Review of Washington Metropolitan Area Transit Authority's (WMATA) MAXIMO Work Orders Module

Final Report

Information Technology No. IT 11-002
March 28, 2011

Washington Metropolitan Area Transit Authority
Office of Inspector General

M E M O R A N D U M

FINAL AUDIT REPORT WITH RECOMENDATIONS
Information Technology No. 11-002

SUBJECT: Review of Washington Metropolitan Area Transit Authority's (WMATA) MAXIMO Work Orders Module.

DATE: 3/28/2011

FROM: IG/OIG – Helen Lew /s/

TO: DGMA/CFO – Carol Kissal

This Final Audit Report entitled, *Review of WMATA's MAXIMO[1] Work Orders Module,* presents the results of our audit. The objective of the audit was to determine whether MAXIMO has adequate controls to ensure that its Work Orders Module is working as intended and meeting the users' needs.

BACKGROUND

In 2002, WMATA launched the Information Technology Renewal Program to develop and implement an enterprise-wide information systems upgrade to support all of its operational and business systems. To meet these objectives, WMATA chose to integrate several commercial, off-the-shelf applications[2] to replace the multitude of small and non-integrated legacy software packages that supported WMATA's functional areas. WMATA procured MAXIMO for approximately $2.6 million in 2002. According to the Department of Information Technology (IT), Deputy Chief of Operations and Maintenance, WMATA implemented MAXIMO, version 5, in January 2006 and upgraded to version 6 in April 2009.

Washington Metropolitan Area Transit Authority

[1] Computerized Asset Maintenance Management System.
[2] Trapeze software for Bus and Rail Scheduling and Dispatch (BRSD), PeopleSoft HRMS for Human Resources and Payroll (HRPR), PeopleSoft Financials for Accounting, Budget, Capital Plus Procurement (ABC+), and MAXIMO Asset and Transportation Manager for Maintenance and Material Management System (MMMS).

MAXIMO is a computerized asset maintenance system that provides asset, work, and materials management and purchasing capabilities to help companies maximize productivity and extend the life of their revenue-generating assets. It stores and maintains data pertaining to assets, facilities, and inventory.

MAXIMO contains applications grouped into modules.[3] The applications within a module have similar purposes; for example, applications related to the purchasing module are grouped together. Some applications, such as the Work Order Tracking application, function individually, while other applications create records designed to be used in conjunction with more than one application. The Work Order Tracking application is used to plan, review and approve work orders for assets, locations, or other work charged to general ledger accounts. A work order is a request for work to be performed. Using the Work Order Tracking application allows one to both track work performed and planned.

MAXIMO supports approximately 13 divisions within WMATA, with cross-functional users spanning multiple locations. The overall system has approximately seven interfaces that connect and transfer bus and rail data within MAXIMO.

Two previously issued reports, one by the OIG, and one by a private consultant[4] identified issues related to the closing of work orders in MAXIMO. For example, in the OIG report, employees indicated that work orders were being closed in MAXIMO prior to completion of the work, and managers were closing out repair tickets (work orders) without ensuring the necessary repair had been completed. In the consultant's report, among other things, it was disclosed that mechanics need to be better aware of what information is needed to create, update, and close a work order.

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[3] There are 13 modules, including Assets, Contracts, Deployed Asset, Inventory, Planning, Preventive Maintenance, Purchasing, Resources, Safety, Self-Service, Service Desk, Service Management, and Work Orders.
[4] Control Self-Assessment – Employee Safety in the Office of Track and Structures Systems Maintenance – OIG Internal Operations Report No. CSA 11-001 dated, September 8, 2010, and Assessment of Elevator and Escalator Maintenance & Repair Program dated, November 15, 2010, by Vertical Transportation Excellence (VTX).

