
Review of Quality Assurance Program,
Department of Transit Infrastructure and Engineering Services

Final Report



Internal Operations No. 14-001
September 5, 2013

Washington Metropolitan Area Transit Authority
Office of Inspector General

M E M O R A N D U M

FINAL AUDIT REPORT WITH RECOMENDATIONS

Internal Operations No. 14-001



SUBJECT: Review of Quality Assurance Program,
Department of Transit Infrastructure
and Engineering Services

DATE: September 5, 2013

FROM: OIG – Helen Lew *IS/*

TO: DGMO – A. Robert Troup

This **Final Audit Report**, entitled *Review of Quality Assurance Program, Department of Transit Infrastructure and Engineering Services*, presents the results of our audit. The objectives of the audit were to determine whether: (1) the quality assurance program in the Department of Transit Infrastructure and Engineering Services is operating effectively and efficiently, including meeting the organizational mission, goals, and objectives, and (2) the First Article Inspection process is effective and efficient. The latter objective was requested by the Deputy General Manager Operations (DGMO).

Background

In July 2007, the Washington Metropolitan Area Transit Authority's (WMATA) former General Manager (GM) reorganized the Office of Quality Assurance, renamed it the Office of Quality Assurance and Warranty (QAAW), and placed it under the Department of Rail Operations Delivery. With this reorganization, the former GM authorized QAAW to establish a quality assurance program for the Department of Rail Operations Delivery. He also mandated the department provide quality oversight for Rail programs, projects and contracts funded by either the Federal Transit Administration or by WMATA operating funds.

In August 2008, the Department of Rail Operations Delivery was renamed the Department of Transit Infrastructure and Engineering Services (TIES). TIES reports to the DGMO, and QAAW is an office within TIES.

QAAW has written a new mission statement, approved on July 22, 2013, by the Assistant General Manager of TIES. The mission statement is to ensure WMATA's "Standards for Quality" and the required leadership, direction, and management to maintain the TIES quality management system are effectively implemented and maintained.

QAAW has three branches: (1) Rail, (2) Track and Structures (TRST)/Chief Engineer Infrastructure Services (CENI)/Systems Maintenance (SMNT), and (3) Programs. In addition to TIES, QAAW supports Rail Transportation (RTRA), which is not in TIES but reports directly to the DGMO.

QAAW's goal is to implement quality assurance policy and program objectives to ensure continuous improvement of processes, services, and equipment.

QAAW is responsible for performing audits, reviews, and assessments for quality assurance activities, covering the 106+ mile WMATA rail transit system, which presently consists of 1100+ rail cars, track wayside signaling and support equipment, 86 rail stations, and various support facilities. QAAW also monitors compliance with WMATA warranty provisions for purchases of equipment, components, parts, and materials. QAAW assists and provides support to all offices within TIES.¹

¹ TIES consist of Car Maintenance, Elevator and Escalator, Infrastructure Services, Plant Maintenance, Systems Maintenance, Track and Structure, Storerooms and Material Logistics, Vehicle Program Services and Intermodal Strategic Planning.

TIES' approved Fiscal Year (FY) 2013 budget was \$428.7 million; and QAAW's approved FY 2013 budget was \$2.1 million. QAAW has 31 employees.

In addition to QAAW's role for quality assurance, the Department of System Safety and Environmental Management (SAFE) was authorized in March 2002, to re-establish a quality assurance program to provide quality oversight for projects and contracts for Operations. The Chief Safety Officer (CSO) delegated responsibility to the Deputy Chief, Corporate Quality Assurance (QUAL), to put a corporate quality assurance program into effect during calendar year 2014, which would expand its services beyond Operations, to include all of WMATA. The Deputy Chief, QUAL will have responsibility for developing and issuing a Corporate Quality Assurance manual and monitoring compliance with the requirements, including internal safety audit results.

Audit Results

OIG generally found the Quality Assurance and Warranty (QAAW) program is operating effectively and efficiently and meeting the organizational mission, goals and objectives of the Department of Transit Infrastructure and Engineering Services (TIES) in Railcar Maintenance (CMNT). Specifically, OIG noted QAAW (1) has policies and procedures that prescribed their responsibility to provide a comprehensive quality assurance and warranty program; (2) conducts oversight for railcar maintenance, railcar procurement, vehicle engineering and design; (3) reviews engineering modification instructions and software modifications to ensure the integrity of systems and equipment was maintained; and (4) conducts acceptance inspections for parts, materials and components shipped to the Metro Supply Facility (MSF).

These inspections are necessary to ensure railcar parts, materials and components comply with Vehicle Program Services (CENV) drawings and specifications.

OIG, however, found QAAW should expand its quality assurance program by conducting acceptance inspections for parts, materials and components shipped to other storerooms outside of MSF. In addition, the quality assurance program should implement acceptance inspections and the warranty management program in the other offices within TIES, in order to provide a high level of customer service and delivery.

According to a new QAAW Quality Management System Manual approved July 2013, "QAAW shall develop and administer a program of quality assurance and warranty for WMATA internal offices within TIES Operations and perform quality oversight activities for the efforts of external programs and projects." At the time of our audit, the quality assurance and warranty programs had not been implemented for all internal offices and storerooms within TIES due to funding and manpower constraints.

