OFFICE OF INSPECTOR GENERAL
UNITED STATES POSTAL SERVICE

AUDIT REPORT

Web End-of-Run System

June 2, 2014

Report Number MS-AR-14-004

OFFICE OF INSPECTOR GENERAL
UNITED STATES POSTAL SERVICE

HIGHLIGHTS

June 2, 2014

Web End-of-Run System
Report Number MS-AR-14-004

BACKGROUND:

The U.S. Postal Service uses the Web End-of-Run (WebEOR) system to collect, store, and report mail volume data. The WebEOR process for collecting mail volume data differs depending on the type of mail processing involved. The system collects automated mail volume data directly from mail processing equipment. It bases daily manual mail volume on projections from annual surveys that Postal Service plant personnel conduct. About 95 percent of the total mail volume WebEOR records is automated and about 5 percent is manual.

The Postal Service must consider WebEOR data when establishing workshare discounts it provides to mailers for presorting, barcoding, or handling mail. The Postal Service uses WebEOR data in cost avoidance calculations and other analyses, including assessments of plant productivity. The Postal Accountability and Enhancement Act of 2006 established regulations for workshare discounts and requires the U.S. Postal Service Office of Inspector General (OIG) to review data collection systems the Postal Service uses to determine annual product costs, revenue, and rate reporting. WebEOR is one of several systems the Postal Service uses to gather such data.

Our objective was to evaluate the accuracy of mail volume that WebEOR reports.

WHAT THE OIG FOUND:

The Postal Service has opportunities to increase the accuracy of mail volume data that WebEOR reports. WebEOR's automated volume data has generally proven to be reliable; however, the system resets volumes to zero if mailpieces that require processing by multiple sort programs are not subsequently processed within 3 business days. The system cannot automatically identify when this type of variance occurs, so staff members must manually review data collection reports to detect the errors. This may affect the accuracy of automated WebEOR data. The accuracy of manual WebEOR data also faces risks, albeit on a smaller scale, from inconsistencies in mail surveys and the use of less reliable judgmental sampling for those surveys.

Increasing the accuracy of mail volume data reported by WebEOR would help strengthen the Postal Service's cost calculations and enhance the accuracy of the data management use to make decisions.

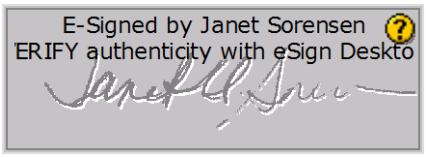
WHAT THE OIG RECOMMENDED:

We recommended the Postal Service update WebEOR to automatically identify mail volumes that are reset to zero, improve the consistency of manual mail surveys, and evaluate additional strategies to improve the methodology used to conduct manual mail surveys.

Link to review the entire report

June 2, 2014

MEMORANDUM FOR: DAVID E. WILLIAMS, JR.
VICE PRESIDENT, NETWORK OPERATIONS



FROM: Janet M. Sorensen
Deputy Assistant Inspector General
for Revenue and Resources

SUBJECT: Audit Report – Web End-of-Run System
(Report Number MS-AR-14-004)

This report presents the results of our audit of the Web End-of-Run System (Project Number 13RG024MS000).

We appreciate the cooperation and courtesies provided by your staff. If you have any questions or need additional information, please contact Joshua M. Bartzen, acting director, Sales and Marketing, or me at 703-248-2100.

Attachment

cc: Corporate Audit and Response Management

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Introduction

This report presents the results of our audit of the Web End-of-Run (WebEOR) system (Project Number 13RG024MS000). Our objective was to evaluate the accuracy of mail volume reported by WebEOR. This audit was self-initiated, based on a requirement in the Postal Accountability and Enhancement Act of 2006 that the U.S. Postal Service Office of Inspector General (OIG) regularly review data collection systems the U.S. Postal Service uses to collect information for its *Annual Compliance Report*.[1] See Appendix A for additional information about this audit.

