May 13, 2010

DAVID E. WILLIAMS
VICE PRESIDENT, ENGINEERING

JORDAN SMALL
VICE PRESIDENT, NETWORK OPERATIONS

SUBJECT: Audit Report – Automated Package Processing System Equipment Maintenance Opportunities (Report Number DA-AR-10-003)

This report presents the results of our self-initiated audit of Automated Package Processing System (APPS) Equipment Maintenance Opportunities (Project Number 09YG044DA000), which addresses both operational and financial risks. Our objective was to identify opportunities to reduce preventive maintenance workhours through the U.S. Postal Service's Electronic Condition Based Maintenance (eCBM) program. See Appendix A for additional information on this audit.

In July 2004, the Postal Service began deploying APPS machines, which sort small packages and Priority Mail. At the time of our review there were 73 active APPS machines nationwide[1] located at 62 facilities. APPS candidate mail includes packages and bundles (letters or flats) of up to 25 pounds.[2] Mail processed on APPS machines requires culling or removal of non-candidate mail prior to placement on the machine in accordance with the *APPS Methods Guide.*[3] Removing out-of-specification mailpieces (or "culling") reduces potential jams, which optimizes machine performance.

Conclusion

During a 2-year period ending September 30, 2009, Postal Service processing facilities equipped with APPS machines exceeded estimates for preventive maintenance by 85,958 workhours[4]. eCBM requires that maintenance hours be aligned with machine usage and establishes an expected level of maintenance based on machine throughput. The most frequent causes cited by maintenance managers for excessive workhours were jams occurring too frequently due to poorly culled[5] mail and the inability in some

[1] According to eMARS inventory data, there were 73 active and 5 inactive APPS machines assigned to processing operations nationwide.
[2] Maximum dimensions are 15" high, 22" wide, and 18" long. Minimum dimensions are .05" high, 3" wide, and 3.5" long.
[3] *APPS Methods Guide*, June 2006.
[4] During fiscal year (FY) 2009, 43 of 62 facilities (or 69 percent) equipped with APPS exceeded eCBM estimates.
[5] Culling is removing and separating mail by type and characteristic.

cases to incorporate the eCBM checklist. We noted that sites operating within eCBM workhour standards attributed success to maintaining a well-trained staff, cooperating with operations to ensure candidate mail is processed according to specifications, and generating eCBM checklists early in the day.

As a result of using more workhours than necessary, we estimate the Postal Service incurred excessive maintenance costs of $3.5 million for fiscal years 2008 and 2009. Furthermore, we estimate the Postal Service can avoid $2.4 million in overtime costs over the next 2 years by maintaining the APPS within eCBM standards. See Appendix B for our detailed analysis of this issue.

We found that the manager, Maintenance Policies, has launched initiatives to address each of the causes for excessive maintenance, except for a solution to eliminate frequent jams due to poorly culled mail.

We recommend the vice president, Engineering, in coordination with the vice president, Network Operations:

1. Schedule stand-up talks at Automated Package Processing System (APPS) sites to reinforce the importance of operations complying with the *APPS Methods Guide* for culling candidate mail prior to mail processing

2. Establish a control to track preventive maintenance workhours to ensure compliance with eCBM requirements.

Management's Comments

Management agrees with our findings, monetary impact and two recommendations and is taking the following actions to implement corrective measures:

- Recommendation 1 – Network Operations will provide stand-up service talks to all mangers and all APPS employees. They expect to complete this initiative by June 30, 2010.

- Recommendation 2 – Maintenance Policies and Programs (MPP) will revise the eCBM task list to accommodate work requirements for single and dual sided configurations. MPP will also establish a control to track preventive maintenance work hours to assist field sites in managing performance within 20 percent of eCBM requirements. A report reflecting compliance will be provided to Area Managers of Maintenance Operations for necessary action. Management expects to complete initiatives by Quarter 4, FY 2010.

