OFFICE OF INSPECTOR GENERAL
UNITED STATES POSTAL SERVICE

Surface Visibility Scanning – Western Area

Audit Report

Report Number
NL-AR-17-009

September 5, 2017

OFFICE OF INSPECTOR GENERAL
UNITED STATES POSTAL SERVICE

Highlights

Background

The U.S. Postal Services' Surface Visibility Scanning (SV) network was intended to provide nationwide mail container visibility, real-time asset identification, and improved dock operations at over 430 sites. SV sites have Mail Transport Equipment Labelers (MTEL) to print barcoded placards that are scanned six different times using a wireless SVmobile scanning device. These scans record:

- Assignment of MTEL placards to mail containers;
- Closed mail containers for dispatch;
- Loaded mail containers on trailers;
- Departure of trailers from the dock;
- Arrival of trailers at the dock; and
- Unloaded mail containers from trailers.

Permanently affixed trailer barcodes are scanned twice to record:

- Departure of trailers from the dock;
- Arrival of trailers at the dock.

The Postal Service's fiscal year (FY) 2017 national facility scan compliance goal is 91 percent. As of the week ending June 2, 2017, the reported percentage achieved is 92 percent.

We selected the Western Area for our audit because between FYs 2015 and 2016, it had the largest difference in facility scan compliance, ranging from 52 percent to 95 percent, a 43 percent difference. Subsequently, we judgmentally selected four Western Area processing and distribution centers (P&DC) for site visits to identify best practices that could be used to improve SV scan compliance. We selected the Albuquerque and Seattle P&DCs with the highest SV scan compliance rates of over 95 percent and the Portland and St. Paul P&DCs with the lowest scan compliance rates of about 60 percent within a particular quarter. The Western Area's overall SV scan compliance rate increased from about 76 percent as of FY 2016, Q1, to about 92 percent as of FY 2017, Q2.

The objective of our audit was to identify opportunities to improve SV scan compliance at Postal Service P&DCs in the Western Area.

What the OIG Found

We identified three best practices at the two high-performing P&DCs in the Western Area that should provide opportunities for SV scan compliance improvement. In addition, we identified needed improvements in wireless connectivity that should improve scan compliance.

Western Area management attributed its improved overall SV scan compliance rate to conducting scan compliance meetings, using the reporting practices of another Postal Service area to monitor scan compliance, and providing scan compliance training for SV site coordinators. Based on our site

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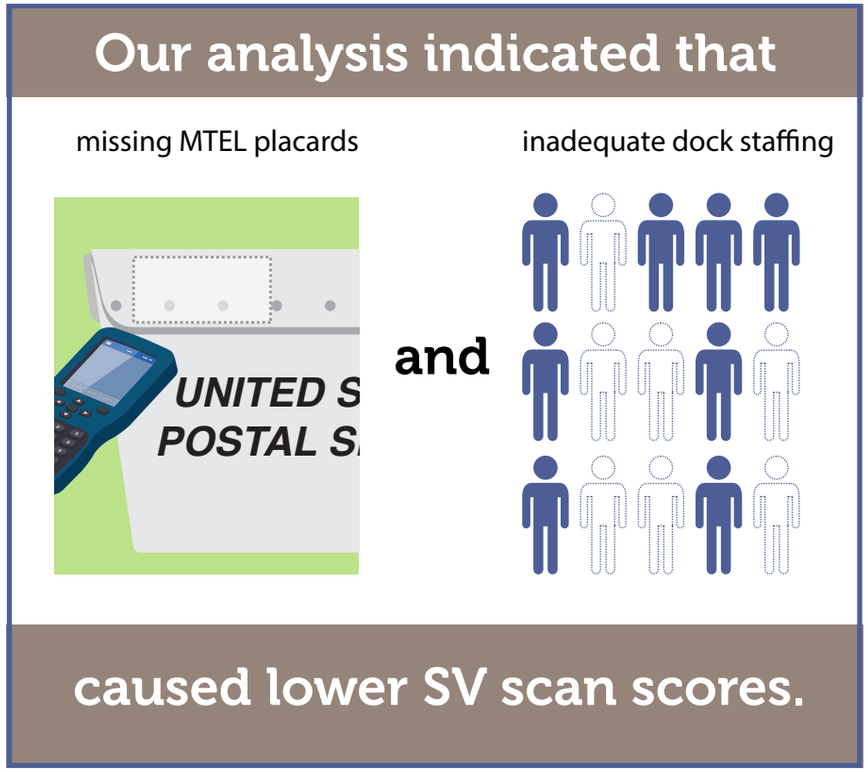
observations, we agree that these practices contributed to their scan compliance rate.

During our visits to the Albuquerque and the Seattle P&DCs, the high-performing sites, we observed the use of expeditor and mail handler teams to improve scan consistency and the printing of new MTEL placards at the end of each tour to reduce failed scans. In addition, we observed the use of the posting of scan data printouts on the workroom floor that compared all Western Area P&DCs' SV scan performance. This was done to highlight the importance of scanning compliance.

We also observed at the four P&DCs, about 15 percent of the mail containers without MTEL placards. This occurred because the P&DC staff did not always print and attach MTEL placards as needed and did not oversee highway contractors who discarded MTEL placards during their manual consolidation of mail for their routes.

Finally, we observed that the Portland and St. Paul P&DCs did not have adequate dock personnel to ensure all scanning was done during the tour one and tour three peak work periods. This occurred at the Portland P&DC because of authorized, but vacant, staff positions. Inadequate staffing also occurred at the St. Paul P&DC because management needed to improve their staffing coordination to ensure adequate coverage during peak work periods. During the audit, the St. Paul P&DC acting plant manager agreed with our observation and plans to reassign employees for adequate coverage.

Our analysis indicated that the missing MTEL placards and the inadequate dock staffing caused lower SV scan scores. Specifically, the average trailer load and unload SV scan scores at the four P&DCs were about 3 percent to 23 percent lower than the other four of the six required SV scan scores through FY 2017, Quarter 2.



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We also found that the Albuquerque and Portland P&DC's SV scanners experienced disruptions in connecting to the P&DC's wireless network. This occurred because of structural building interference and interference from cellular phones, routers, and microwave ovens sharing the same frequency as the SV scanners and network. Additionally, the Portland and St. Paul P&DCs' SV scanners could not connect because of interference from the employees' Bluetooth® connection on their mobile phones.

Finally, we found that P&DC staff can perform multiple SV scans for all of the six SV scan events. Postal Service customers are only able to view the most recent scan. As a result, a later scan of the same event provides incorrect SV scan data to the customer.

Headquarters Enterprise Analytics was aware of the duplicate SV scan issue and conducted a system update in April 2017. The update did not work and management is working on another fix. We are not making a recommendation because management is actively working on a solution. We will continue to follow this issue for any future audit work.

