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# Highlights

## Objective

Our objective was to evaluate the throughput and productivity performance of the U.S. Postal Service's 33 deployed Small Package Sorting System (SPSS) machines.

Since 2015, the Postal Service has deployed 33 SPSS machines costing over \$141 million. The SPSS machine was designed to provide automated package sorting capability, alleviate existing processing capacity shortfalls, and reduce manual sorting to support package delivery. Currently, the Postal Service is "We evaluated the throughput and productivity performance of the Postal Service's 33 deployed SPSS machines."

investing an additional \$23 million to purchase seven more SPSS machines, scheduled to be operational in November 2017.

# What the OIG Found

We found that on average nationally, the SPSS machine throughput performance goal was exceeded by about five percent from January 1, 2016, through July 31, 2017. The throughput was based on the average number of packages sorted by the SPSS in an hour. The throughput goal was 4,500 packages per hour and the achieved throughput was 4,737 packages per hour. However, only 23 of the 33 SPSS machines, about 70 percent, exceeded the goal and the other 10 were below the goal, from about 132 to 878 packages per hour.

We also found that on average nationally, the Postal Service was not meeting its SPSS productivity goal by about 17 percent from January 1, 2016 through July 31, 2017. The productivity was based on the average number of packages sorted by SPSS compared to employee workhours used to staff the SPSS machines. The SPSS productivity goal was 385 packages per hour and the achieved productivity was 319 packages per hour. Twenty-nine of the 33 SPSS machines, or about 88 percent, failed to meet the goal and the other four were above the goal, from about 14 to 307 packages per workhour.

We conducted SPSS site observations from May to August 2017 at one highperforming site — the Atlanta, GA, Processing & Distribution Center (P&DC) and four low-performing sites — Merrifield, VA, Richmond, VA, Mid-Carolinas, NC, and the Rochester, NY P&DCs. We also reviewed and evaluated the Postal Service's April 2017 Lean Six Sigma (LSS) SPSS project documents at the Columbus, OH, P&DC.

During our site visit to the Atlanta P&DC, we observed SPSS operations and compared them to the best practices identified in the Columbus LSS project. We observed best practices related to supervision and planning that included:

- Monitoring and correcting staff labor code selections for reporting workhours;
- Using standard work instructions for machine set-up and restart; and labor code selection; and
- Matching SPSS staffing to package volume.

As a result, SPSS productivity at the Atlanta P&DC averaged 486 packages per workhour during the period of review, exceeding the productivity goal by 101 packages per workhour, or 26 percent.

At the four low-performing sites we observed lack of supervisory presence and planning that resulted in:

- Incorrect labor code usage for reporting workhours;
- Lack of standard work instructions for machine set-up and restarts and labor code selection; and
- Insufficient package volume to support SPSS staffing.

As a result, SPSS productivity was misstated and throughput did not meet the goals. Better supervision and planning will improve SPSS productivity and throughput.

We calculated that the Postal Service would save about \$24.8 million in labor costs annually by correcting the causes of low productivity nationally. This will

reduce costs, increase operational savings, and support the Postal Service's package platform strategy.

## What the OIG Recommended

We recommended management:

 Ensure adequate supervisor and staff SPSS training that includes standard SPSS machine set-up and restart instructions;

- Ensure staffing to package volume management;
- Ensure monitoring and correct staff labor code selection for reporting workhours; and
- Determine the nationwide applicability of the Columbus, OH, LSS project.