AUDIT RESULTS

We found that the MAXIMO Work Orders Module does not have adequate controls to ensure that its Work Orders Module is working as intended and meeting the users' needs. Specifically, MAXIMO does not have adequate controls in place to prevent and detect: (1) completed work orders that were not closed; (2) work orders that were missing essential maintenance data; and (3) work order failure class codes and/or problem codes that were not correctly entered in MAXIMO. Failure to have adequate controls affects the ability of management and users to rely on the accuracy and completeness of information in the Work Orders Module.

We also identified an issue concerning MAXIMO's database configuration. The MAXIMO development team failed to detect or document database configuration changes, which can result in application development, integration, and reporting problems. This application control weakness is discussed in the "Other Matters of Concern" section of this report.

In the Deputy General Manager, Administration and Chief Financial Officer's (DGMA/CFO) March 9, 2011, response to a draft of this report, she indicated general concurrence/agreement with our findings and recommendations. The complete text of the DGMA/CFO's response is included as Attachment 1 of this report.

FINDING 1 – WMATA's MAXIMO Work Orders Module Does Not Have Adequate Controls

During our audit, we identified data input and application control deficiencies that prevent WMATA from detecting incomplete and/or inaccurate work order data entered into the MAXIMO system. We found that the Work Orders Module lacks adequate controls to prevent or detect: (1) completed work orders that were not closed, (2) work orders that were missing essential maintenance data, and (3) work order failure class codes and/or problem codes that were not correctly entered in MAXIMO. The incomplete and/or inaccurate data could prevent accurate analysis, detection, and

remediation of systemic issues.

1. Completed Work Orders Were Not Closed

According to the MAXIMO User's Guide,[5] the status of a work order—completed or not completed—is captured in the MAXIMO system. Completed work orders are subject to review and approval by a supervisor prior to their closing in MAXIMO by the superintendent or his/her designee. Superintendents and/or managers are responsible for closing work orders in the Office of Bus Maintenance (BMNT), Elevator and Escalator (ELES), Systems Maintenance (SMNT) and Track & Structures Maintenance (TRST).[6] A superintendent from BMNT informed us that, once all the maintenance work on an order has been completed, reviewed, and approved, the work order should be closed. However, we found that the current MAXIMO work order business process does not have any performance measure on when a work order should be closed.

We reviewed a random sample of 256 work orders in MAXIMO and found that 75 or 29 percent of these work orders had not been closed for an average of approximately 113 calendar days from the date of completion of the work to the date of our sample selection.[7] Of the 75 open work orders, 27 came from Plant Maintenance (PLNT), 20 from ELES, 14 from TSSM (Communication Systems – COMM & Shops and Material Support – SAMS), and the remaining 14 from various departments.

For example, ELES work order number 7256221, initiated on July 30, 2009, indicated that the work was completed on the same date but remained open in MAXIMO as of November 10, 2010, (468 calendar days later). In addition, we could not determine who performed the work. The fields in the WORKORDER table used to capture information on the supervisor who reviewed and/or approved the completed work, were not completed. In another example, PLNT work order number 7491879 indicated that the work was completed on October 27, 2009, but the work order remained open as of

[5] Tivoli, IBM MAXIMO, User's Guide, release 6.2.1, dated January 2007.
[6] SMNT and TRST were formerly part of Track and Structures Systems Maintenance or TSSM.
[7] We selected the sample on March 8, 2010.

October 6, 2010, (342 calendar days later). We found no written policy or procedure regarding the timeliness of reviewing, approving and closing completed work orders. The failure to properly review, approve, and close out completed work orders in the MAXIMO system makes it difficult to determine whether corrective and/or preventive maintenance work was actually initiated and/or completed. Additionally, this creates an opportunity to manipulate the work order record after the maintenance tasks had presumably been completed.

Management could not provide us with a definitive explanation for why the work orders in our sample had not been closed. A SMNT manager informed us that, at one time, the superintendents were responsible for ensuring work orders are properly closed. Sometime in March 2009, the superintendents verbally delegated the closing of work orders to the supervisors due to the high volume of work orders. According to one superintendent, the supervisors are simply not reviewing, approving, and closing completed work orders as required. A number of supervisors, however, told us that they did not know they are responsible for reviewing, approving and closing completed work orders. The delegation of responsibility for closing work orders was apparently verbally communicated to supervisors rather than formally documented in a policy. Verbal rather than written communication of policy to supervisors increases the risk that some supervisors may not have known of the policy change, especially among new supervisors.