What the OIG Recommended

We recommended management:

- Ensure area implementation of the three best practices we identified.
- Require P&DC managers to develop procedures to ensure MTEL placards are printed and attached to all mail containers and highway contractors do not discard MTEL placards.
- Adjust staffing and scheduling to ensure adequate staffing during peak SV scanning.
- Identify and resolve SV scanning connectivity issues.

Transmittal Letter

OFFICE OF INSPECTOR GENERAL
UNITED STATES POSTAL SERVICE

September 5, 2017

MEMORANDUM FOR: GREG G. GRAVES
VICE PRESIDENT, WESTERN AREA

JEFFREY C. JOHNSON
VICE PRESIDENT, INFORMATION TECHNOLOGY

ISAAC S. CRONKHITE
VICE PRESIDENT, ENTERPRISE ANALYTICS

E-Signed by Michael Thompson
VERIFY authenticity with eSign Desktop

FROM: Michael L. Thompson
Deputy Assistant Inspector General
For Mission Operations

SUBJECT: Audit Report – Surface Visibility Scanning – Western Area
(Report Number NL-AR-17-009)

This report presents the results of our audit of the Surface Visibility Scanning – Western Area (Project Number 17XG015NL000).

We appreciate the cooperation and courtesies provided by your staff. If you have any questions or need additional information, please contact Daniel S. Battitori, Director, Transportation, or me at 703-248-2100.

Attachment

cc: Postmaster General
Chief Operating Officer and Executive Vice President
Corporate Audit Response Management

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Findings

Introduction

This report presents the results of our audit of the U.S. Postal Service's Surface Visibility (SV) scanning process in the Western Area (Project Number 17XG015NL000). The objective of this self-initiated audit was to identify opportunities to improve SV scan compliance at Postal Service processing and distribution centers (P&DC) in the Western Area. See Appendix A for additional information about this audit.

Since fiscal year (FY) 2004, the Postal Service has spent about $120 million on a SV scanning network at over 430 sites. SV scanning is designed to provide mail container visibility, real-time asset identification, and improved dock operations.

The SV sites have a Mail Transport Equipment Labeler (MTEL) to print unique barcoded placards that contain distribution and routing data. The MTEL placards are required to be scanned four different times using a wireless SVmobile scanning device. These scans collect container and trip data to indicate:

- Assignment of MTEL placards to mail containers;
- Closed mail containers for dispatch;
- Loaded mail containers on trailers; and
- Unloaded mail containers from trailers.

Permanently affixed trailer barcodes are scanned twice to record:

- Departure of trailers from the dock;
- Arrival of trailers at the dock.

The Postal Service's FY 2017 national facility scan compliance goal is 91 percent.[1] As of the week ending June 2, 2017, the reported percentage achieved is 92 percent.

We selected the Western Area for our audit because between FYs 2015 and 2016, it had the largest difference in facility scan compliance, ranging from 52 percent to 95 percent, a 43 percent difference. As of June 2, 2017, the Western Area achieved an overall scan compliance rate of about 92 percent.

We judgmentally selected four Western Area P&DCs based on SV scan compliance rates from October 2015 to March 2017 to identify efficient practices and opportunities to improve scan compliance. We selected the Albuquerque and Seattle P&DCs with the highest scan compliance rates of over 95 percent and the Portland and St. Paul P&DCs with the lowest scan compliance rates of about 60 percent within a particular quarter.

1 This is the SV National Performance Assessment goal used for Executive and Administrative Schedule personnel performance at processing facilities in FY 2017.

Western Area management attributed its current 92 percent overall SV scan compliance rate to conducting scan compliance meetings, implementing report practices of another Postal Service area, and providing scan compliance training for SV site coordinators.

Summary

We identified three best practices at the two high-performing P&DCs that should provide opportunities for further SV compliance improvement in the Western Area. In addition, we identified needed improvements in SV connectivity that should improve scan compliance.

Western Area management attributed its current 92 percent overall SV scan compliance rate to conducting scan compliance meetings, implementing report practices of another Postal Service area, and providing scan compliance training for SV site coordinators. Based on our site observations, we agree that these practices contributed to their scan compliance rate.

At the high-performing Seattle and Albuquerque P&DCs, we identified additional best practices. These practices include using expeditor and mail handler teams to improve scan consistency, printing new MTEL placards at the end of each tour to reduce failed scans, and posting of scan data printouts on the workroom floor that compared all Western Area P&DCs' SV scan performance to highlight the importance of scanning compliance.

We also identified opportunities for improvement related to MTEL placards, staff assignment, and connectivity issues. Specifically, we observed about 15 percent of mail containers without MTEL placards at all four P&DCs. We also observed that the Portland and St. Paul P&DCs did not have enough dock personnel to ensure that all scanning was done during the daily 2:30 a.m. to 6:00 a.m. (Tour 1) and 6:00 p.m. to 9:30 p.m. (Tour 3) peak work periods. We concluded that the missing and removed MTEL placards and inadequate dock staffing issues resulted in lower scan scores. Additionally, we found that the Albuquerque and Portland P&DCs had intermittent disruptions in their wireless scanner reception. This occurred because of structural building interference and interference from cellular phones, routers, and microwave ovens sharing the same frequency as the SV scanners and network. Also, the Portland and St. Paul P&DC scanners could not pair due to interference from the Bluetooth® connection on employees' mobile phones.

In another matter, Postal Service personnel can unintentionally perform duplicate scans for each required scan. Customers view SV scan data in the Product Tracking Reporting (PTR) system to track packages, but customers can only see the date and time of the last scan completed for each required scan. Therefore, customers may not see the actual time and date that the required scans were performed on their package. Headquarters Enterprise Analytics personnel are aware of the problem and planned a system update on April 17, 2017; however, our observations at the Atlanta P&DC on June 8, 2017, found that the update did not resolve the issue. We will follow up on resolution of the duplicate scan issue, although we will not be making a specific recommendation at this time.

Improved Compliance

The Western Area's overall scan compliance increased from about 76 percent as of FY 2016, Quarter (Q) 1, to 92 percent as of FY 2017, Q2. Scan compliance improved because Western Area management conducted area-wide SV compliance meetings, implemented reporting practices from the Eastern Area, and trained SV site coordinators on scan compliance. We evaluated the training and reporting processes and we agree that these practices contributed to their scan compliance rate.

During our visits to the Albuquerque and Seattle P&DCs, the two high-performing facilities, we observed best practices. Specifically, at the Seattle P&DC, we observed an expeditor and mail handler assigned at each dock door to coordinate and complete the necessary arrive/depart and load/unload scans, reducing duplicate scanning. In addition, at the end of each tour, we observed the printing of new MTEL placards and the conducting of the terminate scans to void old placards that are no longer

needed,[2] which reduces the chance of failed scans. At the Albuquerque P&DC, we observed posting of scan data printouts on the workroom floor, comparing the P&DC's performance to those of other Western Area facilities to highlight the importance of scanning compliance.