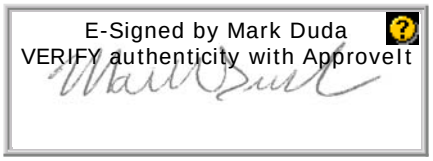
We have included management comments, in their entirety, in Appendix D.

Evaluation of Management's Comments

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

The OIG considers all 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's follow-up tracking system until the OIG provides written confirmation that the recommendations can be closed.

We appreciate the cooperation and courtesies provided by your staff. If you have any questions or need additional information, please contact Miguel Castillo, director, Engineering and Facilities, or me at 703-248-2100.



Mark W. Duda
Deputy Assistant Inspector General
for Support Operations

Attachments

cc: Patrick Donahoe
Steven J. Forte
Edward L. Gamache
Sally K. Haring

APPENDIX A: ADDITIONAL INFORMATION

BACKGROUND

In July 2004, the Postal Service began deploying APPS machines, which sort small packages and Priority Mail. At the time of our review there were 73 active APPS machines nationwide located at 62 facilities. APPS candidate mail consists of packages and bundles (letters or flats) of up to 25 pounds. Mail processed on APPS machines requires culling or removal of non-candidate mail prior to placement on the machine in accordance with the *APPS Methods Guide.* Removing out-of-specification mailpieces (or "culling") reduces potential jams, which optimizes machine performance.

Preventive maintenance is the scheduled, systematic servicing of equipment to maximize operating conditions. In October 2004, condition-based preventive maintenance — or electronic Conditional Based Maintenance (eCBM) — guidelines were introduced to maintain processing equipment, including APPS. In December 2005, the Postal Service introduced eCBM guidelines when it started to use the Electronic Maintenance Activity Reporting and Scheduling (eMARS) as the support system for eCBM. eMARS facilitates eCBM by creating and maintaining preventive maintenance task checklists. eCBM generates preventive maintenance tasks based on machine throughput.

OBJECTIVE, SCOPE, AND METHODOLOGY

Our objective was to identify opportunities to reduce APPS preventive maintenance workhours through the Postal Service's electronic condition-based maintenance program.

To accomplish this objective, we collected actual FY 2008 and 2009 preventive maintenance workhour data for APPS nationwide. We calculated potential savings by comparing actual preventive maintenance workhours with estimated maintenance workhours. We collected the estimated preventive hours used in our analysis from eMARS and the actual preventive hours from the National eMARS Reporting System. We verified our methodology for calculating potential savings with the Maintenance Technical Support Center (MTSC)[6]. We also electronically surveyed maintenance managers[7] to determine reasons for excessive hours and assessed best practices.

We relied on Management Operating Data System (MODS) End-of-Run reports[8] and did not test the reliability of our data. However, prior Engineering audits evaluating preventive maintenance workhours revealed that MODS data was reliable at the plant level.

[6] MTSC is an organization reporting directly to Engineering, Maintenance Policies and Programs.
[7] A total of 57 electronic surveys were sent to maintenance managers nationwide, of which 41 responded.
[8] Workload estimates generated by eCBM are based on MODS End-of Run data.

We conducted this performance audit from October 2009 through May 2010 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 objectives. We believe the evidence obtained provides reasonable basis for our findings and conclusions based on our audit objective. We reviewed policies and procedures for internal controls and discussed our observations and conclusions with management officials on March 23, 2010, and included their comments where appropriate.

PRIOR AUDIT COVERAGE

Report Title	Report Number	Final Report Date	Monetary Impact	Report Results
Equipment Maintenance Opportunities	DA-AR-08-02	February 15, 2008	$11.6 million for the year ending December 21, 2007 and $130 million over the next 10 years.	The report disclosed facilities equipped with the Automated Facer Canceller System did not implement Production Based Maintenance (PBM) guidelines. Management concurred with our finding and recommendations.
Delivery Bar Code Sorter (DBCS) Maintenance Opportunities	DA-AR-09-009	July 23, 2009	$8.2 million for FY 2008 and $69.5 million over the next 10 years.	The report disclosed nationwide facilities with the DBCS were approximately 84 percent compliant with PBM procedures. Management concurred with our findings and recommendations.