According to the "Complete MAXIMO 6 Book"- Work Orders flow chart, when appropriate managerial approval is given, the work order should be closed. In addition, according to COBIT,[8] Section 11.7, Accuracy, Completeness and Authorization Checks, transaction data entered for processing (people generated, system generated or interfaced inputs) should be subject to a variety of controls to check for accuracy, completeness, and validity.

[8] COBIT is an IT governance framework and supporting toolset that allows managers to bridge the gap between control requirements, technical issues, and business risks. COBIT enables clear policy development and good practice for IT controls throughout organizations.

Recommendation

We recommend that the DGMA/CFO in conjunction with the Deputy General Manager for Operations (DGMO) and the Assistant General Manager, Bus Services (AGM, BUSV):

1.1 Develop a formal quality assurance plan, policy, and/or procedure to ensure that all business units review, approve, and close MAXIMO work orders within a specified time period after the work is completed. The plan should clearly delineate each level of responsibility for reviewing, approving, and closing of work orders.

Management's Comment

Management concurs with this finding but believes overall guidance in this area should be directed by the DGMO and the AGM, BUSV since work orders are Operations business processes. Management agrees "there is currently no consistent, formal quality assurance plan[,] policy and/or procedure to ensure all business units review and close MAXIMO work orders." Management also stated that "the upcoming MAXIMO Gap Analysis will highlight the current state [of] business processes and recommend necessary improvements to an Executive Steering Committee, which includes the DGMO, DGMA and the Assistant General Manager of Bus Services."

OIG's Comment

We revised the recommendation to include the DGMO and the AGM, BUSV in the process of developing a formal quality assurance plan, policy, and/or procedure to ensure that all business units review, approve, and close MAXIMO works orders after the work is completed.

2. Work Orders Were Missing Essential Maintenance Data

We found that some work orders in MAXIMO did not contain essential maintenance information, such as the failure codes, labor hours, status, description, and type of work. In addition, according to the ELES Assistant Superintendent, the current application of

the Work Orders Module for ELES does not capture the work crew identification (CREWID)[9] or the responsible supervisor[10] data fields, because this feature is not currently enabled.

According to a May 3, 2010, memorandum from a superintendent at the Montgomery County Bus Garage:

> "[T]he leadman[11] must verify in MAXIMO [that] the documentation is entered and time, failure codes, work order status and description of work [are] noted. (Same practice that was done with MARS). There are too many work orders getting pass[ed] the lead mechanic with missing information that should be caught and addressed at the time of completion of the work."

This memorandum also stated supervisors are having to spend too much time researching who worked on each bus and getting the information from that individual so that they (supervisors) can enter the information and close the work order.

We also found that management did not establish proper controls to reconcile information entered into MAXIMO and to identify missing or incomplete data in the system. The BMNT Information Support Technical Analyst indicated that they try to ensure the data is complete by reviewing some of the work orders entered by bus garage personnel, but they are unable to review all of the information given the magnitude of the system. According to the Information Technology (IT) Deputy Chief of Operations and Maintenance, there is currently no exception reporting requirement in the current application of MAXIMO to assist them in identifying missing critical maintenance data on work orders.

COBIT, Section 11.7, Accuracy, Completeness, Authorization Checks, specifies that transaction data entered for processing (people generated, system generated or interfaced inputs) should be subject to a variety of controls to check for accuracy,

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[9] The WORKORDER table in MAXIMO contains a field "CREWID" to record the crew that performs the repair.
[10] The WORKORDER table in MAXIMO contains a field "SUPERVISOR" to record the supervisor responsible for the work order.
[11] Leadman, as defined by BMNT, is the person who leads the crew and is responsible for ensuring that all work is being performed correctly.

completeness and validity. Procedures should also be established to ensure input data is validated and edited as close to the point of origination as possible.

