



July 23, 2009

DAVID E. WILLIAMS  
ACTING VICE PRESIDENT, ENGINEERING

SUBJECT: Audit Report – Delivery Bar Code Sorter Maintenance Opportunities  
(Report Number DA-AR-09-009)

This report presents the results of our self-initiated audit of Delivery Bar Code Sorter (DBCS) maintenance opportunities (Project Number 09YG022DA000). Our objective was to identify opportunities to reduce preventive maintenance workhours through the U.S. Postal Service's DBCS production based maintenance (PBM) program. PBM utilizes mailpiece throughput to align the timing and extent of preventive maintenance performed with wear and tear on the machine. The Postal Service issued PBM guidelines in August 2007 and May 2008 for its DBCS. Engineering establishes equipment maintenance policies and Postal Service area. Operations personnel are responsible for implementing them at their respective sites nationwide. See [Appendix A](#) for additional information on this audit.

## Conclusion

### **Compliance with DBCS PBM Guidelines**

Approximately 84 percent of Postal Service facilities nationwide equipped with DBCS are performing PBM, which requires that preventive maintenance be aligned with throughput on a daily basis. Other facilities cited they have not implemented PBM guidelines because the Electronic Maintenance Activity Reporting and Scheduling (eMars) system is not capable of automatically generating production-based checklists that facilitate daily maintenance routines. In addition, survey responses from sites that did not implement PBM indicate these facilities do not understand the interim process established to support PBM.

As a result, the Postal Service incurred excessive maintenance costs of \$8.2 million for fiscal year (FY) 2008. Furthermore, not fully implementing PBM guidelines will cost the Postal Service \$69.5 million over the next 10 years. We recognize postal management is piloting a solution to automate PBM activities that will require capital funding. See [Appendix B](#) for our detailed analysis of this issue.

We recommend the Vice President, Engineering:

1. Emphasize to the Area Vice Presidents adherence to the Maintenance Management Order requirements for production-based maintenance until an automated support solution is available.
2. Request priority funding for a system support solution for production-based maintenance.

### **Management's Comments**

Management agreed with recommendations 1 and 2, stating they will issue a policy letter to the Area Vice Presidents requesting adherence to the Maintenance Management order requirements for PBM by August 9, 2009. They also agreed to request priority funding upon completion and validation of the proposed system support solution to automate PBM activities. Management agreed in principle with the monetary impact; however, management requested the salary rate reflected in the monetary impact be more specific. As such, we re-calculated the monetary impact to a weighted average for the three levels of maintenance employees performing the work and their associated pay rates. We also escalated these labor rates accordingly. See [Appendix D](#) for management's comments in their entirety.


### **Evaluation of Management's Comments**

The U.S. Postal Service Office of Inspector (OIG) considers management's comments responsive to the recommendations and corrective actions should correct the issues identified in the report.

The OIG considers both recommendations significant, and therefore requires OIG concurrence before closure. Consequently, the OIG requests written confirmation when corrective actions are completed. These recommendations should not be closed in the Postal Service follow-up tracking system until the OIG provides written confirmation that the recommendations can be closed.

We will report \$8.2 million as unrecoverable questioned costs, and \$69.5 million as funds put to better use in our *Semiannual Report to Congress*.

We appreciate the cooperation and courtesies provided by your staff. If you have any questions or need additional information, please contact Wayne D. Sharpe, Acting Director, Engineering, or me at (703) 248-2100.

E-Signed by Miguel Castillo   
VERIFY authenticity with ApproveIt  
*Miguel Castillo*

Miguel A. Castillo  
Acting Deputy Assistant Inspector General  
For Support Operations

Attachments

cc: William Galligan  
Edward L. Gamache  
Katherine S. Banks

## **APPENDIX A: ADDITIONAL INFORMATION**

### **BACKGROUND**

Preventive maintenance is the scheduled, systematic servicing of equipment to maximize operating conditions. Historically, preventive maintenance needs were determined by machine run time. In August 2007 and May 2008, preventive maintenance guidelines based on pieces fed per production run for the DBCS were issued. PBM was developed to measure throughput of mailpieces to align the timing and extent of preventive maintenance performed with wear and tear on the machine. Because throughput of mailpieces wear parts, PBM more accurately reflects when preventive maintenance should be performed and is based on having maintenance fit the needs of the machine. PBM results in more efficient use of maintenance hours, which makes more hours available for proactive maintenance and to supplement hours needed for other equipment.

### **OBJECTIVE, SCOPE, AND METHODOLOGY**

Our objective was to identify opportunities to reduce preventive maintenance workhours through the Postal Service's PBM program.