# Transmittal Letter

OFFICE OF INSPECTOR GENERAL UNITED STATES POSTAL SERVICE						
November 29, 2017						
MEMORANDUM FOR:	ROBERT CINTRON VICE PRESIDENT, NETWORK OPERATIONS E-Signed by Kimberly Benoit ERIFY authenticity with eSign Deskto					
FROM:	for Michael L. Thompson Deputy Assistant Inspector General for Mission Operations					
SUBJECT:	Audit Report – Small Package Sorting System Performance (Report Number NO-AR-18-002)					
This report presents the results of our audit of the U.S. Postal Service's Small Package Sorting System Performance (Project Number 17XG019NO000).						
We appreciate the cooperation and courtesies provided by your staff. If you have any questions or need additional information, please contact Margaret B. McDavid, Director, Network Processing, or me at 703-248-2100.						
Attachment						
cc: Postmaster General Corporate Audit and Response Management Chief Operating Officer and Executive Vice President Vice President, Capital Metro Area Operations Vice President, Eastern Area Operations						

# Results

## Introduction/Objective

This report presents the results of our audit of the U.S. Postal Service's Small Package Sorting System (SPSS) Performance (Project Number 17XG019NO000). The objective of our self-initiated audit was to evaluate the throughput and productivity performance of the 33 deployed SPSS machines. See Appendix A for additional information about this audit.

"The SPSS machine was designed to provide automated package sorting capability."

## Background

Since 2015, the Postal Service has deployed 33 SPSS machines costing over \$141 million. The SPSS machine was designed to provide automated package sorting capability, alleviate existing processing capacity shortfalls, and reduce manual sorting to support package delivery. In a January 27, 2017, briefing to the Postal Service's Investment Review Committee, management presented data that showed the throughput, utilization, and volume processed for the 33 deployed SPSS machines were generally positive compared to the Decision Analysis Report (DAR) goals. However, machine productivity needed significant improvement. The Postal Service is using Lean Six Sigma (LSS) techniques from the Columbus, OH, Processing & Distribution Center (P&DC) project to improve productivity.

We ranked the 33 SPSS machines from highest to lowest based on throughput and productivity for the period October 1, 2015, through April 19, 2017. Throughput was based on the average number of packages sorted by the SPSS in an hour and productivity was based on the average number of packages sorted by SPSS machines compared to employee workhours used to staff the machines. We judgmentally selected five SPSS facilities for site observations — one highand four low-performing — based on SPSS throughput and productivity goals.

We also reviewed and evaluated the Postal Service's April 2017 LSS SPSS project documents at the Columbus, OH, P&DC. The Postal Service, at the time of our audit, was not planning any additional LSS projects for SPSS.

The Postal Service is investing an additional \$23 million to purchase seven more SPSS machines, scheduled to be operational in November 2017.

## Finding #1: Small Package Sorting System Performance

We found that on average nationally, the SPSS machine throughput performance goal was exceeded by about five percent from January 1, 2016, through July 31, 2017. Throughput was based on the average number of packages sorted by the SPSS machine in an hour. The throughput goal was 4,500 packages per hour and the achieved throughput was 4,737 packages per hour. However, only 23 of the 33 SPSS machines, about 70 percent, exceeded the goal, while the other 10 were below the goal, from about 132 to 878 packages per hour.

During our site visit to the Atlanta, GA, P&DC — the high-performing site — we observed SPSS operations and compared them to the best practices identified in the Columbus, OH, LSS project. We observed best practices related to supervision and planning that included:

- Monitoring and correcting staff labor code selections for reporting workhours;
- Using standard work instructions for machine set-up, restart, and labor code selection; and
- Matching SPSS staffing to package volume.

The Columbus, OH, LSS project created a standard work instruction that included instructions to ensure employees clock into the correct operation, conduct huddle meetings, and move employees to a productive operation when there is no mail for processing. Additionally, the LSS project required site managers to continuously monitor clock ring issues and provide both operator and supervisor training.

As a result, SPSS throughput at the Atlanta P&DC was about 4,925 packages per hour, or 9 percent above the goal, and productivity averaged 486 packages per workhour, or 26 percent above the goal. Columbus, OH, achieved productivity of 397 packages per hour during the LSS project in March and April of 2017, or about 3 percent above the goal. At the four low-performing sites — the Merrifield, VA, Richmond, VA, Mid-Carolinas, NC, and Rochester, NY, P&DCs — we observed lack of supervisory presence and planning that resulted in:

- Incorrect labor code usage for reporting workhours;
- Lack of standard work instructions for machine set-up, restarts, and labor code selection; and
- Insufficient package volume to support SPSS staffing.