Lack of Mail Transport Equipment Labeler Placards to Scan

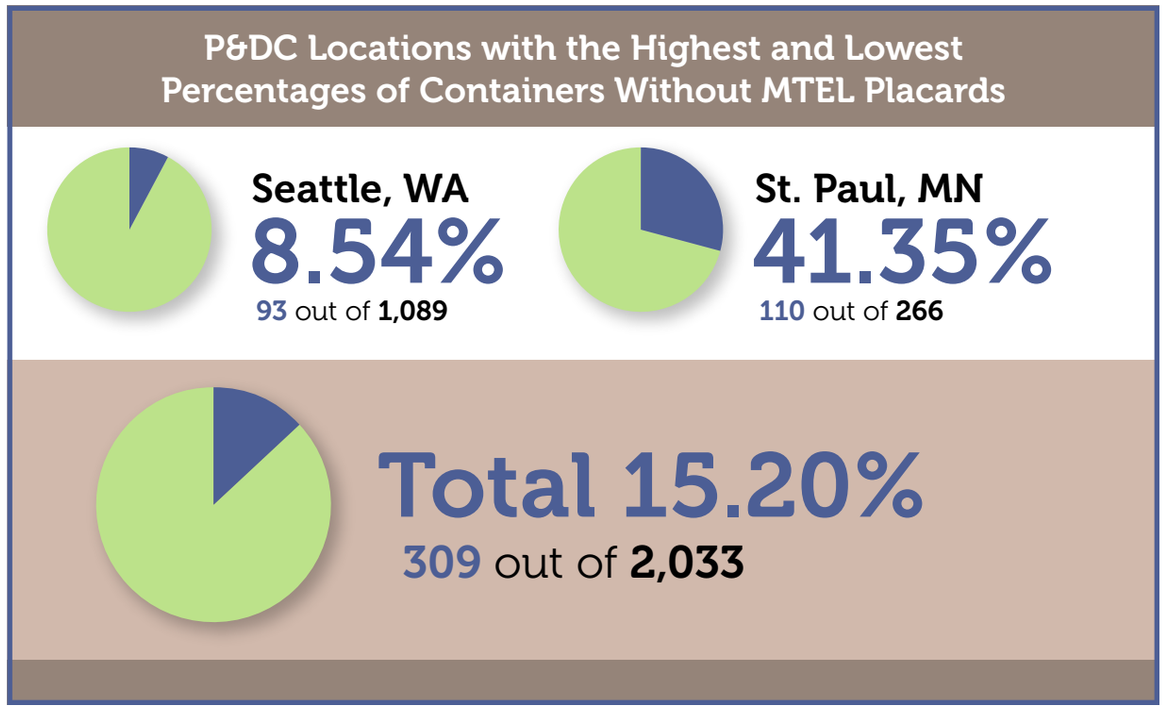
We determined through our observations at the four Western Area sites visits that about 15 percent of the mail containers did not have MTEL placards (see Table 1).

Table 1. Containers Without MTEL Placards

P&DC Location	Date of Observations	Number of Containers Without Barcoded Placards	Total Containers Observed	Percentage of Containers Without Barcoded Placards
Seattle, WA	April 4 – 6, 2017	93	1,089	8.54%
Albuquerque, NM	April 10 – 14, 2017	60	358	16.76%
St. Paul, MN	April 24 – 27, 2017	110	266	41.35%
Portland, OR	April 18 – 20, 2017	46	320	14.38%
Totals		**309**	**2,033**	**15.20%**

Source: U.S. Postal Service Office of Inspector General (OIG) analysis.

This occurred because the P&DC staff did not always print and attach MTEL placards as needed and highway contractors discarded MTEL placards during their manual sorts. An MTEL placard is created and assigned to a mail container and is supposed to be scanned six times when at a facility to ensure the visibility of mail containers. Without the MTEL placards on mail containers, visibility of the mail containers is lost and customers may seek alternative delivery options to gain such visibility.



Assignment of Staff

We observed that the Portland and St. Paul P&DCs did not have enough dock personnel to ensure all scanning was

2 The placard terminate scan ends the MTEL placard life and allows no additional scans on that placard. This is an internal scan and no impact on mail container visibility or scan compliance.

done during the daily 2:30 a.m. to 6:00 a.m. (Tour 1) and 6:00 p.m. to 9:30 p.m. (Tour 3) peak work periods, respectively. This occurred at the Portland P&DC because management did not have adequate staffing because of authorized, but vacant, positions. Specifically, plant management from the Portland P&DC stated that they can only staff to their approved earned complement.[3] Based on our review of Web Complement Information System (WebCOINS),[4] the Portland P&DC is understaffed by about 80 personnel during Tour 1 and about eight personnel during Tour 3 from authorized levels.[5] Inadequate staffing also occurred at the St. Paul P&DC. The acting St. Paul P&DC plant manager recognized the need to improve staffing coordination to ensure adequate coverage during peak work periods. The acting plant manager plans to reassign employees to ensure adequate staff are available to conduct scans. Without adequate staffing for SV scans, there is reduced dock productivity and reduced mail container visibility for customers.

Effect on Scan Scores and Opportunities for Improvement

We concluded that the lack of MTEL placards and alignment of staffing contributes to lower scan scores. We also reviewed Enterprise Data Warehouse (EDW) data and determined that the average trailer load and unload scan scores at the four P&DCs varied from about 3 percent to 23 percent lower than the other four scan scores through FY 2017, Q2. Load and unload scans are designed to determine how full the trailers are loaded and unloaded (see Table 2).

Table 2. Average Mail Container Load/Unload Scan Scores Compared to Average Scan Scores

P&DC Location	Load/Unload Average	Average of Other Four Scores	Difference
Albuquerque, NM	93.32%	95.88%	2.56%
Portland, OR	73.08%	90.96%	17.87%
Seattle, WA	91.37%	96.06%	4.69%
St. Paul, MN	62.85%	86.24%	23.39%

Source: EDW average FY 2017, Qs 1 and 2.

The Postal Service calculates the scan compliance rate by dividing the total of all six scans performed by the number of expected scans. Scan scores are tracked by facility, district, area, and headquarters personnel. The Postal Service issues weekly SV scan reports that provide the results of expected and performed scans.

By adopting the best practices of the high-performing P&DCs and addressing a lack of MTEL placards and staff alignment, the Portland and St. Paul P&DCs could potentially avoid the risk of losing about $330 million in revenue from customers who seek alternative delivery options because of low mail container visibility. Increased mail container visibility enables customers to plan their mailings and positions the Postal Service to be more competitive.

