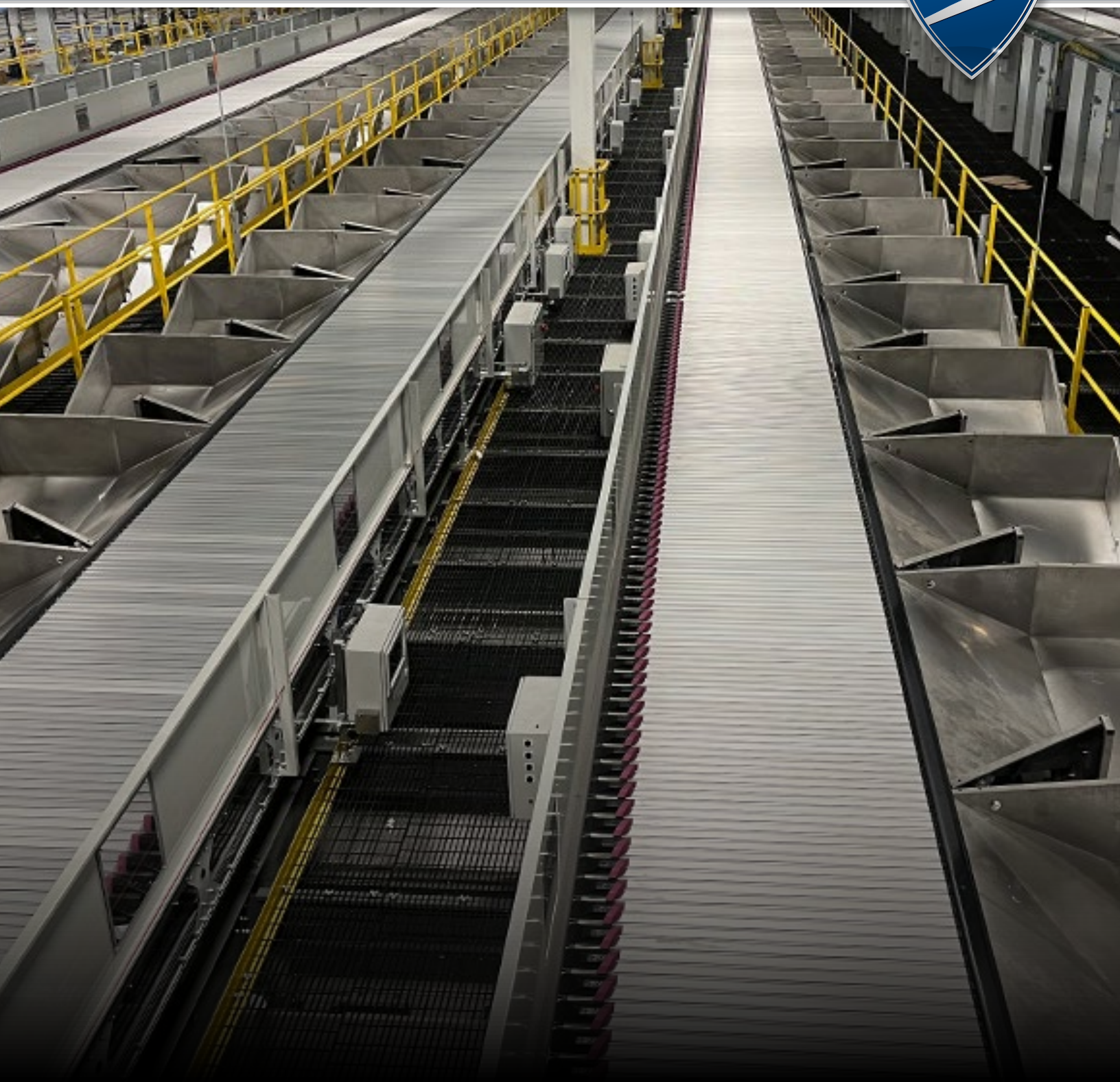
Planning and Deployment of the Matrix Regional Sorter

AUDIT REPORT

Report Number 24-049-R24 | September 5, 2024



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Highlights

Background

The U.S. Postal Service recently begun realigning its network by implementing Regional Processing and Distribution Centers (RPDC) to consolidate mail processing operations, reduce costs, and grow package business. To help support this strategy, the Postal Service deployed the Matrix Regional Sorter (MaRS). The MaRS is designed to increase package processing capacity and efficiency while using less floor space, a critical factor to the success of implementing the Postal Service's network transformation and increasing their share in the growing package market.

The Postal Service spent over [redacted] to design and deploy the first two MaRS and expects to save over $200 million in labor over a [redacted] for each facility where a machine is deployed.

What We Did

Our objective was to evaluate the planning, deployment, and initial performance of the MaRS at the Atlanta and Chicago RPDCs. We conducted observations of the MaRS at the Chicago and Atlanta RPDCs in February, April, and May 2024.

What We Found

The Postal Service was able to quickly plan, design, and deploy the MaRS to help support its RPDC initiative and help meet its package sorting demands at the Chicago and Atlanta RPDCs. However, the Postal Service did not adequately plan and prepare for Postal Service maintenance personnel to accept maintenance responsibility from contractors for the MaRS. Also, the Postal Service overestimated the achievable efficiency of the machine, which can impact the expected savings from its operation.

The initial operation of the MaRS led to [redacted] damaged packages, overflowing conveyor belts creating safety hazards as mail fell off the machine, and [redacted] mail requiring resorting. Further, a lack of oversight led to packages being delayed.

Recommendations and Management's Comments

We made three recommendations to address the planning and deployment of the MaRS; three recommendations to address damaged and delayed mail; one recommendation related to rehandling mail; and two recommendations to address local management oversight. Management agreed with all recommendations. The U.S. Postal Service Office of Inspector General (OIG) considers management's comments responsive to all recommendations, as corrective actions should resolve the issues identified in the report. Postal Service management's comments and our evaluations are at the end of each finding and recommendation. See Appendix C for management's comments in their entirety.

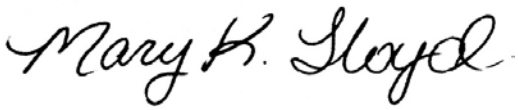
Transmittal Letter

OFFICE OF INSPECTOR GENERAL
UNITED STATES POSTAL SERVICE

September 5, 2024

MEMORANDUM FOR: DANE COLEMAN
VICE PRESIDENT, PROCESSING AND MAINTENANCE OPERATIONS

SCOTT BOMBAUGH
CHIEF TECHNOLOGY OFFICER & EXECUTIVE VICE PRESIDENT



FROM: Mary Lloyd
Deputy Assistant Inspector General
for Mission Operations

SUBJECT: Audit Report – Planning and Deployment of the Matrix Regional Sorter (Report Number 24-049-R24)

This report presents the results of our audit Planning and Deployment of the Matrix Regional Sorter.

All recommendations require U.S. Postal Service Office of Inspector General (OIG) concurrence before closure. Consequently, the OIG requests written confirmation when corrective actions are completed. Recommendations 1, 2, 3, 5, and 7 should not be closed in the Postal Service's follow-up tracking system until the OIG provides written confirmation that the recommendations can be closed. We consider recommendations 4, 6, 8, and 9 closed with issuance of this report.

We appreciate the cooperation and courtesies provided by your staff. If you have any questions or need additional information, please contact Todd Watson, Director, Network Processing, or me at 703-248-2100.

Attachment

cc: Postmaster General
Corporate Audit Response Management

Results

Introduction/Objective

This report presents the results of our self-initiated audit of the Planning and Deployment of the Matrix Regional Sorter (Project Number 24-049). Our objective was to evaluate the planning, deployment, and initial performance of the Matrix Regional Sorter (MaRS). See Appendix A for additional information about this audit.

Background

As part of its Delivering for America plan and goal to achieve financial sustainability and service excellence, the Postal Service has recently begun realigning its network by implementing Regional Processing and Distribution Centers (RPDC)[1] to consolidate mail processing operations, reduce costs, and grow package business. This RPDC strategy relies on fewer processing facilities that will handle larger volumes of mail. To help support this strategy, the Postal Service is deploying new package sorting machines that can process the higher volumes. This included the acquisition of MaRS. The MaRS is a package sorting machine designed to increase package processing capacity and efficiency while using less floor space, a critical factor to the success of implementing the Postal Service's network transformation and increasing their share in the growing package market.