The failure to have accurate and complete maintenance information could result in inefficient maintenance management processes, skewed report data, and inaccurate statistics relating to labor hours incurred, materials used, and services provided. This condition could also allow errors and irregularities to go undetected and unreported, as well as omit critical repair information necessary for the Work Orders Module to function as designed.

Recommendation

We recommend that the DGMA/CFO, in conjunction with the DGMO and the AGM, BUSV:

2.1 Develop and implement internal control procedures and/or application controls to ensure that accurate and complete information is captured on MAXIMO work orders.

Management's Comment

Management concurs with this finding but believes overall guidance in this area should be directed by the DGMO and the AGM, BUSV since work orders are Operations business processes. Management agrees that without a proper review process essential data may not be captured. It again mentioned that the upcoming MAXIMO Gap Analysis will focus on good business processes and documentation.

OIG's Comment

We revised the recommendation to include the DGMO and the AGM, BUSV in the process of developing and implementing internal control procedures and/or application controls to ensure accurate and complete information is captured on MAXIMO work orders.

3. Work Order Failure Class Codes/Problem Codes Were Not Correctly Entered In MAXIMO

In our review of the MAXIMO WORKORDER table for BMNT and ELES, we found that 38 of 67 or 56 percent of the corrective maintenance work orders for these offices did not have the proper failure class codes or problem codes.[12] We found that BMNT and ELES failure class codes and problem codes did not correspond with their appropriate system classification.

Specifically, BMNT personnel told us that BMNT assigns failure class codes to their corrective maintenance work orders to help identify the origin of [bus] failures. BMNT uses two specific codes[13] to assist the department in managing its bus operations. According to BMNT's "*Corrective Maintenance Work Order Process*" documentation, all corrective maintenance failure class codes are either BMNT029 (service interruption) or BMNT030 (defect work order with tasks). During our sample review, we found 33 BMNT corrective maintenance work orders initiated without either of these two failure class codes. According to BMNT personnel, users who entered the wrong codes failed to follow instructions. The IT Deputy Chief of Operations and Maintenance informed us that MAXIMO does not have application rules/controls to prevent users from entering improper failure class codes.

Our review of ELES corrective maintenance work orders also revealed similar problems with entering correct codes. We found that five ELES problem codes in our sample review did not correspond to the correct work type. According to ELES personnel, ELES problem codes are used to capture various work type problems. For example, if ELES gets a call from a station manager regarding an escalator that is out-of-service, ELES opens problem code 3430, "Callback" problem. ELES also defines the work by

[12] We found that 33 BMNT failure class codes and 5 ELES problem codes were used incorrectly.
[13] BMNT029 (service interruption) is used for all work reported through incident tracking; and BMNT030 (defect work order with tasks) is used for all corrective maintenance work along with the associated problem code to identify where the defect was found (*i.e.*, shop card, preventive maintenance inspection).

assigning a work type, which indicates the work is either corrective maintenance (CM), limited maintenance (LM), or other work type. See Appendix 1 for a list of ELES's problem codes and work type.

ELES uses problem codes to provide two levels of data reporting to enable comprehensive tracking, and reporting/failure analysis. The entry of inaccurate codes limits tracking and reporting of the problem. It may cause performance and/or safety issues. The Assistant Superintendent, ELES Operational Center, Reliability and Data Analytics, informed us that ELES may have difficulty addressing the problem if the (problem) code is not correctly entered in MAXIMO. In the worst case scenario, incorrect problem codes can delay the mechanic in identifying the problem, and it can also prevent safety issues from being detected and addressed in a timely manner.

Failure to use the correct problem code hinders WMATA's ability to accurately track the history of asset failures, its ability to analyze trends and patterns of failures to prevent and reduce future failures. Inaccurate data can adversely impact management's decision making. It can also impact management's ability to detect safety-related systemic issues.

