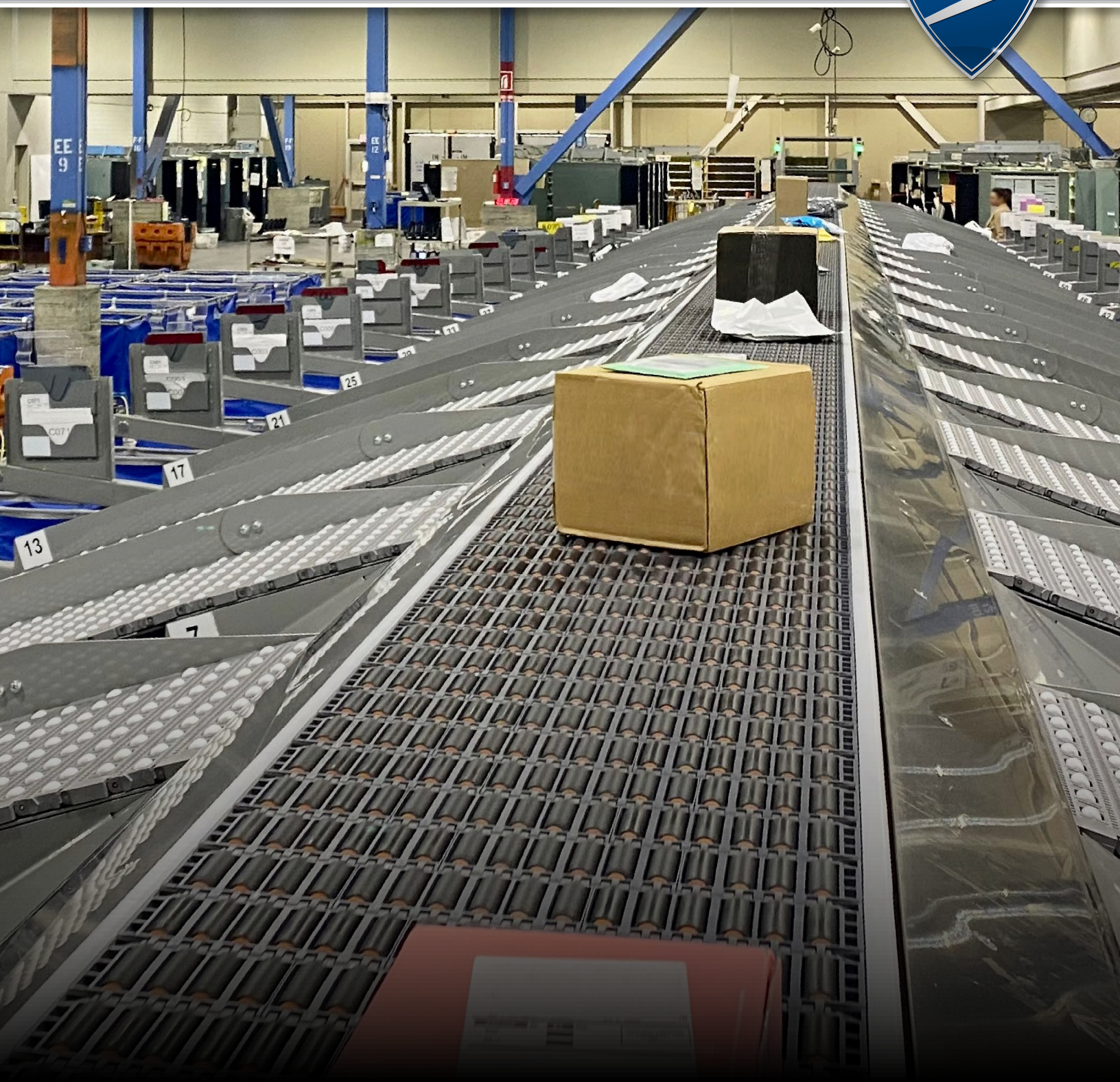
Repair and Maintenance of Package Sorting Machines at Delivery Units

AUDIT REPORT

Report Number 23-089-R23 | August 10, 2023



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Highlights

Background

In November 2014, the Postal Service deployed the Automated Delivery Unit Sorter (ADUS), which automated the sorting of smaller packages in delivery units and small processing and distribution centers. Further, in 2021, as part of the 10-year Delivering for America Plan, the Postal Service kept its commitment to accelerate investments in new package sorting equipment to delivery units and rolled out the Small Delivery Unit Sorter (SDUS). According to the Postal Service, these machines process packages 12 times faster than manual sorting. However, this productivity can be affected by equipment breakdowns.