The Postal Service uses WebEOR to collect, store, and report about 85 to 95 percent of mail volume data[2] and determine mailpiece counts for mail processed at each postal facility. Facilities conduct a mailpiece count each time they sort a letter, flat, or parcel and the following mail operations generate mail volume data:

- Mail processing equipment (MPE) collects automated mail volume data directly and collects about 95 percent of total mail volume recorded in WebEOR.

- WebEOR calculates manual mail volume data for letters and flats based on projections from annual surveys (in other words, counts) of manual mail conducted by Postal Service plant personnel. About 5 percent of total mail volume is manually processed.

The Postal Service's Cost Attribution group uses WebEOR data to help determine cost avoidance calculations,[3] which the Postal Service must consider when establishing workshare discounts[4] for market-dominant products.[5] The Postal Service uses calculations and discounts to develop its *Annual Compliance Report*. The Network Operations group uses WebEOR volume data to evaluate facility productivity and efficiencies, which can assist in estimating workhours, evaluating facility consolidations, and assessing budgets. This is the OIG's first review of WebEOR since the Postal Service began using it to collect automated mail volume data in 2008.

[1] Public Law 109-435, Section 3652, December 20, 2006.
[2] Several Postal Service systems collect mail volume data. The systems record volume amounts based on how management intends to use the data; therefore, systems may report volume totals differently, making it difficult to determine what specific percentage of total mail volume comes from WebEOR.
[3] Reductions in an organization's future costs. Cost avoidance calculations help contain and control costs and may create cost savings over time.
[4] Rate discounts provided to mailers for presorting, barcoding, handling, or transporting mail. See 39 U.S.C. § 3622(e) for a full description of the requirements.
[5] Market-dominant products are First-Class Mail letters, sealed parcels and cards, Periodicals, Standard Mail, single-piece Parcel Post, Media Mail, Bound Printed Matter, Library Mail, Special Services, and single-piece international mail.

Conclusion

The Postal Service has opportunities to increase the accuracy of WebEOR mail volume data. Automated mail volume data in WebEOR is generally reliable; however, the system resets volumes to zero if facilities do not process certain mailpieces within 3 business days. Facility staff must review error reports and manually correct volumes in the system when this occurs. We also observed that the accuracy of data for manually processed mail reported by WebEOR also faces risks, albeit on a smaller scale, due to inconsistencies in survey-related procedures and reliance on subjective sampling methodologies. Increasing the accuracy of WebEOR mail volume data would help strengthen the Postal Service's cost calculations and enhance the data management use to make decisions.[6]

Opportunities for Data Improvement

WebEOR resets mail volume data to zero when mailpieces that require processing by multiple sortation programs are not processed by subsequent sort programs within 3 business days of initial handling.[7] WebEOR cannot automatically identify this type of variance, so staff members must manually review mail volume data collection reports to detect the errors.[8] This may affect the accuracy of automated WebEOR data, as many of the facility staff with whom we spoke were unaware of this system limitation. Updating WebEOR so that it automatically identifies volume variances that arise when automated mailpieces are not processed on time would eliminate reliance on manual reviews and could increase the accuracy of these data.

We also noted that improvements to annual manual mail surveys could enhance the reliability of volume data for manually processed mail. Improving the consistency and methodology of yearly manual mail surveys may not only improve the accuracy of WebEOR volume reporting, but also strengthen the Postal Service's cost calculations and enhance the data management use to make decisions. Specifically, we noted:

- The facilities we visited did not conduct surveys and related mail counts consistently. For example, manually processed digital video disc (DVD) mail[9] was included in the survey counts at some facilities we visited, but not at others.

- Employees at sites we visited based manual mail counts on the "fullness" of mail containers, which is a subjective estimate, rather than weighing the mail.