According to COBIT, Section 11.11, Data Processing Error Handling, the organization should establish data processing procedures that enable erroneous transactions to be identified without being processed, and without undue disruption of the processing of other valid transactions.

Recommendation

We recommend that DGMA/CFO in conjunction with the DGMO and the AGM, BUSV:

3.1 Develop and implement application controls and/or edits to ensure users can enter only the correct failure class codes and/or problem codes into MAXIMO.

Management's Comment

Management concurs with this finding but believes overall guidance in this area should be directed by the DGMO and the AGM, BUSV since work orders are Operations business processes. Management agrees that without a proper review process accurate data may not be captured.

OIG's Comment

We revised the recommendation to include the DGMO and the AGM, BUSV in the process of developing and implementing application controls and/or edits to ensure users can enter only the correct failure class codes and/or problem codes into MAXIMO.

OTHER MATTERS OF CONCERN

Concern Over The MAXIMO Database Configuration

During our audit of WMATA's MAXIMO Work Orders Module, we identified a matter of concern. This concern involves MAXIMO's database configuration. Specifically, we determined that MAXIMO's data dictionary, which is part of the database configuration, is not set up correctly. The data dictionary[14] is the road map to the structure of the database. It describes such things as the required format of the data and which data fields are mandatory. The MAXIMO database administrator (DBA) agreed with our determination that the data dictionary is incorrect. He informed us that this was caused by the receipt of incorrect system documentation from the software vendor during the migration of MAXIMO from version 5 to version 6.

The system documentation[15] provided to us by the DBA did not match the production database dictionary. For example, when we examined the actual production WORKORDER table, certain fields were specified that it must contain data, yet the

[14] Data Dictionary is structured information that describes, explains, locates, or otherwise makes it easier to retrieve, use, or manage an information resource.
[15] Technical documentation from IBM – vendor of MAXIMO--regarding the MAXIMO system

system documentation indicated that these fields did not require data. We found that the problems with the data dictionary affected the Work Orders Module of MAXIMO. While examining other MAXIMO modules was beyond the scope of our audit, the inconsistency we found in the data dictionary could logically affect the operation of all MAXIMO databases and applications.

This database configuration issue could cause application development, integration, and reporting problems. For example, if a database field is a required field and the requirement is not correctly documented and communicated to the application developer, the application coding could be incorrect. Furthermore, if data in this field are exchanged with data in another application, data integration/exchange issues could arise. These issues can affect data integrity, resulting in bad information being entered into MAXIMO. In these circumstances, the information generated from MAXIMO would not be reliable. Upon notification by OIG in June 2010, the DBA immediately provided us with revised system documentation that corresponded with the production data dictionary.

This database configuration issue could have been detected and prevented if IT had utilized a configuration management[16] and quality assurance process. Such a process would have provided a necessary control to ensure that the data and database configuration are accurate and complete.

Recommendation

We recommend that the DGMA/CFO:

4. Develop and utilize a configuration management and quality assurance process on all modules of MAXIMO to ensure that database configuration and application issues are identified and addressed when migrating to different versions of MAXIMO.

[16] Configuration management are activities related to the creation, maintenance and control of products and their updates.

Management's Comment

Management concurs with the concern we raised in this report. Management stated that configuration management tools and quality assurance processes are essential to ensure Maximo operates as intended. Management also stated that technical configurations are maintained in a product called Vault. Vault is a commercial off-the-shelf (COTS) product specifically built to maintain system configurations.

OIG's Comment

The OIG has reviewed documentation provided by management which demonstrates their use of a configuration management and quality assurance process through the use of the Vault product. Appropriate use of this COTS product should help management address our concern and recommendation.