Connectivity Issues That Affect Scanning Compliance

Postal Service personnel at SV-equipped sites use SVmobile scanners, which are wireless handheld touch screen computers with an integrated barcode scanner, for scanning mail containers. The SVmobile scanners collect end-to-end container and trailer data

3 Authorized positions are the official positions posted to the facility but earned complement is based upon the mail workload volume credited to the facility.
4 WebCOINS is a web-based tool for managing and tracking employee complement levels by operational unit.
5 The Postal Service did not have enough data to show specific numbers for the St. Paul P&DC.

from scans performed by users at SV facilities nationwide. We found that the Albuquerque and Portland P&DCs' SV scanners had intermittent disruptions in their network connectivity. This occurred because structural metal beams, interior walls, and interference caused by other electronic devices, such as cellular phones, routers, and microwave ovens, limited wireless coverage of SV scanners. Without assessing the SV network environment, SV scans may not be captured and mail container visibility may be lost. Additionally, the Portland and St. Paul P&DCs' SV scanners could not connect to long-range scanners because of interference from the employees' Bluetooth® connection on their mobile phones.

The SV wireless connectivity issues we identified at the Portland and St. Paul P&DCs were examined by the Postal Service Information Technology (IT) in an April 2016 white paper.[6] The white paper identified similar SV scan network issues at the Los Angeles P&DC and determined that the Postal Service should focus on examining and isolating Bluetooth and Wi-Fi network frequencies to resolve wireless connectivity issues. Suggestions for improving interference between networks included radio frequency spectrum analysis, reducing the range of overlapping Wi-Fi networks, and isolating certain frequencies for Bluetooth usage.[7] The white paper also noted that the Bluetooth pairing process is affected by the limited number of radio frequencies available for each device.[8]

Other Matters

Mail handlers, mail processing clerks, and expeditors can unintentionally perform duplicate scans for each of the six required scans. We determined that duplicate scans change the date and time of tracking reported to customers. The SV scan process is intended to link multiple scans and collect data on mail containers to achieve 100 percent mail visibility for customers. This visibility is achieved as the SV scan data is transmitted to the PTR system, which tracks the delivery status for mail and parcels for customers. However, the PTR tracking history only captures the time and date of the last scan performed for each required scan; therefore, customers may not see the actual time and date of required scans. Headquarters Enterprise Analytics personnel were aware of the problem and performed a system update on April 17, 2017, to warn personnel before they make a duplicate scan. However, our observations at the Atlanta P&DC on June 8, 2017, found that the update did not provide such a warning and confirmed that duplicate scans are still occurring in SV. Our audit only focused on the Western Area's disrupted wireless network. We will follow up on the resolution of the duplicate scan issue, although we will not be making a specific recommendation at this time.

6 *Bluetooth and Wi-Fi Troubleshooting White Paper* Version 1.0.
7 Bluetooth and Wi-Fi are radio frequency-based technologies that share the same frequencies. There can be interference due to the radio signals of Wi-Fi antennas for devices interfering with neighboring Bluetooth and Wi-Fi antennas. Reduction of radio signals can be achieved by using smaller antennas on certain networks to reduce the effective range of the network. In addition, Bluetooth needs a minimum of 20 radio frequencies to operate effectively.
8 There are 79 possible frequencies available for use by Bluetooth devices but a minimum of 20 frequencies are necessary for the uninterrupted use of the devices. However, those frequencies are shared with wireless Internet devices, cordless phones, and other Bluetooth devices.

Recommendations

We recommend management ensure area implementation of best practices; require P&DC managers to develop procedures; adjust staffing and scheduling during peak SV scanning; and identify and resolve connectivity issues.

We recommend the Vice President, Western Area:

1. Implement in the Western Area the following Surface Visibility scanning best practices. Specifically:
   - Use teams to improve scan consistency.
   - Print new placards at the end of each day to reduce failed scans.
   - Post compliance reports to compare Processing & Distribution Centers' performance to those of other Western Area facilities to highlight the importance of scanning.
2. Direct district managers to require all Processing & Distribution Center managers develop procedures to ensure that Mail Transport Equipment Labeler placards are printed and attached to mail containers and not removed by highway contractors during the manual mail consolidations.
3. Direct district managers to ensure that all Processing & Distribution Center managers adjust staffing and scheduling to ensure adequate coverage during peak Surface Visibility scanning periods.

We recommend the Vice President, Western Area, in conjunction with the Vice President, Information Technology, and the Vice President, Enterprise Analytics:

4. Assess the Surface Visibility scan network environment in all Western Area Processing & Distribution Centers to identify and resolve wireless connectivity issues that affect Surface Visibility scanning.

Management's Comments

Management partially agreed with the findings and recommendations. Management disagreed with the Portland P&DC being understaffed, stating that WebCOINS may have shown vacant positions but the observation did not take into account their review and rightsizing of the Portland P&DC or Portland's earned complement. Management also disagreed that the Portland and St. Paul P&DCs could avoid losing $330 million in revenue by adopting best practices and addressing the issues with MTEL placards and staffing alignment. Management stated that the Portland P&DC had improved its total SV scan compliance by replicating Western Area best practices and the scan compliance is increasing and they expect that to continue. In addition to these disagreements, management indicated that the report contained the following gaps and inaccuracies.

- Management indicated that the scanner on the cover is the carrier Mobile Delivery Device scanner and not the SVmobile CN51 scanner.
- Management stated that personnel scan MTEL placards for the assign, close, load, and unload scans and scan the permanently affixed trailer barcodes for the trailer depart and arrival scans.
- Management identified that the latency in the wireless network does not have an impact on SV scan compliance. SV scanners can capture and store data while offline and transfer data when the device reconnects. Management also stated that based on their analysis of SV scanner usage reports, the long-range scanners are successfully scanning load and unload scans.

- Management indicated that as of May 2017, duplicate trailer depart scans include a warning that the trip has already departed and asks if the departure time should be updated.

- Management indicated that the business rules in PTR minimize customer impact of duplicate scans and that the duplicate scan issue does not have any effect on scan compliance.

Regarding recommendation 1, management did not agree that creating teams of expeditors and mail handlers to coordinate and complete scans or the printing of new placards at the end of each tour would ensure a reduction in failed scans. However, management will reinforce Western Area Lean Six Sigma operating instructions to include monitoring requirements by September 15, 2017.

Regarding recommendation 2, management agreed and will ensure P&DC managers develop procedures to ensure contract drivers do not consolidate or load mail until a Postal Service representative provides an ”All Scanned” message. In addition, they will provide training and procedures on performing consolidate scans. Management will complete these activities by September 15, 2017.