The Postal Service spent over [redacted] to design and deploy the first two MaRS from concept to testing to meet the needs of its changing network. The Postal Service expects the MaRS to improve efficiency through labor savings by consolidating processing operations and processing up to [redacted] pieces per hour. This rate is over eight times greater than what other comparable machines in the Postal Service's inventory are capable of processing. The Postal Service used contractors to build the MaRS and provide initial operational, maintenance, and training support. The first MaRS started operations at the Atlanta and Chicago RPDCs in November 2023[2] (see Figure 1 for MaRS timeline). The Postal Service expects to save over $200 million in labor over a [redacted] for each facility where a machine is deployed.

> "The MaRS is a package sorting machine designed to increase package processing capacity and efficiency while using less floor space ."

The MaRS is a large machine taking up approximately [redacted] square feet., or the size of [redacted]. While this is extremely large, the Postal Service noted in its analysis that it would take eight of the next comparable high-capacity package machines using over two times the square footage to match the MaRS capacity. The MaRS works off a large conveyor system that consists of [redacted] where mail can be inducted, and multiple lanes that travel via a system of belts to sort packages based on their destination. Mail enters the machine directly from the trailer docks, travels a system of conveyor belts, enters a scanning tunnel,[3] and finally gets routed to a destination bin to be transported or sent to additional processing operations.

[redacted] the system is designed to efficiently handle [redacted] using a [redacted] to move mail between different operations. For example, the MaRS can process mail that is to be sent to other processing facilities at the same time it processes mail for local delivery, a functionality that does not exist on any other Postal Service mail processing machine. See Appendix B for an illustration of the MaRS machine.

1 RPDCs are larger processing facilities that will sort all mail and packages being sent to other regions, as well as sort packages for delivery in the regional area. These facilities will be the hubs for the Postal Service's long-distance transportation.
2 A third MaRS is currently being built and deployed at the [redacted]
3 A large tunnel on the MaRS that reads package addresses or barcodes to route them to the correct location. The scanning tunnel uses a variety of laser scanners, mirrors, cameras, and optical character recognition.

Figure 1. MaRS High Level Timeline

Source: Data obtained from Postal Service.

Findings Summary

The Postal Service was able to quickly plan, design, and deploy the MaRS to support its RPDC initiative and help meet its package sorting demands at the Chicago and Atlanta RPDCs. The MaRS sorted packages at a much faster rate than any other machine currently deployed by the Postal Service, sorting up to [redacted] per day.

However, the Postal Service did not adequately plan and prepare for Postal Service maintenance personnel to accept maintenance responsibility from contractors for the MaRS at the Chicago and Atlanta RPDCs. Also, the Postal Service overestimated the achievable efficiency of the machine, which can impact the expected savings from its operation.

Further, the initial operation of the MaRS led to [redacted] damaged packages, overflowing conveyor belts creating safety hazards as mail fell off the machine, and [redacted] mail requiring resorting. Finally, a lack of oversight led to packages being delayed.

Finding #1: Planning and Deployment

Generally, the Postal Service quickly and effectively executed the planning and deployment of the MaRS to help meet its package sorting demands at the Chicago and Atlanta RPDCs. However, the Postal Service did not adequately plan and prepare for Postal Service maintenance personnel to accept maintenance responsibility from contractors, didn't define maintenance tasks, and overestimated the achievable efficiency of the machine. Management stated the Postal Service is still in early stages of MaRS processing and they expect to make enhancements to improve the efficiency and handling of the MaRS.

Planning and Deployment of the MaRS

The Postal Service was able to design, contract, build, and deploy the MaRS in less than one year, which is much faster than prior package sorting machines deployed by the Postal Service. The Postal Service designed the MaRS to be the first machine that processes mail from one region going out to the nation at the same time it processes that region's mail for delivery, [redacted] packages per day. This eliminated the need to use [redacted] to complete those operations, simplified how mail moves through a facility, and potentially decreases the amount of processing time needed. Additionally, the MaRS was designed to [redacted], reducing the number of packages that [redacted]

The Postal Service also phased in the use of the MaRS, allowing operators time to test the machine and identify potential issues before running it at full capacity.

Postal Service Not Ready to Accept Maintenance Responsibility for MaRS

We found that the Postal Service did not adequately plan to take over maintenance of the MaRS from contractors by the end of the contract in March 2024. Postal Service personnel did not shadow the contractors, as expected, to gain the knowledge and skills needed to take over the MaRS maintenance responsibilities. Management at the Atlanta RPDC stated maintenance personnel started shadowing the contractors in March 2024 to learn the maintenance tasks but stopped shadowing shortly thereafter. During our observations, we did not see Postal Service employees shadowing the contractors.

To cover the shortfall, the Postal Service extended the MaRS maintenance contract to September 2024, with the possibility of additional extensions. Extending the contract for maintenance of the MaRS will result in the Postal Service incurring additional, unplanned costs totaling about $2.2 million.[4]

MaRS Maintenance Tasks Not Defined and Maintenance Not Performed

The Postal Service did not define specific maintenance tasks to be performed on the MaRS, how often maintenance should be performed, or create instructions on how to maintain the MaRS. We observed several maintenance issues with the MaRS including belts running on the machine with significant tears and up to 30 belts replaced in a month, which was an abnormally high amount according to the contractor (see Figure 2).

Figure 2. Large Tear in MaRS Belt and Hamper Full of Replaced MaRS Belts

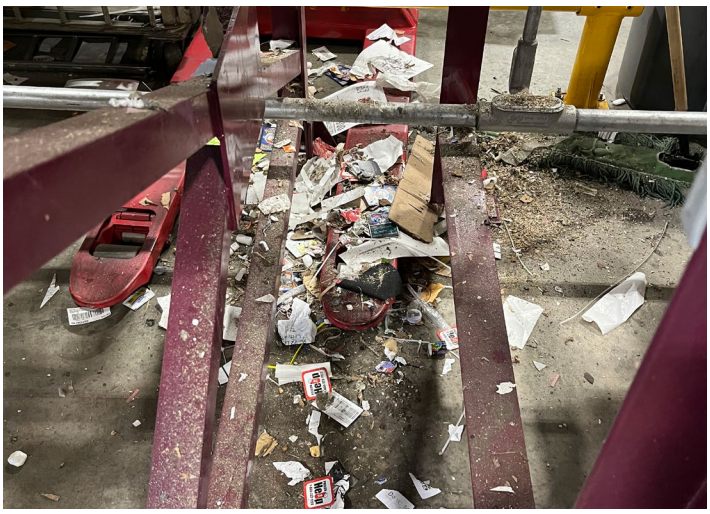
Source: Photos taken by U.S. Postal Service Office of Inspector General (OIG) auditors on May 2, 2024, at the Atlanta RPDC.

4 The OIG considers these as funds that could be used more efficiently.

We also observed indicators that basic maintenance was not being performed, such as dirt/debris being left on the machine and scanners (see Figure 3).

Figure 3. Debris Observed on the MaRS

Debris under MaRS conveyor Belts



Trash Left on and Around the MaRS Scanners

Source: Photos taken by OIG auditors on May 2, 2024, at the Atlanta RPDC.

These issues occurred due to lack of management oversight. Postal Service management did not verify the contractor and its own maintenance staff were performing their assigned maintenance tasks on the MaRS. Additionally, the contractor stated that management did not always honor the maintenance windows[5] and sometimes shortens or skips them altogether.

> "Postal Service management did not verify the contractor and its own maintenance staff were performing their assigned maintenance tasks on the MaRS."

Postal Service guidance states that machine utilization efficiency requires that equipment be kept in optimum operating condition and that one of the guidelines for good maintenance is to establish maintenance windows and enforce them.[6] Additionally, guidance states that preventive maintenance should include time for cleaning.[7] On other Postal Service package sorting machines, daily preventive maintenance is scheduled to be performed before initial operation of the machine, including cleaning or dusting the barcode reading lenses.