- Current manual mail surveys rely on judgmental sampling methodologies that are less likely to generate accurate percentage rates compared to statistical sampling

[6] See Appendix B for a discussion of other impact associated with data integrity.
[7] If mailpieces are not fully processed and distributed within 3 business days, the WebEOR category of subsequent handling piece (SHP) is reset to zero. Additional information on this and other WebEOR categories is in Appendix A.
[8] The Postal Service Network Operations group can retrieve historical data and recalculate for "lost" data and correct volume rate.
[9] Due to its fragile nature, some DVD mail is manually sorted, yet it does not fall within one of the designated manual operations identified in manual mail survey instructions.

methodologies. The Postal Service's use of judgmental sampling is predicated on its assumption that the proportion of total mail that is processed manually will not change when automated mail volume fluctuates throughout the year. It bases this assumption on advances in remote computer reader recognition technology.[10] Judgmental sampling, however, is subjective and prone to bias.

When we discussed these issues with facility managers, they expressed a need for improved training on the survey process, as they currently rely on instructions from Postal Service Headquarters and district offices to conduct the annual surveys. Headquarters managers we spoke with observed that local facilities have control over the timing and coverage of the surveys because they are best able to judge and evaluate representative mail flows.

Recommendations

We recommend the vice president, Network Operations, determine strategies to improve the accuracy of mail volume data reported in Web End-of-Run, including:

1. Updating the Web End-of-Run system to identify volumes reset to zero.

2. Improving the consistency of manual mail surveys by standardizing the types of mail to be included in the surveys and enhancing related facility-level training.

3. Evaluating additional strategies to improve the methodology used to conduct manual mail surveys.

Management's Comments

Management agreed with the findings and recommendations in the report.

Regarding recommendation 1, management will update the system so that it can identify when volumes are not completely accounted for in downflow operations within the current timeframes. The identification will include a reporting facility for these instances. The manager, Processing Operations, will complete this effort by October 31, 2014.

Regarding recommendation 2, management will revise the annual survey documentation (for manual mail) to clarify and standardize volumes to be included or excluded and develop additional training materials to improve local personnel's understanding of the survey. The manager, Processing Operations, will complete these efforts by August 31, 2014.

Regarding recommendation 3, management will continually evaluate new data sources and technologies (for manual mail surveys), evaluate the costs and benefits of any

[10] This assumption is not verifiable through any Postal Service study.

possible changes, and implement those that make good business sense. In subsequent correspondence, management stated this would be completed by October 31, 2014.

See Appendix C for management's comments in their entirety.

Evaluation of Management’s Comments

The OIG considers management’s comments responsive to the recommendations and corrective actions should resolve the issues identified in the report.

Appendix A: Additional Information

Background

The Postal Service uses mail volume data to determine cost avoidance calculations for its market-dominant products and evaluate processing productivity. The Postal Service previously weighed mail to determine mail processing volume data,[11] which is a time-consuming and highly inaccurate process. The agency worked to improve its mail volume data collection and, in 2008, modified WebEOR to collect, store, and report mail volume data for automated and manual processing operations. WebEOR currently records about 85 to 95 percent of mail volume data.

The process for generating volume data in WebEOR differs based on the type of mail processing involved:

- Automated Processing – MPE collects volume data directly from automated mail. The WebEOR system pulls raw data files from MPE and reproduces, archives, and summarizes it. Volume data are archived into three categories: first handling pieces (FHP),[12] SHP,[13] and total pieces handled (TPH).[14] Automated mail volume data comprise about 95 percent of all mail volume data recorded in WebEOR.

- Manual Processing – WebEOR manual operations consist of letter and flat mail deemed non-machineable,[15] such as oversized or oddly shaped mail, compact discs, Periodicals, and rejected mail. Manual mail volume data comprise about 4 percent of total WebEOR mail volume data. WebEOR calculates daily volume data for manually processed mail based on projections gathered from annual surveys of manual mail that Postal Service plant personnel conduct. More specifically, WebEOR calculates volume as a percentage of automated mail that flows to manual operations.