Regarding recommendation 3, management agreed to re-emphasize daily cadence[9] activities to ensure that performance at high-levels to include peak periods by the targeted implementation date of September 15, 2017.

Regarding recommendation 4, management disagreed that wireless connectivity issues are affecting SV scan compliance, stating that wireless connectivity issues have a minimal impact on SV scan compliance. They stated that SV scanners store data offline until connectivity is reestablished. Management provided an analysis showing that 95 percent of Western Area scans are transferred in three seconds, which management can use to pinpoint potential connectivity issues without impacting SV compliance. Additionally based on their review of Western Area trouble tickets, management did not identify any systemic wireless connectivity issues contributing to SV scanning problems.

See Appendix B for management’s comments in their entirety.

Evaluation of Management’s Comments

The OIG considers management’s comments responsive to recommendations 2 and 3 and corrective actions should resolve the issues identified in the report. However, the OIG considers management’s actions unresponsive to the findings and recommendations 1 and 4.

Regarding recommendation 1, the OIG did not conclude that teams of expeditors and mail handlers coordinating and completing scans would reduce the number of failed scans but would improve consistency and reduce duplicate scans. As for the printing of new placards at the end of each day, the OIG concluded that it will reduce failed scans because the Seattle P&DC, where this practice was identified, had the lowest observed missing placard percentage and the highest scan performance among the four selected P&DCs.

Regarding recommendation 4, the OIG believes that wireless connectivity is an issue that is not resolved by the offline caching of data. First, management concurred with our finding that each site is structurally unique and presents unique connectivity challenges

9 The SV daily cadence is a Western Area management strategy to ensure daily SV scan compliance. SV site managers and supervisors use a checklist to certify completion of daily tasks to monitor scan compliance.

that must be examined and addressed on a site-by-site basis. Second, as noted in our finding, an April 2016 Postal Service white paper determined that the Postal Service should focus on examining and isolating Bluetooth and Wi-Fi network frequencies to resolve wireless connectivity issues. Third, although we did not conclude there was a systemic connectivity issue, we identified 21 service tickets since the beginning of FY 2017 submitted by the Albuquerque, Portland, and St. Paul P&DCs related to SV scanning and connectivity. Six of those tickets noted that Postal Service personnel observed scans occurring but did not upload the data into SVWeb 2.0. Postal Service management said that wireless connectivity issues have minimal impact on SV compliance, but they did not provide any assessment to support their statement.

The OIG believes that the report statements regarding the Portland P&DC are accurate. With regard to staffing, we used the information available to quantify the observation of insufficient scanning personnel during peak times. If WebCOINS is inaccurate, management should review and adjust as appropriate. For the potential revenue loss, we acknowledge the Portland P&DC's improvement. We based the potential revenue loss on a risk assessment which considered the effect of not implementing best practices.

For the gaps and inaccuracies management identified, we revised the cover photo and clarified the breakout of scans. However, as identified above in our response to recommendation 4, the OIG believes that wireless connectivity is an issue that is not resolved by offline caching of data. The OIG also tested SV scans on June 8, 2017, and found that the update did not provide a duplicate scan warning and we confirmed that duplicate scans are still occurring. Although the duplicate scans do not affect scan compliance, we determined the information in PTR may not provide correct information to customers. As stated in the report, we will follow up on the resolution of the duplicate scan issue.

All recommendations require OIG concurrence before closure. Consequently, the OIG requests written confirmation when all 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

Click on the appendix title to the right to navigate to the section content.

Appendix A: Additional Information

Background

In 2004, the Postal Service approved funding of $52.7 million in capital investments to track mail containers through the surface transportation network. The capital investment initiated the deployment of SV scan capabilities to various sites, including surface transfer centers (STC), network distribution centers (NDC), and P&DCs to track mail at various points.

Subsequent funding was approved in 2014 and 2015:

- In 2014, management approved $6.3 million to purchase servers and storage to replace outdated hardware and update the SV system from a distributed to a centralized solution.
- In 2015, management approved $60.4 million to procure new scanner devices, expand to 90 non-SV scan sites, and install Wi-Fi at 40 sites.
- In 2016, management approved a Decision Analysis Report modification to expend the remaining funds from 2015 on SV functionality to 115 non-SV sites.

Objective, Scope, and Methodology

The objective of our audit was to identify opportunities to improve SV scan compliance at Postal Service P&DCs in the Western Area.

Our site selection methodology for performing an area-wide audit included analyses of Performance and Results Information System (PARIS) Transportation Risk SV data. We determined the SV scanning practices that included four P&DCs: Albuquerque and Seattle (high-performing) and Portland and St. Paul (low-performing). The high and low performers were paired and we conducted reviews during concurrent plant visits for audit consistency and comparability.

We selected the Western Area based on the variance of the population (scans) using scan compliance data. Variance is a measure of how far the scans are from the mean and was chosen because a wider variance could reflect truer distinctions between lower and higher performing facilities. The Western Area presented the largest average variance (mean), ranging from 52 percent to 95 percent for FYs 2015 and 2016. This method provides a representative sample of the population by considering every score in our data set. There were sites with zero scores in our sampling period due to installation of SV scanning equipment in the first quarter that non-zero data was available. We then separated scan data for FY 2016 by quartile to identify the top 25 percent of high performers (Q4) and bottom 25 percent of low performers (Q1).

We then sorted the P&DCs within the quartiles by mail volume and judgmentally selected two high- and low-performing P&DCs to ensure they were comparable operationally using total mail volume as an operational measure. We selected the higher performing sites first and then used mail volume profile as additional criteria. Therefore, we selected Albuquerque and Seattle as our initial high-performance sites and based our low-performing selections to more closely match the high performers. We considered other facilities based on scan scores but eliminated them due to volume differences. Albuquerque and Seattle were the highest performing P&DCs in Quartile 4. Additionally, the St. Paul and Seattle P&DCs have similar volume profiles, as noted below. The following four P&DCs are included in our scope (see Table 3).

Table 3. Facility Profiles for the Selected P&DCs

P&DC	Location	Volume*	Performance	Scan Rate
Seattle	Seattle, WA	5,022,926,760	High	95.2%
Albuquerque	Albuquerque, NM	2,361,965,988	High	95.1%
St. Paul	St. Paul, MN	5,007,624,502	Low	66.9%
Portland	Portland, OR	3,276,385,937	Low	61.2%

*Includes first-handled pieces, total pieces handled, and non-added total pieces handled.