When necessary maintenance tasks are not identified and performed, it can lead to inadequate machine performance and excessive breakdowns and can affect the processing efficiency of the MaRS.

Fewer Packages Processed Per Hour Than Expected

The Postal Service is not able to consistently achieve its expected processing efficiency of the MaRS. While the MaRS processes more packages per hour than any other processing machine in the Postal Service's inventory, on average it is processing over [redacted] packages per hour (or [redacted]) less than its expected peak rate[8] of [redacted] packages per hour. The Postal Service does not have an expected average pieces per hour rate. However, on average, the MaRS processed [redacted] pieces per hour at Atlanta and [redacted] pieces per hour at Chicago between March 1

5 Time set aside from the processing of mail for the scheduled maintenance of equipment.
6 Management Instruction AS-530-1990-5, *Preventive Maintenance for Mail Processing Equipment,* section 2-A/B, dated April 1990.
7 Management Instruction AS-530-1990-5, *Preventive Maintenance for Mail Processing Equipment,* section 2-B and 7-C, dated April 1990.
8 Peak rate is the highest achievable pieces processed per hour in any given hour over the machines [redacted] operational window.

and May 31, 2024, with a daily high of [redacted] pieces per hour.

The Postal Service has been unable to meet the expected rate because the rate was calculated assuming mail would constantly flow to the machine and be evenly distributed across [redacted]. However, the MaRS operates [redacted] and mail does not always arrive to the facility at a consistent rate. Additionally, some [redacted] For example, the Postal Service was able to reach near its expected peak processing rate on [redacted] throughout a day, but the remaining [redacted] had inducted less volume, decreasing the machine's overall processing rate. Additionally, we noted conveyor belts get overloaded with mail, which can negatively impact the processing rate as it takes time to clear and process the packages on the congested belts.

When the Postal Service does not accurately estimate expected efficiency when investing in new machines and technologies, it increases the risk expected savings will not be achieved and could lead to flawed decision making.

Recommendation #1

We recommend the **Chief Technology Officer and Executive Vice President**, implement a plan when deploying future Matrix Regional Sorters to provide necessary training to maintenance staff for a smooth and timely transition from contractor support.

Recommendation #2

We recommend the **Chief Technology Officer and Executive Vice President**, coordinate with both local management and the contractor on site to define needed maintenance tasks for both the contractor and Postal Service staff to perform, including the timing and frequency of assigned/required maintenance tasks for the Matrix Regional Sorter.

Recommendation #3

We recommend the **Chief Technology Officer and Executive Vice President**, analyze the Matrix Regional Sorter performance to determine if goals are attainable and, if not, determine realistic goals for each facility with a Matrix Regional Sorter, updating any cost savings projections if necessary.

Postal Service Response

Management generally agreed with the finding and agreed with recommendations 1, 2, and 3. Regarding the monetary impact, management stated that vendor support is standard practice and partially disagreed with the amount.

Regarding recommendation 1, management stated the supplier is still responsible for maintenance and upkeep of the MaRS, as of the date of this report, and a plan has been developed to transition maintenance responsibilities to the local site in Atlanta. The target implementation date for recommendation 1 is January 31, 2026.

Regarding recommendation 2, management notes that the development of maintenance tasks is underway and interim procedures are in place. The target implementation date for recommendation 2 is June 30, 2025.

Regarding recommendation 3, management states that while it is too soon to consider changing throughput goals, it is monitoring performance of the MaRS and is developing solutions to reaffirm the original throughput goals and add additional throughput on top of this. The target implementation date for recommendation 3 is August 31, 2025.

OIG Evaluation

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

Finding #2: MaRS Performance Resulting in Damaged, Delayed and Lost Packages

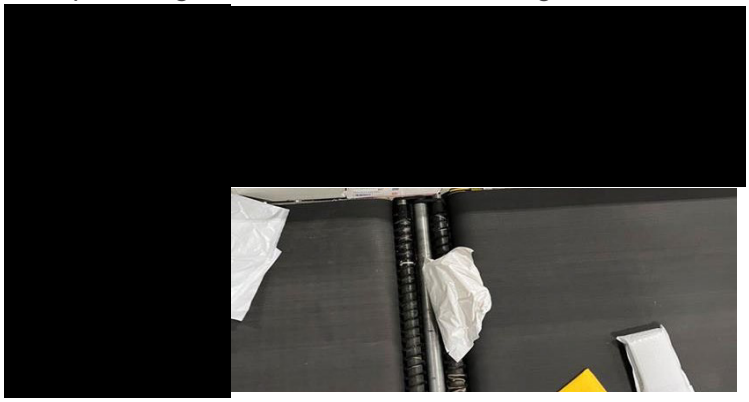
We found the Postal Service has an opportunity to reduce the amount of mail being damaged on the machine and fix safety hazards created by mail falling off the machine.

Damaged Packages

The operation of the new MaRS created [redacted] damaged packages. Specifically, we found damaged packages on the MaRS and significant debris on and around the MaRS. See Figure 4 for examples of damaged mail.

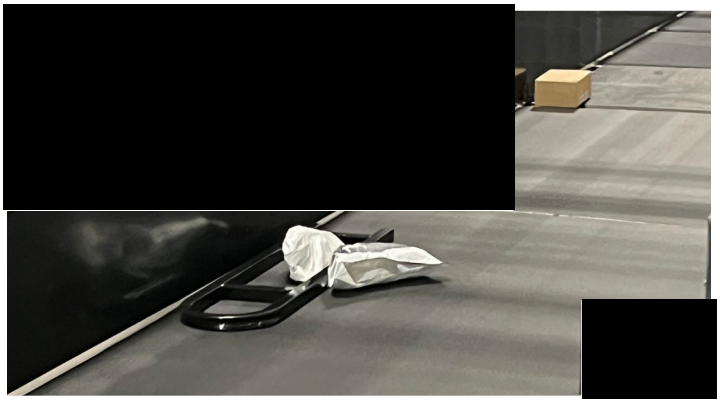
Figure 4. Debris Inducted into the MaRS

Poly Package Stuck in Belt and Flat Lodged on Side



Source: Photo taken by OIG auditors on April 30, 2024, at 2:20 p.m. at the Atlanta RPDC.

Metal Debris



Source: Photo taken by OIG auditors on February 22, 2024, at 6:04 a.m. at the Atlanta RPDC.

Broken Package of Loose Paper

Source: Photo taken by OIG auditors on April 30, 2024, at 1:35 p.m. at the Atlanta RPDC.

Damaged Parcel Inducted on the MaRS

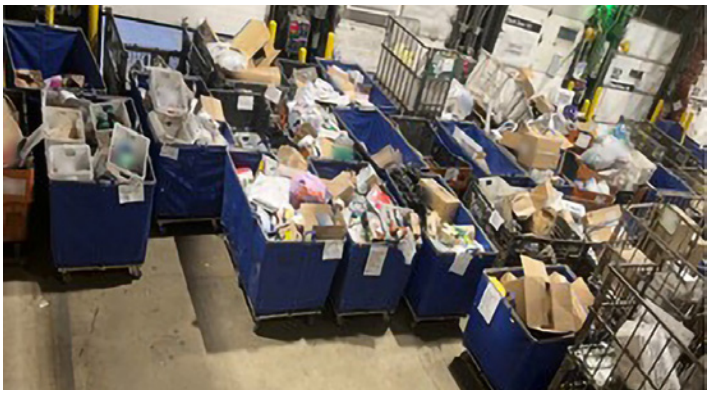
Source: Photo taken by OIG auditors on April 10, 2024, at 6:47 p.m. at the Chicago RPDC.

Further, we identified [redacted] containers full of damaged packages that had been sorted on the MaRS awaiting rewrap[9] at the Atlanta and Chicago RPDCs (see Figure 5).

9 Once a package is damaged, the Postal Service sends it to a rewrap section to be taped up or otherwise repaired before being sorted and sent on to its destination. If the contents or label are too damaged to identify, the Postal Service will send the package/contents to a separate facility, the Mail Recovery Center.