As a result, SPSS throughput and productivity were below the goal as shown in Table 1.

#### Table 1. P&DCs Selected for Site Visits

Facility	Throughput (pieces/run- time)	Throughput Percentage to DAR Goal	Productivity (pieces/work- hour)	Productivity Percentage to DAR Goal
Atlanta, GA	4925	9%	486	26%
Merrifield, VA	4149	(8%)	227	(41%)
Mid-Carolinas, NC	3983	(11%)	279	(28%)
Richmond, VA	3622	(20%)	303	(21%)
Rochester, NY	4283	(5%)	309	(20%)
National Average	4737	5%	319	(17%)
DAR Goal	4500		385	

Source: Enterprise Data Warehouse (EDW) and U.S. Postal Service Office of Inspector General (OIG) calculations.

### Inadequate Management and Supervision

At the low-performing sites we observed a lack of supervisory presence or

monitoring of the SPSS machines. For example, supervisors did not always ensure employees clocked into the correct labor code. We evaluated employee clock ring integrity through the Time and Attendance Collection System (TACS)<sup>1</sup> Employee on the Clock reports for the SPSS machine operation. We identified employees who were not working on the SPSS machine clocked into the SPSS operation and supervisors who were not periodically monitoring the TACS reports to properly staff or correct SPSS clock ring errors.

"Supervisors did not always ensure employees clocked into the correct labor code."

As a result, the P&DCs did not accurately report workhours used to the correct labor code. Management must ensure employee clock rings are properly completed so labor costs can be accurately attributed and measured. Correcting and preventing clock ring issues provides reliable data to evaluate operational efficiency.

We also observed that employees were not always moved to operations where they could be productive during SPSS machine idle times. At the low-performing P&DCs, we observed there were no supervisors present to move employees to operations where they would be productive. At the Merrifield, VA, P&DC, employees and the SPSS machine were unsupervised because the supervisor's work schedule did not align with employee schedules.

## **Staffing to Volume**

We observed that employee shifts were scheduled to begin before sufficient mail volume was available to process, causing an imbalance of workhours to workload. Plant management said employees were scheduled to begin early to set up the machine prior to mail arrival. At the Merrifield, Richmond, and

<sup>1</sup> An automated program used in collecting time and attendance data. TACS stores and processes employee clock rings to generate workhour data that supports Web Management Operating Data System (WebMODS) workhours reporting. Workhours are summarized and transmitted automatically to WebMODS.

Rochester P&DCs, we observed the SPSS machine had already been set up by the prior shift when the employees arrived; however, the employees were not moved to other operations where they could be productive. Productivity is negatively impacted when operational supervisors do not ensure employees are moved to operations where they can be used efficiently.

We also observed a mismatch between mail availability and machine run plans at the Rochester P&DC. The operational managers were attempting to follow the machine run plan; however, at times not enough volume was available to sustain an efficient run.

All SPSS sites should follow the standard work instruction created by the Columbus, OH, LSS project to ensure SPSS processing starts once there is adequate mail volume to run the machine. In addition, when there is no mail to process supervisors should move employees to an operation where they can be productive.

## **Spinner Rack Usage and Mail Alignment**

The Merrifield and Mid-Carolinas P&DCs were not consistently using spinner racks. Spinner racks were designed to reduce the amount of time that discharge bins are out of service due to a full container. The spinner rack is equipped with two sacks — one positioned under the discharge bin to catch packages and one that can be quickly rotated under the bin when the first sack fills. The full sack is then removed, dispatched, and replaced with the empty sack without interrupting the flow of mail being discharged from the bin. Proper use of the spinner racks was documented as a best practice in the Columbus, OH, LSS project and we observed proper use at the Atlanta P&DC. Properly using spinner racks could improve throughput and productivity performance by reducing the amount of time the bin is out of service.