The scope of our audit was limited to the PBM program for the DBCS. To accomplish the objective, we collected FY 2008 daily preventive maintenance workhours for 2,754 DBCS machines running major modes<sup>1</sup> located at 334 facilities. We calculated the potential savings by comparing the above daily preventive maintenance workhours with the calculated production-based maintenance workhours, which are based on machine throughput. The preventive hours used in our analysis were collected from the eMARS system and pieces fed were collected from the Enterprise Data Warehouse/End of Run Report system. After performing initial calculations of potential savings, we verified our methodology with the Maintenance Technical Support Center. We also electronically surveyed maintenance managers<sup>2</sup> to determine whether field maintenance managers had implemented PBM, and if not, why it had not been implemented.

We conducted this performance audit from February through July 2009 in accordance with generally accepted government auditing standards and included such tests of internal controls as we considered necessary under the circumstances. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. We believe the evidence obtained provides reasonable basis for our findings and conclusions based on our audit objective. We reviewed policies and

---

<sup>1</sup> Major modes analyzed are DBCS, output subsystem, and delivery input output subsystem.

<sup>2</sup> We sent a total of 372 electronic surveys to maintenance managers nationwide, from which we received 130 responses.

procedures for internal controls and discussed our observations and conclusions with management on May 28, 2009, and included their comments where appropriate.

We relied on Management Operating Data System (MODS) End of Run reports. We did not test the validity of controls over this system. We determined valid controls are in place, and the data was reliable based on a prior OIG audit report stating MODS internal controls were generally effective and MODS data was generally reliable.<sup>3</sup>

## PRIOR AUDIT COVERAGE

The OIG issued, *Equipment Maintenance Opportunities* (Report Number DA-AR-08-02, dated February 15, 2008). The report disclosed that facilities equipped with the Automated Facer Cancellor System (AFCS) did not implement PBM guidelines. As a result, the Postal Service incurred excessive maintenance costs of \$11.6 million for the year ending December 21, 2007. In addition, successful implementation of the tested PBM guidelines would avoid cost of \$130 million over the next 10 years through attrition and overtime.

---

<sup>3</sup> *Management Operating Data System* (Report Number MS-AR-07-003, dated August 21, 2007).

## APPENDIX B: DETAILED ANALYSIS

### Compliance with DBCS PBM Guidelines

Approximately 84 percent of Postal Service facilities nationwide equipped with DBCS are performing PBM, which requires that preventive maintenance be aligned with throughput on a daily basis. Nationwide data analysis of preventive maintenance workhour usage for the facilities that did not implement PBM revealed excessive maintenance workhours when compared to the calculated PBM workhours. Specifically, excessive workhours totaled 176,572 for the 1-year period following issuance of the PBM maintenance management order. The chart below categorizes these workhours by Postal Service area.

**Chart 1- Excessive DBCS Maintenance Workhours by Postal Service Area**

Postal Service Area	Number of Machines	Number of Facilities	Excess Preventive Maintenance Workhours
Capital Metro	69	8	8,451
Eastern	118	12	21,416
Great Lakes	100	16	24,993
New York Metro	48	11	19,842
Northeast	75	11	14,459
Pacific	76	11	19,758
Southeast	113	11	15,379
Southwest	97	12	8,409
Western	179	28	43,866
<b>Total</b>	<b>875</b>	<b>120</b>	<b>176,572</b>

We surveyed and interviewed Postal Service maintenance managers at 130 facilities to determine the reasons PBM was not implemented. The primary reason cited was that eMARS does not automatically generate production-based checklists facilitating daily maintenance routines<sup>4</sup>. In addition, some facilities did not understand the interim manual process established until an automated eMARS support function is available.

For FY 2008, Postal Service facilities that did not implement PBM exceeded maximum hours allowable for preventive maintenance by 176,572 hours at a cost of \$8.2 million. In addition, we estimate the cost of excessive preventive maintenance for DBCS machines over the next 10 years to be \$69.5 million. As such, we are reporting \$8.2 million as unrecoverable questioned costs, and \$69.5 million as funds put to better use in our *Semiannual Report to Congress*. See [Appendix C](#) for our detailed calculations.

<sup>4</sup> Although eMARS does not support PBM, PBM checklists can still be generated. As indicated by MMO-064-06, DBCS throughput data used to generate the production-based checklists can be obtained from available End-of-Run reports, which contain the same data as eMARS.