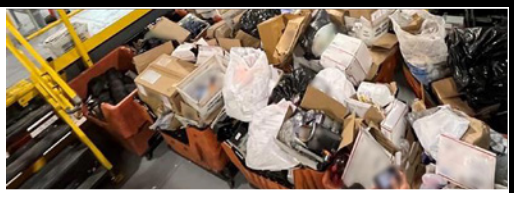
Figure 5. Damaged Mail

Mail Waiting for Rewrap at the Chicago RPDC



Source: Photo taken by OIG auditor on April 10, 2024, at 7:28 a.m. at the Chicago RPDC.

Mail Waiting for Rewrap at the Atlanta RPDC



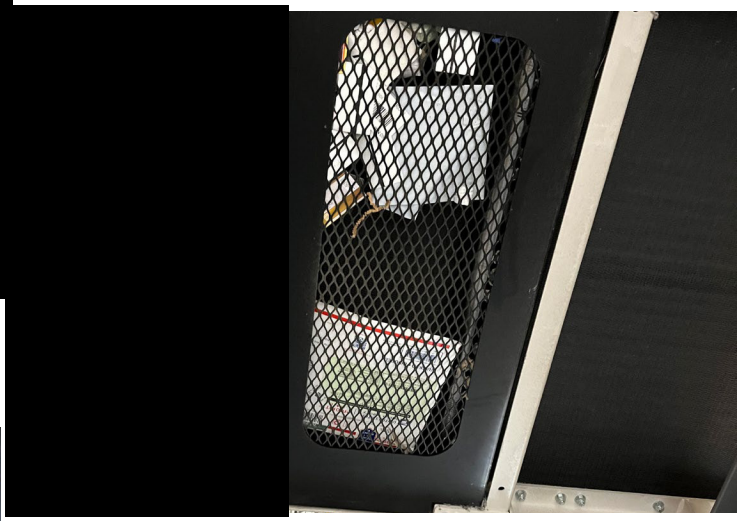
Source: Photo taken by OIG auditor on April 30, 2024, at 10:10 a.m. at the Atlanta RPDC.

Mail Waiting for Rewrap at the Atlanta RPDC

Source: Photo taken by OIG auditor on May 2, 2024, at 8:47 a.m. at the Atlanta RPDC.

Management on site indicated they do not know the root cause of why so much mail was damaged. However, we observed the MaRS at the Atlanta and Chicago RPDCs and noted overcrowded conveyor belts, [redacted] that increased the chances of packages being damaged. We found employees inducted mail on the MaRS that has a higher chance of being damaged, such as [redacted] Employees are instructed to remove [redacted], and damaged packages from the MaRS.[10] However, [redacted] are not to be removed until they are initially rejected, even though the MaRS [redacted] mailpieces such as letters, to fall through or get stuck[11] (see Figure 6).

Figure 6. Mailpieces Pulled Under the MaRS



Source: Photo taken by OIG auditors on May 1, 2024, at 8:57 a.m. at the Atlanta RPDC.

Currently, the Postal Service does not have a process to track the number of mailpieces damaged by mail processing equipment; therefore, neither the OIG nor the Postal Service is able to determine the exact number of packages damaged on the MaRS. We did note that from January to May 2024, the number of hours spent on rewrapping mail increased by 61 percent at the Atlanta and Chicago RPDCs, compared to the same period last year.[12]

10 Standard Work Instruction, *Dock to Machine Unloader/Culler Operations*, dated April 2024.
11 Standard Work Instruction, *Matrix Regional Sorter (MaRS) Relabel Station Culling*, dated March 2024.
12 Includes additional facilities that had package processing operations consolidated into the Atlanta and Chicago RPDCs.

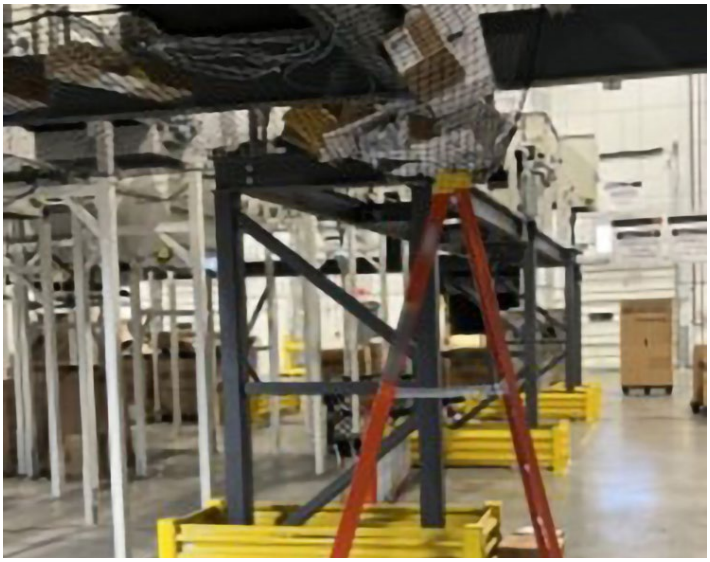
When mail becomes too damaged to read the package label or identify the contents, it can become almost impossible for it to be delivered to customers. We found that between March 1 and March 31, 2024, over [redacted] packages received an initial scan on the Atlanta and Chicago MaRS but never received another processing or delivery scan, indicating a potential risk the pieces were lost or destroyed on the MaRS.

Congested and Overflowing Conveyor Belts Resulting in Mail Falling Off Machine

We found the MaRS conveyor belts frequently got congested with packages. Further, we observed mail continuing to flow into congested points creating build up on the machine, causing packages to get crushed or fall off the machine. The Postal Service set up netting in some high-risk areas to catch falling packages, but the netting was not always adequate to hold the amount of mail falling out. Additionally, we found areas where packages were overflowing and falling, but no netting was in place, creating a significant safety hazard for employees below. See Figure 7 for pictures of mail falling off MaRS.

Figure 7. Congested Belts and Falling Mail on the MaRS

Overloaded Netting Under the Machine Held up With Ladder

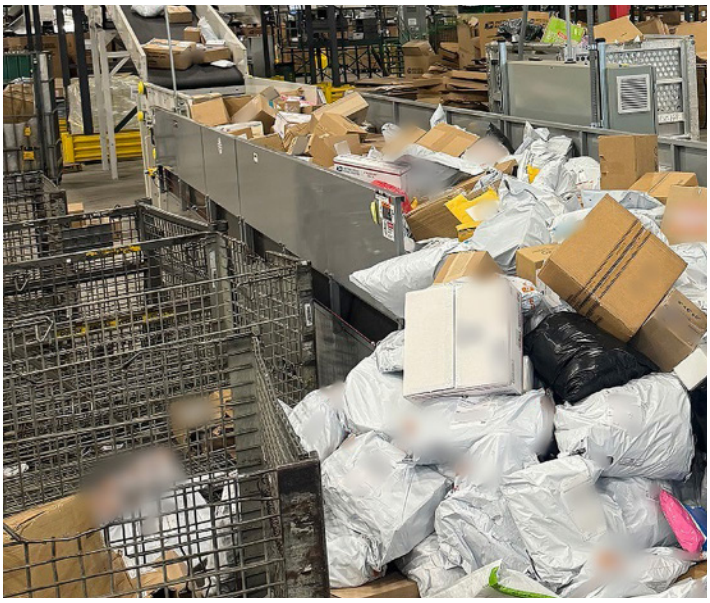


Source: Photo taken by auditors on February 22, 2024, at 5:06 a.m. at the Atlanta RPDC.

Recirculating belt on the MaRS to the Relabel Section

Source: Photo taken by auditors on May 1, 2024, at 9:39 a.m. at the Atlanta RPDC.

Package Backlog of Mail from the MaRS to downstream Machine



Source: Contractor photo provided May 1, 2024 at the Atlanta RPDC.