APPENDIX B: DETAILED ANALYSIS

Maintenance Hours Exceed eCBM Estimated Hours

eCBM requires that preventive maintenance be aligned with machine usage based on throughput of mailpieces. Postal Service facilities nationwide equipped with APPS exceeded eCBM estimates for preventive maintenance workhours by 57,067 and 28,891 for FYs 2008 and 2009, respectively. The greatest opportunity for excessive workhours was in the Northeast, Capital Metro, Great Lakes, and Western Areas.

Chart 1- Excessive APPS Maintenance Workhours by Postal Service Area[9]

Postal Service Area	Number of Facilities	Number of Active Machines	Excess PM Workhours FY 08	Excess Preventive Maintenance Workhours FY 09
Northeast	13	14	17,471	6,845
Capital Metro	6	7	2,657	4,575
Great Lakes	8	10	4,413	4,286
Western	8	9	5,189	4,211
Eastern	8	10	14,565	3,547
Southwest	7	7	6,802	3,154
Pacific	7	8	3,049	1,690
Southeast	5	8	2,920	582
Totals	**62**	**73**	**57,067**	**28,891**

Causes and Impact of Excessive Maintenance Hours

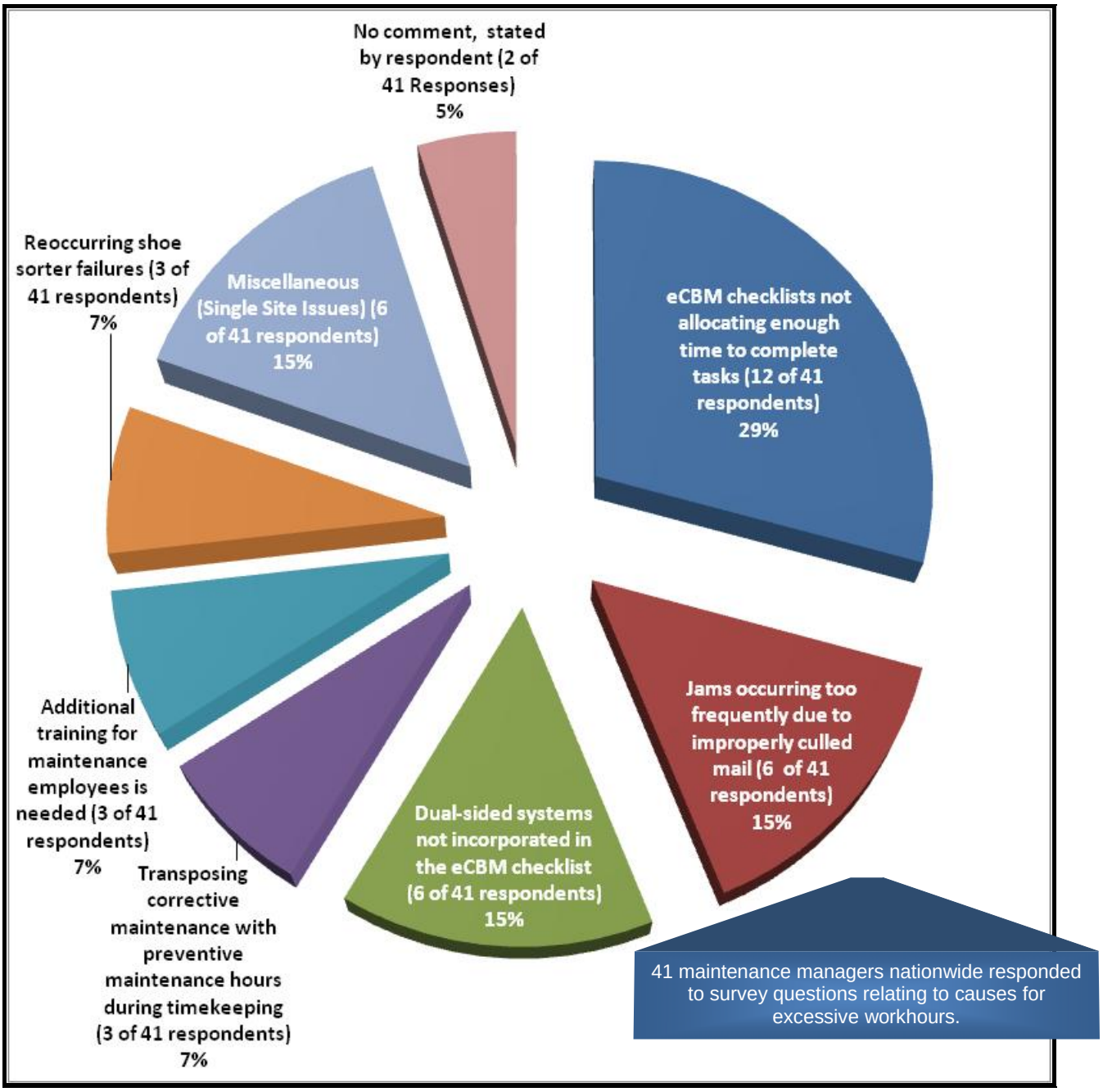
We surveyed and interviewed Postal Service maintenance managers at facilities with APPS machines to determine the causes for excessive maintenance. Twelve of 41 respondents cited eCBM checklists did not allocate enough time to complete tasks. However, this cause is not corroborated by the 31 percent of facilities that completed maintenance using the eCBM checklist during FY 2009. Therefore, the most frequent causes cited by maintenance managers for excessive workhours were frequent machine jams[10] due to poorly culled mail and the inability in some cases to incorporate the eCBM checklist. Additional causes, cited in Illustration 1, include:

- employees transposing corrective maintenance workhours with preventive maintenance workhours during timekeeping, and
- insufficient maintenance training.

[9] Excessive PM workhours, including totals, have been rounded to the nearest hour.
[10] Maintenance staff clears jams requiring access to a maintenance area. Operations clear all other jams.

- Recurring shoe sorter[11] failures.

Illustration 1. Causes Cited for Excess Maintenance Hours



[11] A shoe sorter is the main transport module of the distribution subsystem, where the mailpiece is oriented and diverted to one of the automated induction stations on APPS. The shoe sorter is comprised of a series of rolling slats with sliding shoes on top.

During FYs 2008 and 2009, Postal Service facilities with APPS machines exceeded estimated workhours by 85,958, at a cost of $3.5 million. Furthermore, we estimate exceeding eCBM standard workhours will cost the Postal Service $2.4 million in overtime over the next 2 years. See Appendix C for our detailed calculations.

Best Practices for Complying with Established Standards

During FY 2009, 19 of 62 of APPS sites (or 31 percent) expended fewer preventive maintenance workhours than required by eCBM. In order to identify the particular methods, best practices, and/or tools utilized by these sites, we judgmentally selected six of the 19 sites to interview the respective maintenance managers. They noted the following practices contribute to completing maintenance tasks in accordance with the eCBM:

- Maintaining a well-trained, experienced, and highly motivated staff. This ensures that employees understand their roles and responsibilities.

- Coordinating with machine operators, their respective supervisors, and distribution operations to ensure APPS machines are operated according to specification and that the correct mail type is processed.

- Optimizing the maintenance window by generating eCBM checklists as early in the day as possible, and using maintenance staff in all three tours to complete tasks.

Corrective Actions Initiated To Date

The Postal Service has taken several steps to reduce excess maintenance hours. This has contributed to the reduction in maintenance hours from FYs 2008 to 2009. They are also in the process of incorporating additional initiatives to correct eCBM shortfalls and improve eCBM support for APPS. In particular, the manager, Maintenance Policies, has launched a Lean Six Sigma[12] project to address eCBM tasks, which should ultimately reduce waste when maintaining APPS machines. In addition, MTSC has issued an APPS guide, dated November 2009,[13] to provide refresher training and optimize the performance of APPS. This guide also provides tools to address shoe sorter failures and will formally be added to the preventive maintenance tasks in eCBM after a time study and union review are complete. In addition, the MTSC plans to address eCBM support for dual-sided APPS with plans to implement no later than September 30, 2010. They plan to modify eCBM to generate separate routes for each side of APPS. These efforts should result in improved resource allocation when maintenance managers issue APPS work orders.