OIG also found the First Article Inspections process in QAAW is operating effectively and efficiently. First Article Inspection is the process for initiating, evaluating and approving parts and components that are new and being used for the first time to maintain and/or enhance the WMATA rail system. The First Article Inspections are to ensure compliance with WMATA Engineering's approved drawings or specifications.

We provided a draft of this report to the DGMO for review and comment on August 22, 2013. In the DGMO's September 4, 2013, response, he concurred with the findings, provided that OIG considers revised language provided on August 27, 2013. The DGMO indicated concurrence with the two recommendations in the draft report. The complete text of the DGMO's response is included as Attachment 1 to this report.

We reviewed the DGMO's comments and made revisions to the report, where appropriate.

Finding 1- QAAW should expand its Quality Assurance program by conducting Acceptance Inspections for parts, materials and components shipped to other storerooms outside of MSF, and by expanding inspections to other offices within TIES.

QAAW conducts acceptance inspections for parts, materials and components shipped to MSF used to support CMNT. However, QAAW does not conduct acceptance inspections for CMNT parts, materials and components shipped to other locations. For example, parts delivered to storeroom 200 (Brentwood) and storeroom 251 (Greenbelt) are not inspected.

Acceptance inspections are necessary to ensure parts, materials and components comply with CENV drawings and specifications. During acceptance inspections, QAAW examines how vendors package parts, and they determine if parts were damaged during packaging.

QAAW also does not conduct acceptance inspections of materials, parts, and equipment for other offices within TIES such as, SMNT, TRST, PLNT, and ELES.

The Operations Administration Procedures (OAP), Procedure Number 113-05, was written to prevent the unauthorized use of materials, parts, tools and equipment that do not meet the established criteria or specifications set forth by TIES.

OAP Procedure Number 113-05 states rail car parts and materials, tools or equipment shall not be entered into inventory prior to an acceptance inspection. All parts and materials shall meet specification and drawing requirements, and shall meet inspections described in this procedure before deemed suitable for entry into inventory.

The Department of Quality Assurance and Warranty, Quality Management System Manual, section 2.0, states QAAW shall develop and administer a program of quality assurance and warranty for WMATA internal offices within TIES operations.

According to the QAAW Director, because QAAW has insufficient resources, acceptance inspections are only conducted at MSF for CMNT. Insufficient resources was also given as a reason the other offices in TIES do not receive acceptance inspections from QAAW. The DGMO directed the Director of QAAW to expand the program to other offices as funding becomes available.

Acceptance inspections are important because inspections ensure parts, materials and equipment comply with CENV drawings and specifications. In calendar year 2012, QAAW identified 85 different parts not accepted into inventory because of non-compliance with CENV specifications. Another important benefit to conducting acceptance inspections is to prevent parts from going on the storeroom shelf that cannot be used at a future date and impede daily revenue service requirements.

Failure to inspect components, parts and equipment throughout TIES increases the risk that some parts and materials received at other storerooms and other offices such as, Track and Structure, Systems Maintenance and Elevator and Escalator might not be in compliance with established specifications. There is also a risk that components and parts may be procured from unauthorized suppliers and not subjected to an acceptance inspection. OIG personnel were unable to determine if there were any non-compliant parts (except for storeroom 400 relating to CMNT) since there is no process in-place for tracking at the other storerooms and offices within TIES.

WMATA would benefit from conducting a cost/benefit analysis to determine the feasibility of expanding QAAW acceptance inspections to the other storerooms that components and parts are shipped to, and other offices within TIES. The support structure that QAAW provides to CMNT could serve as the model by which QAAW can support other storerooms and offices within TIES.

Recommendation

We recommend the Deputy General Manager Operations (DGMO):

- 1.1 Conduct a cost/benefit analysis to determine the feasibility of conducting acceptance inspections of parts, materials, equipment, and components at other storerooms that components and parts are shipped to, and other departments in TIES, and take appropriate action.

Finding 2 - QAAW should expand its Warranty Management program by implementing the program in the other offices within TIES

QAAW has implemented a warranty program in CMNT that is effective. When a warranty claim is submitted, the warranty management specialist issues disposition instructions to a Materials Control Supervisor in CMNT who arranges for the items to be shipped to a contractor or vendor. When a new or replacement part is returned to the Material Control Supervisor (MCS), the MCS arranges to have the item or part inspected and notifies the warranty management specialist. If approved, the warranty management specialist closes the warranty claim, updates the applicable records and has the MCS place the replacement part in the appropriate storage area. Any money or credit received should be recorded in the appropriate account.

During calendar year 2012, QAAW submitted warranty claims with a value of \$645,250 in parts and labor which were approved by manufacturers and vendors.

Since calendar year 2008, QAAW saved \$3.7 million in parts and labor because of warranty claims to manufacturers and vendors.

At the end of our field work, QAAW did not track warranty information in the other offices within TIES. Specifically, QAAW did not track warranty costs and maintain warranty records and data, including recovery costs incurred as a result of contract warranty provisions in TRST, SMNT, PLNT and ELES.