Additionally, the Merrifield, Mid-Carolinas, and Rochester P&DCs were not aligning mail at induction stations correctly. Aligning mail correctly could improve the rate at which the optical scanner reads address information, which could subsequently improve throughput and productivity performance.

We discussed our observations with the respective plant managers who said they would evaluate spinner rack usage and discuss alignment of mail with employees. The Columbus, OH, LSS project included specific SPSS training course numbers for employees and supervisors, spinner rack usage, and proper mail alignment.

### **Communication Boards and Huddle Meetings**

Managers at the low-performing sites did not consistently use daily huddle meetings and communication boards to communicate daily goals and schedule for the SPSS machine. For example, during the Rochester P&DC site visit on July 31, 2017, we observed that management had not updated the communication board since February 6, 2017. Use of the communication board was documented as a best practice in the Columbus, OH, LSS project and we observed this practice at the Atlanta P&DC. Effective use of communication boards could improve throughput and productivity performance by communicating goals and schedules and increasing employee engagement.

### **Summary of Best Practices and Challenges**

The SPSS operational challenges we observed at the low-performing P&DCs created SPSS machine inefficiencies and were consistent with issues noted in the Columbus LSS project. The Columbus, OH, P&DC achieved DAR goals using the best practices developed in the LSS project. Personnel at the Atlanta, GA, P&DC was not aware of the Columbus LSS project; however, they used the same best practices and achieved the DAR goals. A summary of our site observations is in Figure 1.

### Figure 1. Summary of Site Observations



Source: OIG observations.

As a result of the inefficiencies presented in Figure 1, SPSS throughput did not meet the goals of the sites visited and productivity was misstated. Better supervision and planning should contribute to improved SPSS throughput and productivity.

We calculated that the Postal Service would save about \$24.8 million annually, or about \$37.1 million of labor costs from August 2017 through January 2019, by correcting the causes of low productivity nationally. We also calculated a predicted savings shortfall in the amount of about \$19.7 million for the 33 SPSS machines that did not achieve the productivity goal from January 1, 2016, to July 31, 2017. Achieving DAR performance goals will reduce costs, increase operational savings, and support the Postal Service's package platform strategy.

#### **Recommendation #1**

**The Vice President, Network Operations**, should ensure adequate supervisor and staff Small Package Sorting System training that includes standard SPSS machine set-up and restart instructions, including proper use of spinner racks and mail alignment at induction stations.

### **Recommendation #2**

The Vice President, Network Operations, should require management to match staffing to package volume management, including run plan generation and employee staffing and scheduling.

#### **Recommendation #3**

The Vice President, Network Operations, should ensure management is monitoring and correcting staff labor code selection for reporting workhours.

### **Recommendation #4**

The Vice President, Network Operations, should determine the nationwide applicability of the Columbus, OH, Lean Six Sigma project.

## **Management's Comments**

Management agreed with the findings and recommendations but not the monetary impact associated with recommendation 1. In subsequent communication, management agreed that there could be a monetary impact associated with productivity that is lower than the DAR-established target. However, management disagreed with the OIG calculated monetary impact because employees incorrectly charging workhours to the SPSS would make the monetary impact calculation unreliable. See Appendix B for management's comments in their entirety.

In response to recommendation 1, management stated they provide SPSS training to site employees and the Postal Service will continue to provide this training as new SPSS equipment is deployed. Management also provides employees and supervisors with standard work instructions on machine set-up, restart instructions, proper use of spinner racks, and mail alignment at induction stations; and will reissue these instructions to all SPSS sites. Management plans to implement these actions by December 31, 2017.