[12] Lean Six Sigma is a tool that makes business processes more efficient.
[13] *FY 2010 APPS Holiday Readiness Review*.

APPENDIX C: MONETARY IMPACTS

Unrecoverable Questioned Costs[14]	
FY08 Excess Preventive Maintenance Workhours	57,067
Overtime Labor rate	$40.25
Questioned Costs	$2,297,225
FY09 Excess Preventive Maintenance Workhours	28,891
Overtime Labor rate	$41.52
Questioned Costs	$1,199,454
Total Unrecoverable Questioned Costs	**$3,496,679**
Funds Put to Better Use[15]	
FY 2010 Excess Preventive Maintenance Workhours	28,891
Overtime Labor rate	$42.13
Overtime Cost Reduction	$1,217,222
FY 2011 Excess Preventive Maintenance Workhours	28,891
Overtime Labor rate	$42.15
Overtime Cost Reduction	$1,217,656
Total Funds Put to Better Use	**$2,434,878**
Total Monetary Impact (Questioned Costs and Funds Put to Better Use)	**$5,931,557**

Notes

- We based labor rates on the Postal Service's FY 2008 and 2009 published rates for PS-09 Electronic Technicians (ET)
- Funds put to better means the reduction in overtime from excess PM hours over the next 2 years.

[14] Unrecoverable costs that are unnecessary, unreasonable or an alleged violation of law or regulation.
[15] Funds that could be used more efficiently by implementing recommended actions.

APPENDIX D: MANAGEMENT'S COMMENTS

UNITED STATES POSTAL SERVICE

May 5, 2010

LUCINE M. WILLIS
DIRECTOR, AUDIT OPERATIONS
1735 NORTH LYNN STREET
ARLINGTON, VA 22209-2020

SUBJECT: Draft Audit Report - Automated Package Processing System (APPS) Equipment Maintenance Opportunities (Report Number DA-AR-10-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.

We agree that there are monetary findings of $5.9 million and accept the amount noted as within the range expected. If, through implementation of these recommendations, we identify a significantly different value we will immediately contact your office with our data. We believe implementation of the recommendations will assist in our efforts to promulgate best practices. It must be noted that there are 74 APPS machines in processing operations and two reduced size APPS machines used for training at NCED.

Recommendation 1:

Schedule stand-up talks at APPS sites to reinforce the importance of operations complying with the *APPS Methods Guide* for culling candidate mail prior to mail processing.

Response:

Management agrees with this recommendation. Network Operations will provide a stand-up service talk to all Managers, Operations Support (Area) and Managers, In-Plant Support (Area) to be distributed and administrated to all APPS employees. A record of all employees receiving the service talk will be maintained at each APPS facility and a follow-up review to ensure all necessary employees have received the service talk will be completed by June 10, 2010.

Recommendation 2:

Establish a control to track preventive maintenance workhours to ensure compliance with eCBM requirements.

Response:

Management agrees with this recommendation. Maintenance Policies and Programs (MPP) will revise the eCBM task list to accommodate work requirements for single side and dual side machine configurations. MPP will also establish a control to track preventative maintenance workhours to assist field sites in managing performance to within 20% of eCBM. A report reflecting compliance will be provided to Area Managers Maintenance Operations for necessary action. These actions will be completed and implemented by the end of Q4 FY10.

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, Michael Rogers of Maintenance Policies and Programs will monitor implementation of report recommendations and can be reached at 703-280-7078.

David E. Williams
Vice President, Engineering

Jordan M. Small
Vice President, Network Operations

cc: Mr. Forte
Ms. Haring
Mr. Gamache
Mr. Neri
Ms. Banks