Finally, there are differences with scanning scores in FY 2017 due to general improvements in scanning compliance in the Western Area. Between October 2015 and March 2017, the average scan score in the Western Area increased from 75 to 89 percent, an increase of over 14 percent. The selection of the quartile method in conjunction with our statisticians meant that we choose every quarterly score within the prior two fiscal years as part of the sampling universe rather than the average score for each facility. However, the quartile analysis results for the site selection are similar using only scan scores from FY 2016. We selected the Western Area because in FYs 2015 and 2016, it had the largest difference in facility scan compliance, ranging from 52 percent to 95 percent, a 43 percent difference. We judgmentally selected four P&DCs — the Albuquerque and Seattle P&DCs with high scan compliance rates of over 95 percent and the Portland and St. Paul P&DCs with low scan compliance rates of over 60 percent within a particular quarter.

We received assistance from the data analytics manager on the scan compliance reporting available for SV and potential data reporting and SV system issues.

To achieve our objective, we:

- Interviewed Postal Service Headquarters SV program staff, Western Area officials, and SV system coordinators at the P&DCs we visited to understand SV scanning processes.
- Interviewed Western Area officials to identify area-wide initiatives that improved scan compliance.
- Observed of the SV scanning processes to identify efficient practices and opportunities to improve scan compliance including review of the area-wide initiatives at the Albuquerque, Portland, Seattle, and St. Paul P&DCs.
- Analyzed and evaluated related scanning data from SV Web and EDW for FYs 2012 through 2017 in the site selection process and to determine if scan performance had improved.
- Analyzed and evaluated PARIS Transportation Risk SV data to ensure consistency of data analyses.
- Reviewed and evaluated the relevant criteria on SV scanning procedures and processes.
- Analyzed and evaluated FY 2016 commercial revenue data from EDW for the Portland and St. Paul Post Offices to determine potential revenue at risk.
- Consulted with an OIG operations research analyst to develop our other impact methodology.

We conducted this performance audit from February through September 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 objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. We discussed our observations and conclusions with management on August 7, 2017, and included their comments where appropriate.

We assessed the reliability of SV Web and EDW data by performing physical observations at the Albuquerque, Portland, Seattle, and St. Paul P&DCs from April 4 through 27, 2017, to assess the reliability of the system data; and by interviewing site SV coordinators, supervisors, expediters, clerks, and mail handlers who monitor and conduct SV scans. We determined that the data were sufficiently reliable for the purposes of this report.

Prior Audit Coverage

The OIG did not identify any prior audits or reviews related to the objective of this audit.

Appendix B: Management's Comments

ISAAC S. CRONKHITE
VICE PRESIDENT
ENTERPRISE ANALYTICS

UNITED STATES POSTAL SERVICE

August 22, 2017

LORI LAU DILLARD
DIRECTOR, AUDIT OPERATIONS

SUBJECT: Surface Visibility Scanning—Western Area (Report Number NL-AR-27-DRAFT])

Thank you for the opportunity to review and provide comments on the Office of the Inspector General's (OIG) subject draft audit report. Enterprise Analytics (EA) disagrees with Recommendation 4 directed to the Vice President, Information Technology and the Vice President, Enterprise Analytics. Additionally, we offer the attached comments, which denote gaps and inaccuracies we identified in the draft audit report.

Recommendation 4:
We recommend the Vice President, Western Area, in conjunction with the Vice President, Information Technology, and the Vice President, Enterprise Analytics:

Assess the SV scan network environment in all Western Area Processing & Distribution Centers to identify and resolve wireless connectivity issues that affect SV scanning.

Management Response/Action Plan:
Management disagrees with this recommendation. The SV application was designed to allow for scan capture regardless of the state of wireless connectivity, and users can continue to scan even when the device is offline. These scans are stored locally on a device's cache and automatically transferred when the device reconnects to the wireless network or when the device is connected to the network via cradling. To this end, EA asserts that the impact of SV scan compliance, due to wireless connectivity issues, is minimal.

The current process for troubleshooting and resolving network issues will continue to be followed. This involves incident detection and problem reporting by site personnel, followed by investigation and mitigation through a tiered IT support structure, which may result in environment and/or network changes, if needed. The troubleshooting activity is primarily performed by IT technicians, with support from EA's SV application support personnel.

Isaac S. Cronkhite

Attachment

cc: Greg G. Graves, Vice President, Western Area
Jeffrey C. Johnson, Vice President, Information Technology
Sally K. Haring, Manager, Corporate Audit Response Management

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Enterprise Analytics Management Response
Surface Visibility Scanning – Western Area, Report Number NL-AR-27-DRAFT

Surface Visibility (SV) Scanning is currently available at 374 postal sites and Surface Visibility Web is available at over 500 postal sites. In September 2016, we began phase 2 of the expansion of the CN51 devices – replacements to the legacy Motorola IMD scanners to the SV network and increased visibility from 260 sites to 374 sites. Below is the SV Scan Compliance Scores for the four facilities surveyed in this report for the week of 7/22/2017 – 7/28/2017.

SV Scan Compliance Scores week of 7/22/17 – 7/28/17

	Outbound Scanning				Inbound Scanning				
	Placard Assign	Close	Load	Trailer Depart	Unload	Trailer Arrive	Total Container Score	Total Trailer Score	Total Scan Score
ALBUQUERQUE PDC	93.8%	94.6%	94.3%	100.0%	90.9%	100.0%	93.3%	100.0%	93.9%
ST PAUL MN P&DC	95.9%	90.7%	89.8%	99.2%	87.6%	97.3%	91.2%	98.3%	91.8%
PORTLAND P&DC	96.7%	95.9%	89.5%	98.6%	94.6%	98.7%	93.8%	98.6%	94.2%
SEATTLE P&DC	98.8%	96.8%	91.9%	100.0%	93.1%	99.6%	95.2%	99.8%	95.5%

The SV application was designed to allow for scan capture regardless of the state of wireless connectivity; meaning users can continue to scan even when the device is offline. These scans are stored locally on the device's cache and automatically transfer when the device reconnects to the wireless network or when the device is connected to the network via cradling.

In an effort to identify potential network related issues, the SV Program measures transfer time from the device to database. A recent analysis of this data for all sites in the Western Area indicates a 3 second transfer time for the 95% percentile of all scans (this is also in line with the national average). Focusing on the 4 sites included in this study shows performance consistent with other sites. It should be noted that latency does not have an impact on SV Scan Compliance, rather is used an indicator of user experience and can be used to help pinpoint potential connectivity issues.