In response to recommendation 2, management stated they already require all plants to create and maintain a run plan generator. Management will reinforce the run plan generator compliance directive to ensure staffing correlates to package volumes. Subsequent to providing their written response, management communicated they will implement this action by December 31, 2017.

In response to recommendation 3, management stated they initiated 12 Kaizens (Lean Six Sigma (LSS) projects) at low-performing sites to address productivities and proper clock rings. A3s (LSS project documents) have been submitted by site managers as validation of the processes. Management will continue tasking underperforming sites with performing Kaizens to improve performance and stabilize processes. Subsequent to providing their written response, management communicated they will implement this action by December 31, 2017.

In response to recommendation 4, management stated they initiated the Columbus, OH, Kaizen (LSS project). Kaizens have been replicated in the field at 12 SPSS sites. The Postal Service will continue to require underperforming sites to perform Kaizens. Subsequent to providing their written response, management communicated they will implement this action by December 31, 2017.

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

The OIG considers management's comments responsive to the recommendations and the actions taken or planned will address the issues identified in the report when they are implemented nationally. The OIG may perform future audit work to validate the effectiveness of these actions.

Regarding management's disagreement with the monetary impact, Postal Service management used the same productivity data to make decisions — such as purchasing additional SPSS machines — and stated the SPSS achieved productivity in its most recent SPSS DAR. During the exit conference we asked Postal Service management if they had more reliable or accurate data that we could use and they had no response. We believe our calculation is a reasonable estimate of the amount of monetary impact based on the best available data.

All recommendations require OIG concurrence before closure. Consequently, the OIG requests written confirmation when corrective actions are completed. 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.

# Appendices

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# **Appendix A: Additional Information**

"We compared and

evaluated actual

throughput and

productivity to the

DAR performance

metrics."

# **Scope and Methodology**

Our objective was to evaluate the throughput and productivity performance of the Postal Service's 33 deployed SPSS machines.

To achieve our objective, we:

- Analyzed and evaluated data from the Postal Service's EDW, Web End-of-Run (WebEOR), Labor Utilization Reporting System (LURS), and TACS to determine SPSS volume, productivity, throughput, workhours, and employee clock rings.
  - Compared and evaluated actual throughput and productivity to the DAR performance metrics.
- Observed and evaluated actual SPSS performance and employee clock ring procedures at the selected sites and determined operational issues and best practices.
- Interviewed mail processing managers, supervisors, clerks, mail handlers, and maintenance operations and identified performance issues and best practices.

To determine the sites for observations we:

Ranked the 33 SPSS machines from highest to lowest based on throughput and productivity for the period October 1, 2015, through April 19, 2017. Judgmentally selected the five SPSS P&DCs shown in Table 1 for site observations — one high- and four low-performing — based on SPSS throughput and productivity goals<sup>2</sup> from October 1, 2015, through April 19, 2017.

We also reviewed and evaluated the Postal Service's April 2017 LSS SPSS project documents at the Columbus, OH, P&DC. At the time of our audit the Postal Service was not planning any additional LSS projects for SPSS.

We conducted this performance audit from May through November 2017, 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 finding and conclusions based on our audit objective. We discussed our observations and conclusions with management on October 27, 2017, and included their comments where appropriate.

We used computer-processed data from the Postal Service's EDW, WebEOR, LURS, and TACS when performing our analysis. We assessed the reliability of computer-generated data by interviewing knowledgeable agency officials and reviewing related documentation. We determined that the data were sufficiently reliable for the purposes of this report.

<sup>2</sup> We removed the Linthicum, MD, P&DC because it was meeting the DAR throughput goal of 4,500 pieces per hour. We replaced this site with the Rochester, NY, P&DC because it was not meeting either the productivity or throughput DAR goals.