These issues occurred due to a lack of mail flow management on the MaRS and failure to stop the machine or communicate to stop the machine when necessary. While the MaRS is [redacted] one of the primary contractors stated that [redacted]

[redacted] For example, [redacted] Further, due to the size and interdependent operations of the MaRS, it is essential that employees communicate with each other to identify backlogs and stop the machine to prevent overflowing conveyor belts and falling mailpieces. However, we found there is no communication plan in place that would inform all MaRS operators when a downstream issue occurs that would require them to stop or pause operations.

Postal Service guidance states employees engaged in handling parcels are responsible for ensuring they are distributed and delivered in good condition.[13] Additionally, supervisors are responsible for identifying and correcting physical hazards.[14]

> "Overflowing and congested conveyor belts increase safety risks and the potential for damaged mail while negatively impacting the machine's efficiency."

Overflowing and congested conveyor belts increase safety risks and the potential for damaged mail while negatively impacting the machine's efficiency. Damaged mail harms the reputation of the Postal Service and increases the risk of mail being lost or not meeting its service standard.

Recommendation #4

We recommend the **Vice President, Processing and Maintenance Operations**, direct local management to oversee staff who are assigned to place mail onto the conveyor system to ensure they know the proper procedures, including the types of mail that must be removed before entering the MaRS.

Recommendation #5

We recommend the **Chief Technology Officer and Executive Vice President**, identify and correct the causes of damaged mail from the MaRS. Additionally, develop a plan to track mail damaged on the MaRS and evaluate if changes made have decreased the amount of mail damaged.

Recommendation #6

We recommend the **Chief Technology Officer and Executive Vice President**, develop a strategy for monitoring and addressing congestion on the MaRS, including continuing to refine flow control.

Postal Service Response

Management generally agreed with the finding and agreed with recommendations 4, 5, and 6.

Regarding recommendation 4, management stated training has been provided to employees and visual aids were mounted. Management provided documentation and requested closure of recommendation 4 upon issuance of the report.

Regarding recommendation 5, management stated significant progress had been made to reduce damaged mail, and multiple strategies are being tested and measured. The target implementation date for recommendation 5 is March 31, 2025.

Regarding recommendation 6, management stated multiple changes were implemented to reduce jams, eliminate conveyor overflow, and add additional netting. Management provided documentation and requested closure of recommendation 6 upon issuance of the report.

OIG Evaluation

The OIG considers management's comments responsive to recommendations 4, 5, and 6, and corrective actions should resolve the issues identified in the report. Based on our review of the evidence provided, we confirmed the Postal Service took corrective action, and the OIG considers recommendations 4 and 6 closed upon issuance of the report.

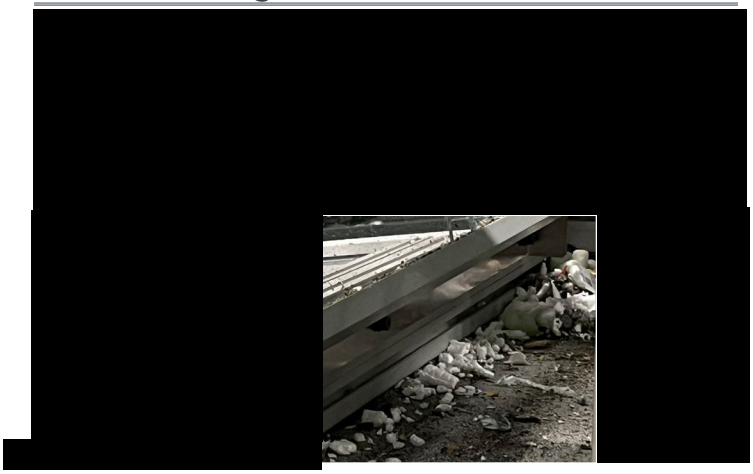
13 Handbook M-41, *City Delivery Carriers Duties and Responsibilities*, section 625.1, dated June 2019.
14 ELM 55, *Employee and Labor Relations Manual*, section 812.51 dated March 2024.

Finding #3: [redacted] Rehandled Mail

The Postal Service can improve efficiency and reduce the number of mailpieces being resorted on the MaRS. The Chicago and Atlanta MaRS sorted [redacted] more than once. Specifically, [redacted] of packages initially sorted on the MaRS had to be resorted manually or rerun on the machine. Mailpieces that are rerun on the MaRS are at risk of getting "stuck in a loop"[15] on the MaRS. In March 2024, [redacted] packages were sorted 11 or more times while stuck in a loop and recirculating for three or more days on the MaRS. This included [redacted] mailpieces that circulated the Atlanta MaRS over 100 times and for over 30 plus days.

The [redacted] resorted mail was due in part to belts getting overloaded and mailpieces stacking on top of one another, causing the machine scanners to not be able to read the barcodes. Additionally, maintenance personnel did not ensure machine scanners were clear of dirt and debris, which can affect the scanners' ability to read barcodes (see Figure 8).

Figure 8. Dirt and Debris Under a Scanning Station Blocking Scanner Mirror



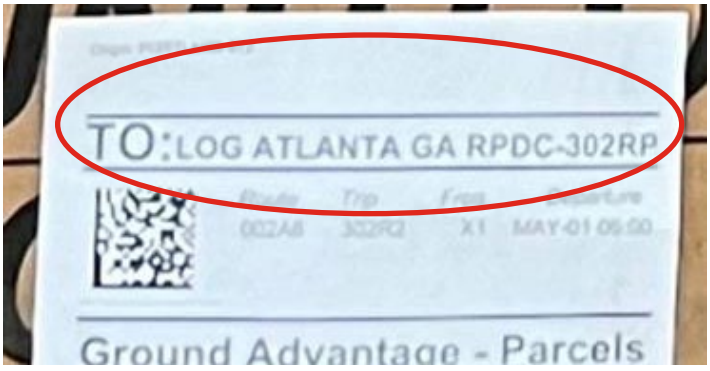
Source: Photo taken by auditors on May 2, 2024, at the Atlanta RPDC.

Another reason mail was resorted on the MaRS was due to employees loading mail onto incorrect conveyor belts causing the mail to have to be resorted. For example, we observed an employee improperly load a container of mail to be delivered to addresses in Atlanta onto the conveyor belt for mail leaving Atlanta. That mail was routed to the shared crossover belt to get to the correct processing operation after the initial sorting (see Figure 9). Employees in the area stated that not everyone was trained to know what conveyor was for mail to Atlanta versus mail from Atlanta.

Figure 9. Mail Improperly Staged

Mail for the Atlanta Region Incorrectly Staged for Processing with Mail from Atlanta Region

Placard Showing Mail was Going to Atlanta



Source: Photos taken by auditors on May 2, 2024, at 2:36 p.m. at the Atlanta RPDC.

15 A mailpiece gets "stuck in a loop" on a processing machine when it continually is not sorted into the expected bin and instead runs or "loops" multiple times on the machine.

Machine utilization efficiency requires that equipment be kept in optimum operating condition, including cleaning as part of preventative maintenance.[16]

When the Postal Service has to rehandle mailpieces, it decreases efficiency, increases cost, and increases the risk mailpieces will loop operations for days at a time and not meet service commitments.

Recommendation #7

We recommend the **Chief Technology Officer and Executive Vice President**, create an action plan to address the causes of mail being resorted on the MaRS and reduce the amount of mail needing to be resorted and relabeled.

Postal Service Response

Management generally agreed with the finding and agreed with recommendation 7. Management stated it has developed and trained personnel using standard work instructions and extended in-house placards for rehandling of special handling flows. [redacted] Management provided documentation and requested closure of this recommendation upon issuance of the report, providing a target implementation date of October 31, 2024.

OIG Evaluation

The OIG considers management's comments responsive to recommendation 7, and corrective actions should resolve the issues identified in the report. Based on our review of the evidence provided, the Postal Service took various corrective actions; however, the OIG will keep this recommendation open until improvements to the recirculation lane are completed and verified.

16 Management Instruction AS-530-1990-5, *Preventive Maintenance for Mail Processing Equipment,* section 2-B and 7-C, dated April 1990.