Scan Transfer Latency: 6/17/17 - 7/20/17

Site name	95th Percentile (secs)
870 - ALBUQUERQUE PDC	3
970 - PORTLAND (OR) P&DC	3
550 - SAINT PAUL (MN) P&DC	3
980 - SEATTLE (WA) P&DC	3

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Enterprise Analytics – Surface Visibility Scanning – Western Area

Response to OIG Draft Audit Report Number NL-AR-27-DRAFT

TOC	OIG Report	EA Response
Cover Page		Photo Discrepancy: The scanner used on the cover page is the carrier MDD scanner, not the SVmobile CN51 Scanner 
Highlights – Background page	SV sites have Mail Transport Equipment Labelers (MTEL) to print barcoded placards that are scanned six different times using a wireless SVmobile scanning device. These scans record: ▪ Assignment of MTEL placards to mail containers; ▪ Closed mail containers for dispatch; ▪ Loaded mail containers on trailers; ▪ Departure of trailers from the dock; ▪ Arrival of trailers at the dock; and ▪ Unloaded mail containers from trailers.	There are six required SV scans; however only 4 scans are required on MTEL placards using the SVmobile device: ▪ Assign ▪ Close ▪ Load ▪ Unload The remaining 2 scans are performed on trailer barcodes (barcodes are permanently affixed to trailers): ▪ Trailer Depart ▪ Trailer Arrive
Highlights page	We also found that the Albuquerque and Portland P&DC's SV scanners experienced disruptions in connecting to the P&DC's wireless network. This occurred because of structural building interference and interference from cellular phones, routers, and microwave ovens sharing the same frequency as the SV scanners and network.	As each site is structurally unique with a variable number of "connected" employees, issues related to wireless interference are handled by the Raleigh wireless network team on a site by site basis. A recent analysis of this data for all sites in the Western Area indicates a 3 second transfer time for the 95% percentile of all

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	Additionally, the Portland and St. Paul P&DCs' SV scanners could not connect because of interference from the employees' Bluetooth® connection on their mobile phones.	scans (this is also in line with the national average). Focusing on the 4 sites included in this study shows performance consistent with other sites. It should be noted that latency does not have an impact on SV Scan Compliance. The SV application has offline scanning capabilities to allow users to continue to scan in the event devices lose connectivity with the wireless network. All scans captured while offline are stored on the device cache and transferred to the database once the device reconnects to the network wirelessly or is placed in the cradle.
Highlights page	Finally, we found that P&DC staff can perform multiple SV scans for all of the six SV scan events. Postal Service customers are only able to view the most recent scan. As a result, a later scan of the same event provides incorrect SV scan data to the customer.	Product Tracking and Reporting (PTR) has business rules that control event display on the internet. As a general rule, only the earliest or latest arrive or depart event is displayed externally. Therefore, for most instances, when multiple events of the same type are captured at a location on the same day, the events are suppressed from the internet display. The business rules in PTR mitigates the impacts to customers. It should be noted that performing duplicate scans on MTEL placards does not affect scan compliance. Duplicates are handled on the backend system through intelligent logic. This permits users to scan and not be interrupted with prompts.
Highlights page	Headquarters Enterprise Analytics was aware of the duplicate SV scan issue and conducted a system update in April 2017. The update did not work and management is working on another fix. We are not making a recommendation because management is actively working on a solution. We will continue to follow this issue for any future audit work.	The SV application was designed to handle "non-standard" scanning processes on the backend to minimize interruptions to the users on the front end, to the extent possible. As such, rules exist to seamlessly handle multiple scans of the same barcodes in the following scan modes: Assign, Close, Load, Unload, and Trailer Arrive.

		The exception to this rule applies to Trailer Depart scans, as an update is an indication that the trailer was not previously departed and can impact downstream estimates of arrival. In this scan mode the user receives the following prompt: "This trip has already departed. Would you like to update the departure time?" The user has the choice at that time to decide if a second (duplicate) Trailer scan is appropriate. Business logic recognizes that acknowledgment and subsequent update of the departure time is an indication that the trailer is actually late (or was previously departed in error). We believe the issue described is referring to the scenario where a trip is updated from 'on time' to 'late' based on scans performed in both the SVmobile application and also the PVS Driver application. As background, the PVS Driver application was introduced in November 2016 at 134 sites (including 3 of the 4 sites referenced in these findings). The application resides on a model of the CN51 with cellular capabilities and enables scanning by PVS drivers at all stops on their run. Initially, the application was limited to Arrive and Depart scans but has since been updated to also include Load and Unload scanning. When the application was deployed, the field began reporting that trips were first being departed using the SVmobile application and then again by the PVS driver at a later point. This could potentially result in a case where a trip was departed on time in SV and departed again much later by the PVS driver. It is our assumption that this is the "duplicate scan issue" being referred to in this report. An update was deployed in early May 2017 to add a prompt to PVS drivers when attempting to depart a trip that has already been departed.

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		In April 2017 an update was deployed specifically to the PVS Driver application for Trailer Depart scans to mirror the duplicate Trailer scan warning in SV. The user has the choice at that time to decide if a second (duplicate) Trailer scan is appropriate. Business logic recognizes that acknowledgment and subsequent update of the departure time is an indication that the trailer is actually late (or was previously departed in error). There are currently no service tickets assigned to the SV team indicating this feature is not working as intended. Further, these scenarios have been reproduced in the lab and have resulted in the "already departed" warnings displaying on the device when an attempt was made to re-depart a trip.
Introduction page 1	1. The SV sites have a Mail Transport Equipment Labeler (MTEL) to print unique barcoded placards that contain distribution and routing data. The MTEL placards are required to be scanned six different times using a wireless SV mobile scanning device. These scans collect container and trip data to indicate: ▪ Assignment of MTEL placards to mail containers; ▪ Closed mail containers for dispatch; ▪ Loaded mail containers on trailers; ▪ Departure of trailers from the dock; ▪ Arrival of trailers at the dock; and ▪ Unloaded mail containers from trailers.	There are six required SV scans; however only 4 scans are required on MTEL placards using the SVmobile device: ▪ Assign ▪ Close ▪ Load ▪ Unload The remaining 2 scans are performed on trailer barcodes (barcodes are permanently affixed to trailers): ▪ Trailer Depart ▪ Trailer Arrive
Summary page 2	In another matter, Postal Service personnel can unintentionally perform duplicate scans for each required scan. Customers view SV scan data in the Product Tracking Reporting (PTR) system to track packages, but customers can only	Product Tracking and Reporting (PTR) has business rules that control event display on the internet. As a general rule, only the earliest or latest arrive or depart event is displayed externally. Therefore, for most instances, when multiple events of the same type are captured at a location on the same

