p> <p>N/A</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>N/A</p> <p>Yes</p>	<p>The SSPP details the Hazards Materials / Hazardous Communications Program. TriMet utilizes a formal process for procuring and handling hazardous materials and an online database of all materials on-site. Purchasing Card procedures also detail requirements.</p> <p>Internal Audits and other facility inspections are performed.</p> <p>Employees may request use of a new chemical; a form asks a series of questions. The Environmental Health & Safety Specialist reviews it; if he approves it, the Environmental Dept. reviews it. If they approve it, the vendor gets notification of approval. TriMet is trying to get further involvement from Purchasing. MSDS are all electronic and available via TriMet Chemical Compliance Manager application on TriNet</p>

**Oregon Department of Transportation
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SSPP Element # 19 Hazardous Materials Programs: A description of the hazardous materials program including the process used to ensure knowledge of and compliance with the program requirements.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
19.4 Interviews with TriMet Safety Personnel	<ul style="list-style-type: none"> ✓ Interview TriMet Safety Department representatives to discuss the TriMet 's hazardous materials program and the role of the TriMet Safety Department in enforcing this program. Be sure to discuss the following: <ul style="list-style-type: none"> ○ The procurement process for insecticides, herbicides, chemicals, and solvents. ○ If a MSDS for each hazardous material is on file with the System Safety Department. ○ If the approved MSDSs have been entered into an MSDS filing system for tracking. 	Yes	
		Yes	
		Yes	Available on TriNet
		Yes	Available on TriNet
19.5 Interviews with Other TriMet Personnel	<ul style="list-style-type: none"> ✓ If applicable, interview TriMet personnel responsible for administering the hazardous materials program to verify compliance with applicable plans, policies, and procedures (such as the MSDS process) ✓ Verify that appropriate personal protective equipment (PPE) is provided and used as required by the MSDS, material manufacturer, and the transit agency, as applicable ✓ Verify that MSDSs are readily available to all pertinent employees and contractors of the transit agency and that they have been properly instructed on the use of the MSDS system. 	Yes	Interviewed Environmental Health & Safety Specialist
		Yes	
		Yes	Available to all on TriNet.

Review completed by: Christopher Wallgren, James S. Young

Dates of Review: Nov. 28 through Dec. 1, 2011

Persons Interviewed:

- Black, Craig. Environmental Health & Safety Specialist.
- Gilbreath, Tommye. Manager, System Safety.

**Oregon Department of Transportation
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SSPP Element # 20 Drug and Alcohol Program: A description of the drug and alcohol program and the process used to ensure knowledge of and compliance with program requirements.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
20.1 Document Review	<ul style="list-style-type: none"> ✓ Verify that the SSPP contains a description of TriMet's drug and alcohol program requirements. ✓ Verify that TriMet has a drug and alcohol policy and that it is consistent with federal and state requirements. 	<p align="center">Yes</p> <p align="center">Yes</p>	[SSPP content verification is secondary to ODOT's regular review and approval of SSPP.]
20.2 Rules Review	Review any rules related to TriMet's Drug and Alcohol Program and determine if they have been updated and distributed to TriMet personnel and to contractors, if applicable.	Yes	
20.3 Records Review	<ul style="list-style-type: none"> ✓ Assess whether TriMet has ever undergone a federal or state audit of its drug and alcohol program? <ul style="list-style-type: none"> ○ If so, what were the outcomes? ○ Have all findings or recommendations been addressed? ✓ Review training program curriculums to verify the transit agency is training all employees regarding its drug and alcohol policy. ✓ Review TriMet records and documents to determine the number of employees in safety sensitive positions who tested positive (or refused to take a test) during the past 3 years: <ul style="list-style-type: none"> ○ For pre-employment; ○ With a reasonable cause; ○ Post-Accident; ○ At random; ○ To return to Work; ○ As a follow-up. ✓ Confirm that this information was accurately reported to FTA through TriMet's annual submission to the Drug and Alcohol Management Information System (DAMIS). ✓ Confirm that TriMet has a policy in place for managing the use of Over-the-Counter drugs. 	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p>	Last FTA audit of the TriMet drug and alcohol program was in July 2010. TriMet has since successfully responded to FTA, which has acknowledged full compliance.