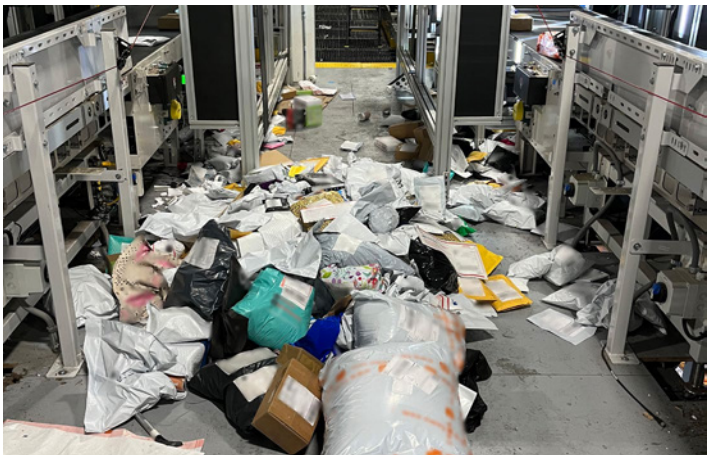
Finding #4: Lack of Local Management Oversight

We found opportunities exist for the Postal Service to improve its attention to detail when sorting mail on the MaRS. We found employees at the Chicago and Atlanta RPDCs incorrectly processed Priority Mail Express using the MaRS. The employees should have separated out the Express mail before entering it on the machine as these packages require a separate sorting process to ensure the express service is met. While it was a small number compared to the total amount of Express mail processed at the Chicago and Atlanta RPDCs, [redacted] of the [redacted] Priority Mail Express packages processed on the MaRS met their service commitment.

Additionally, during our observations we identified mail scattered around the MaRS and laying on the floor after operations have ended at both the Atlanta and Chicago RPDCs. We found packages under the scanners, under the platform on the workroom floor, and stuck in the structure of the machine (see Figure 10 for examples). These packages were delayed due to falling off the machine to the workroom floor and not being reprocessed that same day.

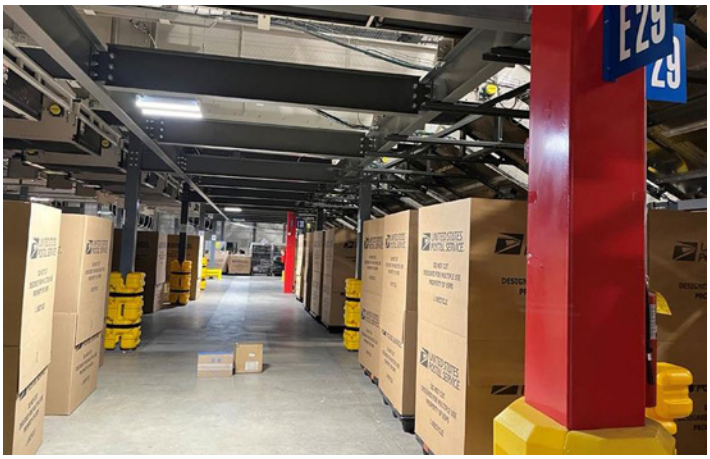
Figure 10. Area Not Swept for Mail on the MaRS

Mail and Debris on the MaRS Not Swept



Source: Photo taken by OIG auditors on May 1, 2024, at 10:00 a.m. at the Atlanta RPDC.

Parcels That Fell off the MaRS and Not Swept



Source: Photo taken by OIG auditors on May 1, 2024, at 9:15 a.m. at the Atlanta RPDC.

We found packages sitting under the machine for many days before being reprocessed and delivered. See Table 1 for an example of the tracking information for a delayed package found under the MaRS.

Table 1. Tracking Information of a Priority Package Found Under the MaRS

Priority Mail Tracking Information	
Event	**Date**
USPS Takes Possession	[redacted]
First Day Processed at Chicago RPDC	
Last day Processed at Chicago RPDC	
Number of Days at Chicago RPDC	
Estimated Delivery Date	
Actual Day Delivered	
Number of Days Delayed	

Source: Table created by auditors based on Postal Service tracking information.

Postal Service guidance states that Express mail should be run on an operation specifically intended to handle Express mail,[17] which the MaRS does not currently run. Further, supervisors are responsible for checking all equipment at the end of a tour to ensure

17 Handbook M-32, *Management Operating Data System*, Section A-2.226-234 dated September 2022.

no mail is left in or on a machine and that all mail has been dispatched.[18]

These issues occurred due to insufficient staff training and a lack of management oversight. Employees putting mail onto the conveyor system did not receive the training necessary to fully understand the requirements for removing mail that cannot or should not be sorted by the MaRS. Additionally, management at the facilities stated that maintenance staff are responsible for sweeping the MaRS to find packages that fell or remained around the machine. Management added they believed this was being performed regularly. After we brought this issue to their attention, we noted employees started collecting mail that had fallen underneath the scanners.

When employees are not trained on the types of mail that should be processed on a MaRS, it increases the risk mail can be damaged and/or delayed. Further, when the Postal Service does not sweep machines to ensure packages that fell off or remain around the machine are processed, it increases the risk of mail being delayed and not meeting service commitments.

Recommendation #8

We recommend the **Vice President, Processing and Maintenance Operations**, create a plan to identify and eliminate Express Mail processed on the MaRS.

Recommendation #9

We recommend the **Vice President, Processing and Maintenance Operations** and the **Chief Technology Officer and Executive Vice President**, instruct local management to create a plan to sweep for leftover mail regularly on and around the MaRS.

Postal Service Response

Management generally agreed with the finding and agreed with recommendations 8 and 9.

Regarding recommendation 8, management stated that Express Mail should not be inducted into the MaRS, and to address this issue, it provided training to employees as well as developed standard work instructions and visual aids to hold out types of mail, including Express Mail.

Regarding recommendation 9, management stated that in addition to existing policies to ensure all mail is processed and dispatched, it created a set of standard work instructions for each operation, which will include sweeping as part of an end-of-day checklist. Management provided documentation and requested closure of recommendations 8 and 9 upon issuance of the report.

OIG Evaluation

The OIG considers management's comments responsive to recommendations 8 and 9, and corrective actions should resolve the issues identified in the report. Based on our review of the evidence provided, the Postal Service took corrective action, and the OIG considers recommendations 8 and 9 closed upon issuance of the report.

18 Handbook PO-420, *Small Plant Best Practices Guidelines,* section 2-2, dated November 1999.

Looking Forward

Increasing package processing capacity while reducing machine footprint is critical to the success of implementing the Postal Service's network transformation. When facilities cannot accept, process, and stage packages using existing space, there is an increased risk facilities could become gridlocked and the Postal Service's plan of consolidating operations into RPDCs will not be viable.

The Postal Service has already invested over [redacted] to build and deploy two MaRS machines and plans for additional MaRS machines in the future. Fixing the issues identified in this report for the operational machines is important, but it is equally important for the corrections to be made before future investments in MaRS machines are made. We plan to conduct future work on the MaRS to evaluate the Postal Service's investment in these machines.

Appendices

Appendix A: Additional Information

Scope and Methodology

The scope of this project is to evaluate the Postal Service's planning and deployment of the MaRS.

To accomplish our objective, we:

- Examined the Postal Service's planning process for developing and installing the MaRS in the Atlanta and Chicago RPDCs.
- Assessed the deployment and performance of these machines though observations and data analysis.
- Reviewed the current performance to the projected performance outlined in the Decision Analysis Reports.
- Conducted observations of the machines in operation in February, April, and May 2024. This included interviewing employees and management about its performance and reliability.

We conducted this performance audit from January through August 2024 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 August 09, 2024, and included their comments where appropriate.

In planning and conducting the audit, we obtained an understanding of the MaRS internal control structure to help determine the nature, timing, and extent of our audit procedures. We reviewed the management controls for overseeing the program and mitigating associated risks. Additionally, we assessed the internal control components and underlying principles, and we determined that these five components were significant to our audit objective:

- Control Environment;
- Risk Assessment;
- Control Activities;
- Information and Communication; and
- Monitoring.

We developed audit work to ensure that we assessed these controls. Based on the work performed, we identified internal control deficiencies related to control activities, information and communication, and monitoring that were significant within the context of our objectives. Our recommendations, if implemented, should correct the weaknesses we identified.