The results of an annual judgmental survey determine percentage rates for manual mail volume. The survey takes place over 5 days during a non-peak mail period (generally in September or October). Facility staff members collect and record volume data. They record manually processed mail volume based on mail levels in mail containers such as trays, tubs, and hampers. Employees use a national average to determine the amount of mail determined to "fill" a mail container. Fullness of mail containers depends on the judgment of personnel conducting the counts. Survey data are entered into WebEOR at

[11] Prior to the introduction of automation in 2008, the Postal Service weighed mail to determine volume data, converting pounds to piece counts to calculate mail volume. It estimated inaccuracies in this process of between 10 and 20 percent.
[12] A letter, flat, or parcel sorted in a processing facility for the first time. The Postal Service calculates FHP as “TPH minus SHP.”
[13] An FHP letter, flat, or parcel that requires additional processing and, therefore, is handled for a second or subsequent time.
[14] The total number of mailpieces fed into MPE minus the total number of mailpieces rejected by MPE.
[15] Mailpieces that normally cannot be run on any type of MPE due to their size, shape, or other characteristics.

the end of the survey period and the system calculates the attributable percentage rate for each WebEOR manual operation.

Postal Service systems, such as the Delivery Operations Information System, Enterprise Data Warehouse, and the Management Operating Data System, receive mail volume data from WebEOR. The Postal Service's Cost Attribution group uses this data to help determine cost avoidance calculations, which the Postal Service must consider when establishing workshare discounts for market-dominant products. The Postal Service uses these calculations and discounts when developing its *Annual Compliance Report*. Management and the Network Operations group use mail volume data to determine facility mail processing productivity and efficiency.

Objective, Scope, and Methodology

Our objective was to evaluate the accuracy of mail volume data reported by WebEOR. To accomplish our objective we:

- Evaluated the WebEOR report module and tested WebEOR reports.
- Visited four processing and distribution centers;[16] interviewed In-Plant Support managers; observed mail processing operations, WebEOR functionality, and the annual survey of manual mail volumes; and evaluated controls of other functions.
- Evaluated procedures concerning data validation checks, program runs deletions, and the consequences of mapping errors and equipment malfunctions.
- Met with mail processing experts to gain an understanding of the WebEOR system, report generation, and the uses of information generated by the system; and to receive training on WebEOR.
- Met with the Postal Service’s Cost Attribution group to discuss observations from various site visits and information gathered from interviews with Network Operations.

We conducted this performance audit from June 2013 through June 2014 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 that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objective. We discussed our observations and conclusions with management on May 1, 2014, and included their comments where appropriate.

[16] We visited four processing and distribution centers in different Postal Service areas. The sites were Buffalo, NY; Merrifield, VA; Oklahoma City, OK; and Indianapolis, IN.

We assessed the reliability of WebEOR data by performing data analysis on WebEOR FHP manual survey factors resulting from annual surveys and observing automated mail processing during site visits. We determined that the data were sufficiently reliable for the purposes of this report.

Prior Audit Coverage

Report Title	Report Number	Final Report Date	Monetary Impact (in millions)
Assessment of Overall Plant Efficiency 2013	NO-MA-13-007	9/26/2013	$628.7
Report Results: Although this report did not include any information specific to WebEOR, its findings did relate to mail volume reporting, which is processed through WebEOR. The Postal Service had not yet fully adjusted workhours in response to declining mail volume or achieved all possible efficiencies in mail processing operations. Therefore, the Postal Service used over 14 million workhours more than necessary to process mail volume. Management did not respond to this report.			
Delivery Operations Data Usage	DR-AR-13-001	10/11/2012	None
Report Results: Although this report did not include any information specific to WebEOR, its findings could result in future use of WebEOR volume data. City delivery operations have a substantial number of systems, reports, and data to manage operations. It is paramount that the Postal Service optimizes the systems, reports, and data so supervisors and managers can make informed and timely operational decisions. Management agreed with the findings and recommendations.			
Management Operating Data System	CRR-AR-12-002	12/13/2011	$86.5
Report Results: The Postal Service must take additional steps to provide more accurate mail processing and cost avoidance estimates. We analyzed the impact of alternative methodologies on two cost avoidance models and estimated that the revised workshare discounts could have resulted in a net impact of $86.5 million in reduced workshare discounts and increased revenue. Management agreed with the findings and recommendations but disagreed with the OIG's calculations of monetary impact.			