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	see the date and time of the last scan completed for each required scan. Therefore, customers may not see the actual time and date that the required scans were performed on their package. Headquarters Enterprise Analytics personnel are aware of the problem and planned a system update on April 17, 2017; however, our observations at the Atlanta P&DC on June 8, 2017, found that the update did not resolve the issue... at the end of each tour, we observed the printing of new MTEL placards and the conducting the terminate scans to void old placards that are no longer needed,[1] which reduces the chance of failed scans	day, the events are suppressed from the internet display. The business rules in PTR mitigates the impacts to customers. It should be noted that performing duplicate scans does not impact compliance scores. Duplicates are handled on the backend system through intelligent logic. This permits users to scan and not be interrupted with prompts.
Lack of MTEL Placards to Scan - page 3	An MTEL placard is created and assigned to a mail container and is supposed to be scanned six times when at a facility to ensure the visibility of mail containers.	There are six required SV scans; however only 4 scans are required on MTEL placards using the SVmobile device: ▪ Assign ▪ Close ▪ Load ▪ Unload The remaining 2 scans are performed on trailer barcodes (barcodes are permanently affixed to trailers): ▪ Trailer Depart ▪ Trailer Arrive
Connectivity Issues That Affect Scanning Compliance - page 5	Without assessing the SV network environment, SV scans may not be captured and mail container visibility may be lost. Additionally, the Portland and St. Paul P&DCs' SV scanners could not connect to long-range scanners because of interference from the employees' Bluetooth® connection on their mobile phones.	The SV application was designed to allow for scan capture regardless of the state of wireless connectivity; meaning users can continue to scan even when the device is offline. These scans are stored locally on the device's cache and automatically transfer when the device reconnects to the wireless network or when the device is connected to the network via cradling. The implementation of and use of long range scanners is intended to enhance the user experience by enabling scanning more

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		within the workflow for certain functions. If unable to connect to the long range scanner users can continue to scan with the CN51 device. Note, data from the most recent SV Scanner Usage reports shows successful Load and Unload scanning with long range scanners for both the Portland and St. Paul PDCs. As each site is structurally unique with a variable number of "connected" employees, issues related to wireless interference handled by the Raleigh wireless network team on a site by site basis.

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UNITED STATES POSTAL SERVICE

8/24/2017
LORI LAU DILLARD
DIRECTOR, AUDIT OPERATIONS

SUBJECT: Surface Visibility Scanning NL-AR-17--DRAFT

Thank you for the opportunity to review and provide comments on the Office of Inspector General subject draft audit report. Information Technology Management disagrees with Recommendation 4.

Recommendation 4:

We recommend the Vice President, Western Area, in conjunction with the Vice President, Information Technology, and the Vice President, Enterprise Analytics:

Assess the SV scan network environment in all Western Area Processing & Distribution Centers to identify and resolve wireless connectivity issues that affect SV scanning.

Management Response/Action Plan:

Management disagrees with this recommendation. Neither the Western Area trouble tickets nor our other work at SV sites show that there is a systemic wireless connectivity issue contributing to scanning problems with Surface Visibility.

Jeffrey C. Johnson

cc: Greg G. Graves, Vice President, Western Area
Isaac S. Cronkhite, Vice President Enterprise Analytics
Sally K. Haring, Manager, Corporate Audit Response Management

GREGORY G. GRAVES
VICE PRESIDENT, WESTERN AREA OPERATIONS

UNITED STATES POSTAL SERVICE

August 24, 2017

LORI LAU DILLARD
DIRECTOR, AUDIT OPERATIONS

SUBJECT: Surface Visibility Scanning (Report Number NL-AR-17-DRAFT)

We appreciate the opportunity to address the OIG's observations and findings on the subject audit. Management agrees in part with the findings but does not agree with the following from "what the OIG found" and "summary statements":

"... We observed that the Portland and St. Paul P&DCs did not have adequate dock personnel to ensure all scanning was done during the tour one and tour three peak work periods. This occurred at the Portland P&DC because of authorized, but "vacant, staff positions"

"Based on our review of Web Complement Information System (WebCoins) the Portland P&DC is understaffed by about 80 personnel during Tour 1 and about eight personnel during Tour 3 from authorized levels"

The Portland Plant is being reviewed and rightsized in preparation to downsize from three processing facilities to one new facility in FY 18. WebCOINS may have shown vacant positions but the observation did not take into account this activity nor their current Mail Processing Variance and F-1 model earned complement.

"...By adopting the best practices of the high-performing P&DCs and addressing a lack of MTEL placards and staff alignment, the Portland and St. Paul P&DCs could potentially avoid the risk of losing about $330 million in revenue..."

At the time of the exit conference Portland had improved their total SV Scan score from 90.96% to 94.21% through week 43 and 93.37% QTD by replicating Western Area best practices and with the current staff in place. We anticipate this trend to continue and we will continue to monitor performance.

Recommendation 1: Implement in the Western Area the following Surface Visibility (SV) scanning best practices. Specifically:

- Use teams to improve scan consistency.
- Print new placards at the end of each day to reduce failed scans.
- Post compliance reports to compare Processing & Distribution Centers' performance to those of other Western Area facilities to highlight the importance of scanning.

Management Response/Action Plan
Management does not agree with the specific recommendation to create teams and print placards. These activities do not ensure reduction of failed scans. Management will re-enforce Western Area Lean Six Sigma Operating Instructions with requirements to monitor the required activity. Western Area currently provides multiple reports each week to District Managers and Plant Managers that are posted in all scanning operations to ensure employees understand expectations and progress towards the recommended goal.

Target Implementation Date:

September 15, 2017

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GREGORY G. GRAVES
VICE PRESIDENT, WESTERN AREA OPERATIONS

Responsible Official:
Manager, Network Operations - Western Area

Recommendation 2: Direct district managers to require all Processing & Distribution Center managers develop procedures to ensure that Mail Transport Equipment Labeler placards are printed and attached to mail containers and not removed by highway contractors during the manual mail consolidations.

Management Response/Action Plan:
Management agrees and will ensure Processing & Distribution Center managers develop procedures that will ensure highway contract drivers do not consolidate or load any mail until an "All Scanned" message has been provided to said contract driver by a postal representative. SOP's and training will also be provided to ensure postal employees are aware of the proper procedure for performing consolidate scans.

Target Implementation Date:

September 15, 2017

Responsible Official:

Manager, Network Operations - Western Area

Recommendation 3: Direct District Managers to ensure that all Processing & Distribution Center managers adjust staffing and scheduling to ensure adequate coverage during peak SV scanning periods.

Management Response/Action Plan:
Management will re-emphasize activities outlined in the Surface Visibility Daily Cadence to ensure Processing & Distribution Center continue to perform at high levels to include peak periods. The Western Area currently has 82 scanning locations of which 65 or 80% are block 7 or higher QTD. Additionally, in FY16 the Western Area performed 28,677,130 total scans, FY17 YTD we have performed 60,245,476 total scans. Western Area overall scan performance, 89.4% YTD or 4th nationally and 93% QTD or 3rd nationally

Target Implementation Date:

September 15, 2017

Responsible Official:

Manager, Network Operations - Western Area

John Darden for
Gregory G. Graves

cc: Jeffrey C. Johnson, Vice President, Information Technology
Isaac S. Cronkhite, Vice President, Enterprise Analytics
Erica Brix, Manager, Operations Support, Western Area
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