We assessed the reliability of various[19] data sources obtained from Postal Service systems and management by performing electronic testing of required data elements, reviewing existing information about the data and the system that produced them, and interviewing agency officials knowledgeable about the data. We determined that the data were sufficiently reliable for the purposes of this report.

19 Various data sources included: Enterprise Data Warehouse, Network Operations Material Handling System, and Web End of Run.

Prior Audit Coverage

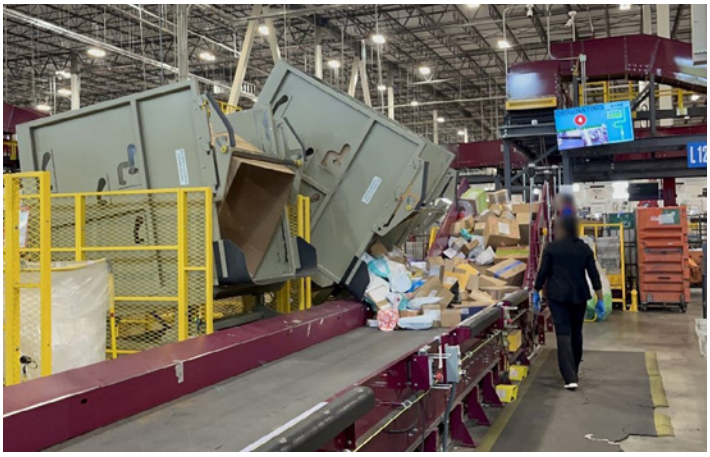
Report Title	Objective	Report Number	Final Report Date	Monetary Impact
The Single Induction Package Sorter Machine Deployment and Performance	Evaluate the U.S. Postal Service's strategic plan for the deployment and performance of the SIPS machine.	23-066-R23	9/11/2023	38.3 million

Appendix B: Conveyor System and MaRS Mail Flow Diagram (Showing [redacted]

Upon arriving at the RPDC, Postal Service employees unload packages onto the conveyor belts at loading stations located along the dock. The conveyor belts then carry the packages to the MaRS scanners, which sort them to the corresponding containers. See photos in Figure 11 and Figure 12. This new design enables employees to unload packages from trailers and induct them into operations at the dock rather than employees moving packages from the dock to the workroom floor for inductions onto machines.

Figure 11. Conveyor System Carrying Mail from Dock to MaRS

Station Where Mail is Placed onto Conveyor System



Source: Photo taken by auditors on May 2, 2024, at 2:22 p.m. at the Atlanta RPDC.

Conveyor System Which Carries Mail from Dock to MaRS

Source: Photo taken by auditors on February 21, 2024, at 10:41 a.m. at the Atlanta RPDC.

Figure 12. MaRS Mail Flow Diagram

Source: OIG Analysis based on machine observations and Postal Service provided information.

Appendix C: Management's Comments

UNITED STATES POSTAL SERVICE

August 27, 2024

JOHN CIHOTA
DIRECTOR, AUDIT SERVICES

SUBJECT: Planning and Deployment of the Matrix Regional Sorter (24-049-DRAFT)

General Comments:

Thank you for providing the Postal Service an opportunity to review and comment on the findings contained in the draft audit report titled: *Planning and Deployment of the Matrix Regional Sorter.*

While management agrees in general with the recommendations, the timing and expectations for the audit concern us. The MaRS platform went from whiteboard concept to deployment in less than a year [redacted]

[redacted] make the expectations of having all things planned and accounted for in that one-year period and an issue-free start-up unrealistic.

Given that the findings were being actively worked at the time of the audit and have been addressed, we will be asking for multiple closures during the Exit Conference.

In addition, we will be requesting extensive redactions due to the sensitive business information captured in the report.

Timeline:

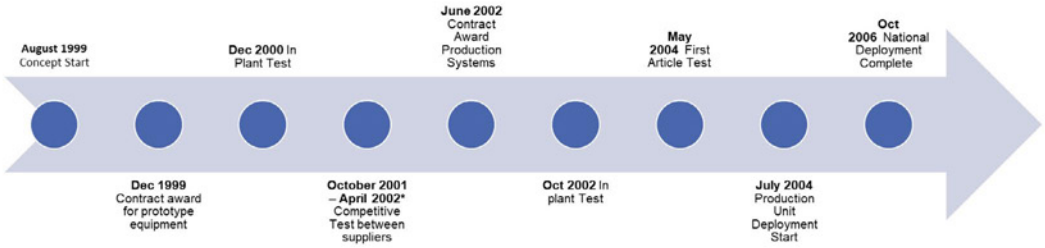
On the top of page 2, Figure 1. MaRS High Level Timeline shows the high-level timeline for the MaRS platform. For context, we have included timelines for three other platforms:

- Automate Package Processing System (APPS)
- Portland Enhanced Package Processing System (EPPS)
- Regional Package Sortation System (RPSS)

In the case of the APPS program, the contract was signed in December of 1999 and the Audit of the system was published on August 20th in 2004. This is more than 4 and a half years after the contract award.

The MaRS contract award was in December of 2022 and the review of the MaRS platform took place between February and May of 2024. The report is being published in August of 2024, a little over a year and a half year (20 months) from contract award. As mentioned in the General Comments, the review is being completed too soon after the start of the deployment of this platform. The ability to meet the goals of the DAR will be clearer once the initial deployments have been completed and the necessary enhancements have been implemented.

Automate Package Processing System (APPS) Timeline



- 16 months from In Plant test to production systems contract award
- Additional retrofit after July 2004 deployment start to retrofit machines to get needed throughput

MaRS DAR Metrics:

On page 6, there is a discussion of average throughput per hour and how we are falling short of the target of [redacted] The DAR metric is not average but "Peak processing hourly throughput of new sorters," (see DAR metric below).

Because the Atlanta MaRS cited in the report is [redacted] so the discussion of a missed average is misleading and not in line with the DAR metric.

[redacted]

Following are our comments on each of the nine recommendations:

Recommendation 1: We recommend the **Chief Technology Officer and Executive Vice President**, implement a plan when deploying future Matrix Regional Sorters to provide necessary training to maintenance staff for a smooth and timely transition from contractor support.

Management Response/Action Plan:
Management **agrees** with this recommendation.

Training cannot be provided before a machine is installed, and staffing requirements must be met before training can commence. USPS' process for developing maintenance policies and documentation on new equipment deployments is as follows:

[redacted]

[redacted]

Target Implementation Date: 01/31/2026

Responsible Official:
Chief Technology Officer and Executive Vice President

Recommendation 2: We recommend the **Chief Technology Officer and Executive Vice President**, coordinate with both local management and the contractor on site to define needed maintenance tasks for both the contractor and Postal Service staff to perform, including the timing and frequency of assigned/required maintenance tasks for the Matrix Regional Sorter.

Management Response/Action Plan:
Management **agrees** with this recommendation.

Development of tasks for maintenance related activities is well underway. Interim procedures are currently in place and HQ Maintenance Operations is working with Engineering and the Supplier to evaluate vendor recommended maintenance activities and develop a comprehensive preventive maintenance program for MaRS sites.

Target Implementation Date: 06/30/2025

Responsible Official:
Chief Technology Officer and Executive Vice President

Recommendation 3: We recommend the **Chief Technology Officer and Executive Vice President**, analyze the Matrix Regional Sorter performance to determine if goals are attainable and, if not, determine realistic goals for each facility with a Matrix Regional Sorter, updating any cost savings projections if necessary.

Management Response/Action Plan:
Management **agrees** with this recommendation, but it is still too soon to make changes to either performance goals or any necessary savings projections.

It is also important to note that the OIG findings on page 6 states that the MaRS is performing and demonstrating the ability to meet the throughputs needed. In short, we continue to monitor the performance of MaRS and any factors limiting maximum potential, addressing areas that lead to incremental improvements to overall performance. As an example, Additionally, we have established target performance metrics, vetted by performance data, that provide achievable goals for the sites to work towards.