Appendix B: Other Impacts

Recommendation	Impact Category	Amount
1	Data Integrity[17]	N/A

Limitations in the WebEOR system can lead to the loss of automated volume data when mailpieces do not go through various sort programs in a designated timeframe. Loss of such volume information would pose a risk to the accuracy of WebEOR data from automated mailpieces. Second, the current methodology the Postal Service uses to calculate WebEOR manual mail volume is not consistent across facilities and is subject to bias and other limitations.

We were unable to measure and monetize the potential impact of these data integrity issues because the manual surveys we used are based on a judgmental sample and not a statistical sample. Therefore, we could not establish the accuracy or the magnitude of the data being measured. Mitigating the data integrity issues should help promote more accurate mail volume reporting and data integrity. These improvements would result in more accurate cost avoidance calculations and measurement of facility productivity and efficiency, which could enhance management's decisions for planning and allocating resources.

[17] Data integrity impacts relate to validation of the consistency, accuracy, and completeness of data the Postal Service uses. Data integrity impacts are also related to data used to support management decisions that are not fully supported or completely accurate. This can be the result of flawed methodology, procedural errors, or missing or unsupported facts, assumptions, or conclusions.

Appendix C: Management's Comments

DAVID E. WILLIAMS
VICE PRESIDENT, NETWORK OPERATIONS

UNITED STATES POSTAL SERVICE

May 23, 2014

JUDITH LEONHARDT

SUBJECT: Draft Audit Report – Web End-of-Run System (Report Number MS-AR-14-DRAFT)

Thank you for providing the Postal Service with the opportunity to review and comment on the subject draft report.

Management is in agreement with the results of the audit, but would like to take this opportunity to clarify one item discussed. The referral in the audit to "… resets volumes to zero…" is somewhat misleading. At no time is volume reported by the system being zeroed out or deleted. Normal volume counts such as pieces fed (FED), pieces rejected, and total pieces handled (TPH) are not being changed by the system.

The process being referred to happens during the calculation of first handling piece (FHP) volumes on subsequent processing operations. The system tracks volumes intended to be reprocessed on subsequent operations in order to correctly compute FHP. These flowed volumes are tracked for up to three days by the system and applied in the FHP calculations. Any volumes not accounted for within the cited window are not used in the calculations beyond that timeframe.

The Web End-of-Run system is a very robust system used to collect, report, and compute many different metrics used throughout the Postal Service. Its dynamic nature has allowed it to expand over the years to include more functionality and provide deeper insight into distribution and productivity leading to improvements in both. The continued evolution of this system will enhance operational performance.

Recommendation 1:
Updating the Web End-of-Run system to identify volumes reset to zero.

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Management Response/Action Plan:
Management agrees with this recommendation. The system will be updated to identify when volumes are not completely accounted for in downflow operations within the timeframes currently in force. This identification will include a reporting facility for these instances.

Target Implementation Date:
October, 2014

Responsible Official:
Manager, Processing Operations

Recommendation 2;
Improving the consistency of manual mail surveys by standardizing the types of mail to be included in the surveys and enhancing related facility-level training.

Management Response/Action Plan:
Management agrees with this recommendation. The annual survey documentation will be revised to clarify and standardize the volumes to be included and/or excluded. Additional training materials will be developed and deployed to improve local personnel's understanding of the survey.

Target Implementation Date:
August, 2014

Responsible Official:
Manager, Processing Operations

Recommendation 3:
Evaluating additional strategies to improve the methodology used to conduct manual mail surveys.

Management Response/Action Plan:
Management agrees with this recommendation. Continual evaluation of new data sources and technology will be performed. The costs and benefits of any possible changes will be evaluated and changes implemented when they make good business sense.

Target Implementation Date:
Ongoing

Responsible Official:
Manager, Processing Operations

This report and management's response do not contain information that may be exempt from disclosure under the FOIA.

David E. Williams

cc: Ms. Brennan
Corporate Audit and Response Management