### **Corrective Action Initiated by Postal Management to Obtain Support System**

The Postal Service manager for maintenance policies recognized PBM system shortfalls and initiated a pilot at two processing sites to test automated maintenance routines. This pilot will provide an enhanced support system for automating PBM with paperless instruction tasks triggered by specific machine throughput levels. This results in streamlining and eliminating redundant preventive maintenance processes thereby facilitating the scheduling of the appropriate level of maintenance workhours. An Integrated Technical Plan has been submitted for approval for the development of Electronic Conditional Based Maintenance (ECBM) system at an estimated cost of \$22 million.

We recognize that the Postal Service has a freeze on capital projects and prioritizes its annual cash flow. However, projects such as ECBM, with low risk, high return, and short payback period should qualify for an exception. We consider ECBM low risk as a pilot project is in progress. In addition, the estimated savings substantially exceeds the estimated cost and the payback period is relatively short when benefits from other processing platforms, such as the AFCS is considered.

**APPENDIX C:**  
**CALCULATION OF UNRECOVERABLE QUESTIONED COSTS AND**  
**FUNDS PUT TO BETTER USE**

<b><i>Monetary Impact</i></b>				
<b><i>Unrecoverable Questioned Costs<sup>5</sup></i></b>				
Labor rates 2008:		Percent of PM Hours	Excess PM Hours	Excess PM Hours Cost
PS-10 ET	\$49.85	10%	17,657	\$880,212
PS-9 MPE	\$48.29	36%	63,566	\$3,069,602
PS-7 MM	\$44.15	54%	95,349	\$4,209,658
Questioned Cost				\$8,159,472
<b><i>Funds Put to Better Use<sup>6</sup></i></b>				
10 Years Cost of ET, MPE and MM Position			\$84,615,405	
Discount Rate			3.5%	
Labor escalation rate			1.3%	
Present Value 10 Years Cost of ET Positions			\$69,538,189	
Total Monetary Impact (Questioned Costs plus Funds Put to Better Use)				<b>\$77,697,661</b>

**Notes**

- Labor rates were based on the Postal Service's FY 2008 fully loaded published rate for Electronic Technician (ET).
- Funds Put to Better Use is the present value of excessive preventive maintenance cost over the next 10 years. The labor escalation rate and discount rate were obtained from the Postal Service's Decision Analysis Factors published on May 28, 2009.

<sup>5</sup> Unrecoverable costs that are unnecessary, unreasonable or an alleged violation of law or regulation.

<sup>6</sup> Funds that could be used more efficiently by implementing recommended actions.



## APPENDIX D: MANAGEMENT'S COMMENTS

ENGINEERING



July 8, 2009

LUCINE M. WILLIS  
DIRECTOR, AUDIT OPERATIONS

SUBJECT: Draft Audit Report - Delivery Barcode Sorter Maintenance Opportunities (Report Number DA-AR-09-DRAFT)

We appreciate the opportunity to review and comment on the subject draft audit report. Generally, we are in concurrence with the report's recommendations and specific responses to each recommendation are below.

While we agree that there are monetary findings, we believe the findings should be adjusted to reflect the labor rates associated with the percentage of work performed by the three levels of maintenance employees performing the work. While the differences between the two calculations may be relatively small, the changes will allow us to more accurately obtain the savings based on your recommendations. Specifically, we recommend the calculations in Appendix C be updated to reflect the below percentages and labor rates:

The Delivery Barcode Sorter is maintained by Electronic Technicians PS-10 (10% of the work), Mail Processing Equipment Mechanics PS-9 (36% of the work), and Maintenance Mechanics PS-7 (54% of the work).

Labor rates (2008):	
PS-10 ET (10%)	\$49.85
PS-9 MPE (36%)	\$48.29
PS-7 MM (54%)	\$44.15

Recommendation 1:

Emphasize to the Area Vice Presidents adherence to the Maintenance Management Order requirements for production-based maintenance until an automated support solution is available.

Response:

Management agrees with this recommendation. A policy letter will be sent to the Area Vice Presidents requesting adherence to the Maintenance Management Order requirements for production-based maintenance. This will be completed by August 2009.

8403 LEE HIGHWAY  
MORRISFIELD VA 22082-6101

Recommendation 2:

Request priority funding for a system support solution for production based maintenance.

Response:

Management agrees with this recommendation. Upon the completion and validation of the proposed solution to automate production-based maintenance activities priority funding will be requested. A Decision Analysis Report for the Capital Investment Committee will be prepared in Quarter 1, FY 2010.

We do not believe this report contains any proprietary or business information that should not be publicly disclosed and do not believe there are any required exemptions under the Freedom of Information Act (FOIA). If you have questions, Mike Rogers of Maintenance Policies and Programs will monitor implementation of report recommendations and can be reached at 703-280-7078.



David E. Williams  
Acting Vice President

cc: Mr. Galligan  
Mr. Gamache  
Ms. Banks