In parallel, we are developing a solution to the MaRS that would reaffirm the maximum achievable throughput at add additional throughput potential on top of that target, and generally improve the process of reject re-handling. We expect this concept to be finalized and reviewed for approval in the coming weeks.

The following metrics have been created and are being tracked at the MaRS locations:

Target Implementation Date: 08/31/2025

Responsible Official:
Chief Technology Officer and Executive Vice President

Recommendation 4: We recommend the **Vice President, Processing and Maintenance Operations**, direct local management to oversee staff who are assigned to place mail onto the conveyor system to ensure they know the proper procedures, including the types of mail that must be removed before entering the MaRS.

Management Response/Action Plan:
Management **agrees** with this recommendation.

The Plant and Process Modernization team has provided on-site training and coaching to EAS and craft employees. This included a comprehensive set of training materials comprised of leader standard work, standard work instruction playbooks, and overhead signage for culling containers. In addition, visual aid instructions have been mounted around each dock to machine series.

VPPM has provided documentation and request closure at issuance of the final report.

Target Implementation Date: 10/31/2024

Responsible Official:
Vice President, Processing and Maintenance Operations

Recommendation 5: We recommend the **Chief Technology Officer and Executive Vice President**, identify and correct the causes of damaged mail from the MaRS. Additionally, develop a plan to track mail damaged on the MaRS and evaluate if changes made have decreased the amount of mail damaged.

Management Response/Action Plan:
Management **agrees** with this recommendation and has already made significant progress:

- Potential causes of mail damage have been identified. The amount of damaged mail from each cause is being evaluated.
- Multiple mitigation strategies are being tested.
- Preliminary measurement plans have been outlined for each cause. Plans will be finalized once relative impacts of each cause are evaluated and the effectiveness of mitigation strategies are measured.

See Appendices 1-4 for more details.

Target Implementation Date: 03/31/2025

Responsible Official:
Chief Technology Officer and Executive Vice President

Recommendation 6: We recommend the **Chief Technology Officer and Executive Vice President**, develop a strategy for monitoring and addressing congestion on the MaRS, including continuing to refine flow control.

Management Response/Action Plan:
Management **agrees** with this recommendation.

Multiple changes were implemented to reduce jams and eliminate conveyor overflow issues:

[redacted]

There have been no occurrences of mail overflowing the conveyor except for minor issues on the MaRS collection conveyors going to the recirculation lane. Nets have been installed. [redacted] project this year.

Target Implementation Date: 10/31/2024

Responsible Official:
Chief Technology Officer and Executive Vice President

Recommendation 7: We recommend the **Chief Technology Officer and Executive Vice President**, create an action plan to address the causes of mail being resorted on the MaRS and reduce the amount of mail needing to be resorted and relabeled.

Management Response/Action Plan:
Management **agrees** with this recommendation.

The Plant and Process Modernization team has developed and trained personal using standard work instructions and extended in house placards for rehandling of special handling flows. [redacted]

VPPM has provided documentation and request closure at issuance of the final report.

Target Implementation Date: 10/31/2024

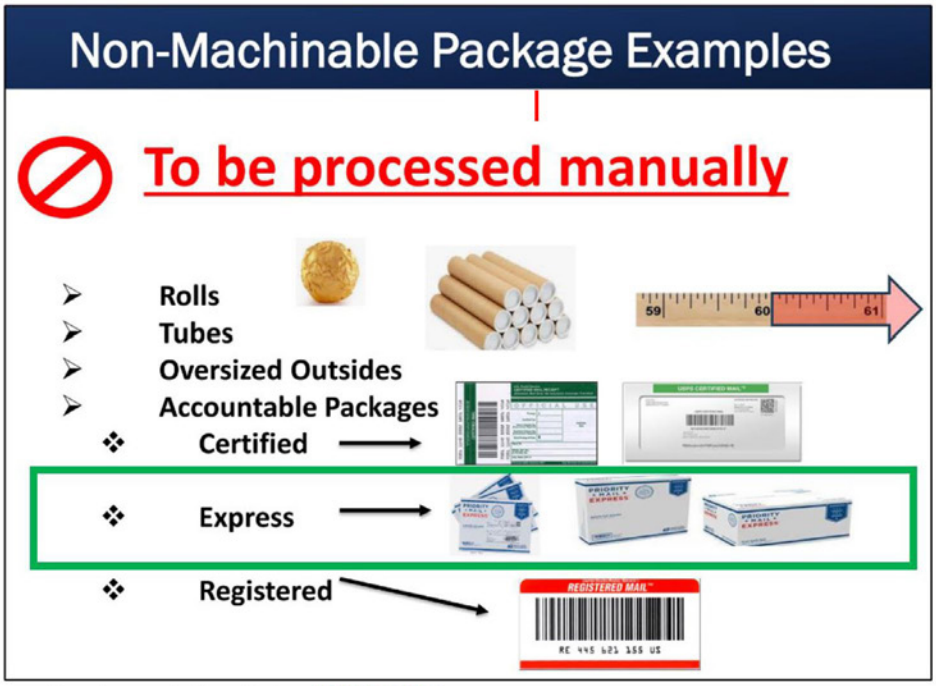
Responsible Official:
Chief Technology Officer and Executive Vice President

Recommendation 8: We recommend the Vice President, Processing and Maintenance Operations, create a plan to identify and eliminate Express Mail processed on the MaRS.

Management Response/Action Plan:
Management **agrees** with this recommendation.

The incorrect product was placed on the sorter in error, so no additional plan is required. The Plant and Process Modernization team has provided on-site training and coaching to EAS and craft employees and has developed and posted comprehensive standard work instructions and visual aids to hold out specific mail types including Express Mail.

VPPM has provided documentation and request closure at issuance of the final report.



Target Implementation Date: 10/31/2024

Responsible Official:
Vice President, Processing and Maintenance Operations

Recommendation 9: We recommend the **Vice President, Processing and Maintenance Operations and the Chief Technology Officer and Executive Vice President**, instruct local management to create a plan to sweep for leftover mail regularly on and around the MaRS.

Management Response/Action Plan:

Management **agrees** with this recommendation.

The Postal Service has existing policies to ensure that all mail is processed and dispatched from every operation. The Plant and Process Modernization team has created a comprehensive set of standard work instructions for each operation, which includes an end of day checklist of things to complete, including the clearance of each operation.

VPPM has provided documentation and request closure at issuance of the final report.

Target Implementation Date: 10/31/2024

Responsible Official:
Vice President, Processing and Maintenance Operations and
Chief Technology Officer and Executive Vice President

Monetary Impact Statement:

In the Monetary Impact Statement, the OIG has estimated costs for Atlanta and Chicago from April until September totaling $2.2M. As emphasized in this response, we use vendor support to help us deploy new platforms, so the use of the vendor support is standard practice.

In Atlanta, there are Maintenance Personnel Hiring challenges, to include a critical shortage of Electronic Technicians. As a result, our transition to Postal Service Maintenance will take longer than anticipated.

In addition to the vendor practice not being taken into consideration, our estimates show this number to be less than half of their estimate at approximately $1M.

In addition to the number being overstated, it is not possible for us to support the sorter until the Postal resources have been hired and trained. We are following our standard process for new platforms as stated above.

E-SIGNED by Scott Bombaugh
on 2024-08-28 08:08:49 EDT

Scott Bombaugh
Chief Technology Officer and Executive Vice President

E-SIGNED by DANE.A COLEMAN
on 2024-08-28 13:32:45 EDT

Dane Coleman
Vice President, Processing and Maintenance Operations

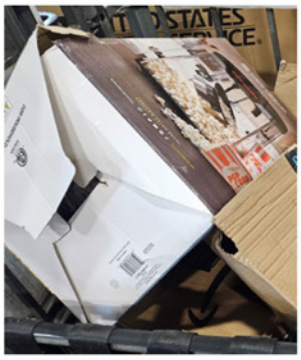
cc: Corporate Audit Response Management

Appendix 1

Examples of Preexisting Parcel Damage

Appendix 2

Examples of Noncompliant Mail Pieces



Appendix 3

Appendix 4

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

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For media inquiries, please email press@uspsoig.gov or call (703) 248-2100