**Oregon Department of Transportation
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SSPP Element # 20 Drug and Alcohol Program: A description of the drug and alcohol program and the process used to ensure knowledge of and compliance with program requirements.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
20.4 Interviews with TriMet Safety Personnel	✓ Interview TriMet Safety Department personnel to verify that they are familiar with the requirements program and provide appropriate support for its implementation.	Yes	The drug and alcohol program is administered through the Safety department.
	✓ Ensure that TriMet Safety Department personnel support implementation of TriMet's post-accident drug and alcohol testing during accident investigations.	Yes	
20.5 Interviews with Other TriMet Personnel	✓ Interview TriMet personnel responsible for administering the program to verify that they are familiar with the requirements and are implementing the program according to federal standards.	Yes	Pertinent TriMet staff appeared to be fully familiar with drug and alcohol program requirements.
	✓ Interview transit personnel, including supervisors, responsible for administering the program and verify they are familiar with the requirements and are implementing the program according to federal standards.	Yes	

Review completed by: Robert Kogan

Dates of Review: Nov. 30, 2011

Persons Interviewed:

- Taylor, Brooke. Designated Employer Representative.

**Oregon Department of Transportation
Guidance for Three-Year Safety and Security Review of TriMet**

SSPP Element # 21 Procurement Process: A description of the measures, controls, and assurances in place to ensure that safety principles, requirements and representatives are included in TriMet's procurement process.			
VERIFICATION METHOD	RECOMMENDED ACTIVITIES	Reviewed Element (Yes/No)	Comment(s)
21.1 Document Review	Verify that the SSPP and any referenced or supporting procedures include a description of the process used by TriMet to ensure that safety issues and concerns are addressed in the procurement process.	Yes	Safety issues are identified in the procurement process.
21.2 Rules Review	Ensure that any updated rules relevant to the TriMet procurement process are communicated appropriately.	N/A	
21.3 Records Review	Verify that the SSPP contains a description of the basic procurement processes that must be followed by the transit agency to assure that safety concerns and issues are addressed. <ul style="list-style-type: none"> ○ Is the procurement process tied to the transit agency's hazard management process? ○ Are procurements of new equipment and material first reviewed by the safety department, engineering, operations, and/or maintenance staff to verify the new equipment or materials won't present a hazard to the existing system? ○ Do all procurement processes for hazardous materials address all appropriate rules and regulations? 	Yes Yes Yes	These questions are not fully detailed in the SSPP. An evaluation committee exists to determine compliance of existing and new products. Manager of Purchasing reviews monthly P-Card statements to ensure approved MSDS materials are being used. There is no official QA/QC person to check receipt of all materials; the respective maintenance supervisor is relied upon for this.
21.4 Interviews with TriMet Safety Personnel	Interview Safety Department representatives and have them explain how they work through their procurement process to ensure that safety issues are identified, assessed, and resolved.	Yes	Procurement should continue to expand its use of Safety personnel expertise for specifications early to midway through the process, as Procurement has found this to be beneficial.
21.5 Interviews with Other TriMet Personnel	Interview transit personnel responsible for procurement to verify that they are aware of, and are following, TriMet's processes to ensure that safety issues and concerns are addressed in the procurement process.	N/A	

Review completed by: Christopher Wallgren, James S. Young

Dates of Review: Nov. 28, 2011

Persons Interviewed:

- Frank, James. Director of Procurement.

**Oregon Department of Transportation
Guidance for Three-Year Safety and Security Review of TriMet**

- Imondi, Ron. Manager of Purchasing
- Woodall, Brian. Contracts Manager.