OBJECTIVES, SCOPE, AND METHODOLGY

The objective of the audit was to determine whether MAXIMO has adequate controls to ensure that the MAXIMO Work Orders Module is working as intended and meeting the users' needs. The scope of our review covers the period from April 2009 through December 2010. We extracted sample data from MAXIMO from June 2009 through December 2009. To accomplish our audit objective, we interviewed general superintendents, assistant superintendents, managers, supervisors, mechanics and technicians from BMNT, ELES, and SMNT. We interviewed MAXIMO subject matter experts (SMEs) and IT personnel. We reviewed application controls over data entry processes and procedures for the MAXIMO system. Using an attribute statistical sampling technique, we selected a sample of 256 work orders out of a universe of 334,503 work orders. In determining our sample, we used the IDEA data analysis software, with a 95 percent confidence level, a lower limit of 23 percent and upper limit of 35 percent, and standard error rate of 3 percent. We reviewed the MAXIMO system user guides and MAXIMO business process flow charts.

We assessed the reliability of the MAXIMO WORKORDER table data by (1) performing electronic testing of data to identify obvious problems with completeness or accuracy of required data elements, (2) reviewing existing information about the data and the system that produce them, and (3) interviewing agency officials knowledgeable about the data. In addition, we traced the statistically random sample of data to source documents. We determined that the data were sufficiently reliable for the purpose of this report.

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 includes assessments of applicable internal controls and compliance with requirements 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 the Inspector General's Audit Accountability and Resolution Tracking System. Department 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 specific action items and targeted completion dates necessary to implement final corrective actions on the finding and recommendations contained in this report. Should you any questions, please contact Andrew Clemmons, Assistant Inspector General for Audits, on (202) 962-1014, or me at (202) 962-2515.

Helen Lew /s/
Inspector General

Attachment

cc: GMGR – Richard Sarles
DGMO – Dave Kubicek
CHOS – Shiva Pant
COUN – Carol O'Keeffe
AGM/BUSV – Jack Requa
AGM IT/CIO — Rob Kramer (Acting)
ACCT – Stephanie Audette

APPENDIX 1

ELES Problem Codes and Work Types

Problem Code/Description	Work Type*
2734-Preventive Maintenance - scheduled, routine maintenance	PM, LM
2733-PM Repairs - repairs discovered during maintenance	PM, LM
2907-Safety Inspections - jurisdictional or accident inspections	TST, LM
3433-Compliance Inspections - procedural compliance audits	TST, LM
3434-Rehabs/Modernizations - equipment modifications and overhauls	CP, LM
2914-Scheduled Support - work orders to support other offices	GS, LM
3294-Esc Walkers - out of service due to other activities	CM, EM, PM, CP, TST
3430-Callbacks/Repairs-trouble/problem calls	CM , LM
2096-Incidents/Accidents-incident/accident work orders	EM, LM,IN
4300-Safety Work Orders-inspection deficiency work orders	CM , LM
0005-Major Repair-unscheduled major repairs	CM , EM , LM
2723-Power/Alarm Related-power/alarm related	CM, LM
3359-Water Leak/intrusion-water leaks/intrusions	CM , LM
3366-Weather Related -extreme weather	CM , LM

*Legend

Work Type Codes	Description
CM	Corrective Maintenance
CP	Capital Projects
EM	Emergency Maintenance
GS	General Support
IN	Incident Report
LM	Limited, Not Out of Service
PM	Preventive Maintenance
TST	Testing

ATTACHMENT I

M E M O R A N D U M

SUBJECT: Response to Review of MAXIMO Work Orders Module - IT No. 11-002 **DATE:** March 9, 2011

FROM: DGMA/CFO – Carol Dillon Kissal

TO: IG/OIG – Helen Lew

The subject draft report, Information Technology No. 11-002, Review of Washington Metropolitan Area Transit Authority's (WMATA) MAXIMO Work Order Module, was issued on February 3, 2011. Below is management's response.