The new QAAW Quality Management System Manual, Revision 3, dated July 22, 2013, provides for QAAW to establish guidelines and procedures within TIES for the warranty process, tracking rail warranty incurred costs, maintaining accurate warranty records and data, and recovering costs incurred as a result of contract warranty provisions.

According to the QAAW Director, because QAAW has insufficient resources, the warranty program is not administered throughout TIES. The QAAW Director requested additional resources during the FY 2012 budget process, but the request was not approved.

Failure to maintain an effective warranty program throughout TIES could hamper efforts to effectively process warranty claims. There is also the risk of WMATA incurring additional costs that should have been recovered through contract warranties. It would be beneficial for WMATA to conduct a cost/benefit analysis to determine the feasibility of expanding the QAAW warranty program to the other offices within TIES. QAAW's success with the warranty program in CMNT could serve as the model for having the program in other offices within TIES. At the time of our Exit Conference on August 7, 2013, management indicated they are in the beginning stages of expanding their warranty program to other areas of TIES.

Recommendation

We recommend the DGMO:

- 2.1 Conduct a cost/benefit analysis to determine the feasibility of implementing a warranty program throughout TIES and take appropriate action.

Finding 3. QAAW conducts First Article Inspections in accordance with policy and procedures

OIG found the QAAW First Article Inspections process is effective and efficient and is conducted in accordance with Operations Administrative Procedure (OAP) 113-06. We reviewed QAAW reviews completed to verify compliance with engineering and design requirements. We also noted that QAAW created a checklist that quality assurance staff uses to determine compliance with engineering and design requirements.

A First Article Inspection is the process for initiating, evaluating and approving parts and components used to maintain and/or enhance the WMATA rail system, while conforming to the engineering approved drawing specifications. If a part or component was manufactured by the Original Equipment Manufacturer (OEM), the part or component would not be subjected to a First Article Inspection unless the OEM deviated from the original design approved by CENV.

Objectives, Scope and Methodology

The objectives of the audit were to determine (1) whether the quality assurance program in the Department of Transit Infrastructure and Engineering Services is operating effectively and efficiently, including meeting the organizational mission, goals, and objectives, and (2) if the First Article Inspection process is effective and efficient.

The audit was conducted from February 2013 to August 2013. We held an exit conference with management on August 7, 2013. We reviewed QAAW Quality Management System Manual, Organization and Administrative Procedures and selected QAAW reports issued during calendar year 2012. Reports were reviewed to allow the auditors to observe the type of reviews QAAW conducted. We reviewed 9 acceptance inspection sheets that included 150 parts, 5 audit reports, 3 management reviews that pertained to the new 7000 railcar series, 6 quality assessment reports, and 3 First Article Inspections. None of the information QAAW provided was computer generated, the information was manually presented by QAAW.

We conducted interviews in 9 of the 10 offices in TIES that are responsible for maintaining and supporting the rail system. We met with management in the following TIES offices:

Car Maintenance (CMNT)	Elevator and Escalator (ELES)
Track & Structure (TRST)	Vehicle Program Services (CENV)
Infrastructure Services (CENI)	Systems Maintenance (SMNT)
Storerooms and Material Logistics (SRML)	Plant Maintenance (PLNT)
Quality Assurance and Warranty (QAAW)	

We also interviewed staff in SAFE to obtain information on the proposed corporate quality assurance program to determine if there are any duplication.

We did limited testing by matching and tracing source documents of QAAW transactions to reports issued and by observing QAAW processes to ensure policies and procedures were followed.

We conducted our audit in accordance with *Government Auditing Standards* appropriate to our scope. Those standards require that we plan and perform the audit to afford a reasonable basis for our judgments and conclusions regarding the organization, program activity or function under audit. An audit also includes assessments of applicable internal controls and risks, and compliance requirement of laws and regulations when necessary to satisfy our audit objectives. We believe that our audit provides a reasonable basis for our conclusions.

Administrative Matters

Corrective actions proposed (resolution phase) and implemented (closure phase) by the affected Departments/Offices will be monitored and tracked through the Office of Inspector General's Audit Accountability and Resolution Tracking System. OIG policy requires that you develop a final corrective action plan (CAP) for our review in the automated system within 30 days of the issuance of this report. The CAP should set forth the specific action items and targeted completion dates necessary to implement final corrective actions on the findings and recommendations contained in this report.

We appreciate the cooperation and assistance extended by your staff during the audit. Should you or your staff have any questions, please contact Andrew Clemmons, Assistant Inspector General for Audits on (202) 962-1014, or me on (202) 962-2515.

Attachment

cc: GM/CEO – R. Sarles
COUN – K. Pett
CHOS – B. Richardson
TIES – R. Bitar

ATTACHMENT 1

M E M O R A N D U M



SUBJECT: Draft Report - Review of Quality Assurance Program, TIES

DATE: September 4, 2013

FROM: A. Robert Troup *ART*
Deputy General Manager, Operations

TO: Helen Lew
Inspector General, OIG

The DGMO has reviewed the Draft Report and concurs with the findings allowing for the comments as noted in the revised language that was provided to the OIG.

Thank you.