# Prior Audit Coverage

Report Title	Objective	Report Number	Final Report Date	Monetary Impact
Small Package Sorting System Performance and Functionality at the West Valley Processing and Distribution Center	Evaluate whether the performance and functionality of the SPSS machine at the West Valley P&DC met stated expectations.	MI-AR-15-006	8/24/2015	None

# Appendix B: Management's Comments

ROBERT CINTRON VICE PRESIDENT, NETWORK OPERATIONS

POSTAL SERVICE

November 15, 2017

LORI LAU DILLARD DIRECTOR, AUDIT OPERATIONS

SUBJECT: Small Package Sorting System Performance (Report Number NO-AR-18-DRAFT)

Thank you for the opportunity to respond to the OIG audit of the Small Package Sorting System (SPSS) Performance. We generally agree with the recommendations.

As noted in the audit, we have already started to develop and implement improvement initiatives for the SPSS operations which are still fairly new to the Postal Service. One such initiative is the Kaizen performance improvement project that was developed at the Columbus OH P&DC. This project is being replicated at SPSS sites throughout the country. In addition, we provide training to all employees as SPSS machines are deployed. We will re-issue the "best practices" and Standard Work Instructions to all SPSS locations. We will also continue to task underperforming sites to complete LSS Kaizen Projects, with A3 submissions for validation.

Currently, all processing facilities are required to create and maintain Run Plan Generators (RPG). The RPG is an effective tool to manage start times and staffing to projected workload. Usage of the RPG can eliminate employee nonproductive time and provide information to employees and management about productivities achieved.

The Postal Service has established the recommended staffing of the SPSS at 12 employees. This is intended to be an average staffing level over a period of time. Actual staffing, which may be either more or fewer employees, will fluctuate as mail volumes and operating conditions warrant throughout each operating day.

Management agrees that supervisory oversight should be established to confirm employees are charging the proper work to the appropriate operation number for accurate workload and workhour credit and we will reissue guidelines for this activity.

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#### **Recommendation 1:**

Ensure adequate supervisor and staff SPSS training that includes standard Small Package Sorting System machine set-up and restart instructions, including proper use of spinner racks and mail alignment at induction stations.

#### Management Response:

Management agrees with this recommendation. Course 10024386 SPSS Operator - ATF Participant Guide and Course 10024387 SPSS Supervisor - ATF is provided to the site and administered to the employees by the installation contractor during burn-in. We will continue to provide this training to employees as new SPSS equipment is deployed.

The employees and supervisors are also provided Standard Work Instructions (SWI) on machine set-up, restart instructions, proper use of spinner racks and mail alignment at induction stations. These SWI's will be re-issued to all SPSS sites.

Responsible Official: Manager, Processing Operations

Implementation Date:

December 31, 2017

#### Recommendation 2:

Require management to match staffing to package volume management, including run plan generation and employee staffing and scheduling.

#### Management Response:

Management agrees with this recommendation. Management already requires all plants to create and maintain a Run Plan Generator (RPG). Management will reinforce the RPG compliance directive to ensure staffing correlates to package volumes.

#### Responsible Official:

Manager, Processing Operations

#### Implementation Date:

Ongoing

#### Recommendation 3:

Ensure management is monitoring and correcting staff labor code selection for reporting workhours.

#### Management Response:

Management agrees with this recommendation. Management has initiated 12 Kaizens in low performing sites to address productivities and proper clockrings.

A3's have been submitted by the sites as validation of the processes. Underperforming sites will continue to be tasked with performing Kaizens to improve performance and stabilize processes

<u>Responsible Official:</u> Manager, Processing Operations

Implementation Date: Ongoing

**Recommendation 4:** 

Determine the nationwide applicability of the Columbus, OH, Lean Six Sigma project.

#### Management Response:

Management agrees with the recommendation. Management initiated the Columbus OH Kaizen. Kaizens have been replicated by in the field at 12 SPSS sites. We will continue to require this of underperforming sites.

Responsible Official:

Manager Processing Operations

Implementation Date: Ongoing

Robert Cintron Vice President, Network Operations



Contact us via our Hotline and FOIA forms. Follow us on social networks. Stay informed.

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