Finding 1 - WMATA's MAXIMO Work Orders Module Does Not Have Adequate Controls

During our audit, we identified data input and application control deficiencies that prevent WMATA from detecting incomplete and/or inaccurate work order data entered into the MAXIMO system. We found that the Work Orders Module lacks adequate controls to prevent or detect: (1) completed work orders that were not closed, (2) work orders that were missing essential maintenance data, and (3) work order failure class codes and/or problem codes that were not correctly entered in MAXIMO. The incomplete and/or inaccurate data could prevent accurate analysis, detection, and remediation of systemic issues.

1. Completed Work Orders Were Not Closed

OIG Recommendation

We recommend that the Deputy General Manager Administration/Chief Financial Officer (DGMA/CFO):

1.1 Develop a formal quality assurance plan, policy, and/or procedure to ensure that all business units review, approve, and close MAXIMO work orders within a specified time period after the work is completed. The plan should clearly delineate each level of responsibility for reviewing, approving, and closing of work orders.

Response

Management concurs with this finding but believes overall guidance in this area should be directed by the Deputy General Manager Operations and the Assistant General Manager Bus Services, since work orders are Operations business processes. We agree there is currently no consistent, formal quality assurance plan; policy and/or procedure to ensure all business units review and close Maximo work orders. Therefore, each business unit has instituted their own procedure for review and closing of work

orders. Some offices such as CMNT, BMNT and AFCS seem to be following more thorough processes, while others as indicated in the audit need improvement. The upcoming Maximo Gap Analysis will highlight the current state business processes and recommend necessary improvements to an Executive Steering Committee, which includes the DGMO, DGMA and the Assistant General Manager of Bus Services.

2. Work Orders Were Missing Essential Maintenance Data

OIG Recommendation

We recommend that the DGMA/CFO:

2.1 Develop and implement internal control procedures and/or application controls to ensure that accurate and complete information is captured on MAXIMO work orders.

Response

Management concurs with this finding but believes overall guidance in this area should be directed by the Deputy General Manager Operations and the Assistant General Manager Bus Services since work orders are Operations business processes. We agree that without a proper review process indicated above in #1, essential data may not be captured. Some controls have been put in place to require data in certain fields. These controls differ by business unit. Again, the upcoming Maximo Gap Analysis will focus on good business processes and documentation.

3. Work Order Failure Class Codes/Problem Codes Were Not Correctly Entered In MAXIMO

OIG Recommendation

We recommend that the DGMA/CFO:

3.1 Develop and implement application controls and/or edits to ensure users can enter only the correct failure class codes and/or problem codes into MAXIMO.

Response:

Management concurs with this finding but believes overall guidance in this area should be directed by the Deputy General Manager Operations and the Assistant General Manager Bus Services since work orders are Operations business processes. We agree that without a proper review process indicated above in #1 accurate data may not be captured. Some controls have been put in place to limit the codes that can be chosen depending on the Asset being worked on. These controls differ by business unit. Again, upcoming Maximo Gap Analysis will focus on good business processes and documentation.

OTHER MATTERS OF CONCERN

Concern Over The MAXIMO Database Configuration

OIG Recommendation

We recommend that the DGMA/CFO:

4 Develop and utilize a configuration management and quality assurance process on all modules of MAXIMO to ensure that database configuration and application issues are identified and addressed when migrating to different versions of MAXIMO.

Management Response:

Management concurs. Configuration management tools and quality assurance processes are essential to ensure Maximo operates as intended. For this very reason, technical configurations are maintained in a product called Vault. Vault is a COTS product specifically built to maintain system configurations. Maximo maintains the database configuration internally. Direct changes to the Maximo schema should not be made. A Maximo program called DBConfig applies any changes in the Maximo database configuration to the Oracle database. Additionally, Maximo development processes follow WMATA's prescribed Systems Development Life Cycle including approval from the Change Control Board prior to production migration.

cc: GMGR – Richard Sarles
DGMO – Dave Kubicek
CHOS – Shiva Pant
COUN – Carol O'Keeffe
BUS – Jack Requa
AGM/CIO – Rob Kramer
ACCT – Stephanie Audette