Analysis of data from October 1, 2021, through December 31, 2022, shows that 45 of 122 (or about 36.9 percent) ADUS and SDUS machines have downtime that is greater than the average for all delivery unit ADUS and SDUS machines.

What We Do

The objective of this audit was to evaluate how maintenance is performed on package sorting equipment within delivery units and determine the impact on machine downtime.

What We Found

The Postal Service did not properly perform maintenance on package sorting equipment at three of the four delivery units reviewed to ensure optimum performance and appropriate asset life. However, we did not find a direct correlation between lack of maintenance and machine downtime at the selected delivery units.

We found the main cause of machine downtime at the selected units was due to personnel improperly using the emergency stop button whenever they needed to stop the machine. Further, delivery unit personnel did not properly induct mail on the ADUS machine at both Toms River Main Post Office and Paschall Station. The improper operation of the package sorting machines was due to insufficient training of personnel, made worse by an overall insufficient number of personnel to optimally staff the machines.

Recommendations

We provided nine total recommendations, five to address issues with inconsistent maintenance and improper operation of package sorting equipment, one to address not entering the deployment of a machine into required data systems, and three to address ineffective communication between operation and maintenance personnel.

Transmittal Letter

OFFICE OF INSPECTOR GENERAL
UNITED STATES POSTAL SERVICE

August 10, 2023

MEMORANDUM FOR: MIKE BARBER
VICE PRESIDENT, PROCESSING AND MAINTENANCE OPERATIONS

ELVIN MERCADO
VICE PRESIDENT, RETAIL AND POST OFFICE OPERATIONS

FROM: Mary K. Lloyd
Deputy Assistant Inspector General for Mission Operations

SUBJECT: Audit Report – Repair and Maintenance of Package Sorting Machines at Delivery Units (Report Number 23-089-R23)

This report presents the results of our audit of the Repair and Maintenance of Package Sorting Machines at Delivery Units.

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 Repair and Maintenance of Package Sorting Machines at Delivery Units (Project Number 23-089). Our objective was to evaluate how maintenance is performed on package sorting equipment within delivery units and determine the impact on machine downtime. See Appendix A for additional information about this audit.

Background

Prior to 2014, sorting packages to individual carriers was done manually at most delivery units and post offices. The cost for manual sortation was high and continued to grow with the package business. To address this, the Postal Service deployed automated package sortation equipment to delivery units, achieving cost savings associated with reducing less efficient manual processing and enhancing productivity (mailpieces processed per workhour).

Specifically, in November 2014, the Postal Service deployed the Automated Delivery Unit Sorter (ADUS), which automated the sorting of smaller packages in delivery units and small processing and distribution centers (P&DC). Further, in 2021, as part of the 10-year Delivering for America Plan, the Postal Service kept its commitment to accelerate investments in new package sorting equipment to delivery units and rolled out the Small Delivery Unit Sorter (SDUS).[1] In May 2023, the Postmaster General highlighted the Postal Service's priority to deploy more package sorting equipment with significantly more capacity and sophistication, including his desire to expand, equip, and improve larger delivery units.

> "Productivity can be affected by equipment breakdowns."

According to the Postal Service, these machines process packages 12 times faster than manual sorting. However, this productivity can be affected by equipment breakdowns. A breakdown is reported when equipment is scheduled for operation, or in an operating status, and cannot perform its function at an acceptable performance level. The Postal Service measures the amount of time between a breakdown and when a maintenance technician designates the equipment to be operational and calls this downtime.[2]

Analysis of data from October 1, 2021, through December 31, 2022, shows that 45 of 122 (or about 36.9 percent) ADUS and SDUS machines have downtime that is greater than the average for all delivery unit ADUS and SDUS machines. Downtime at one location was as high as about 29.8 percent of total machine run time,[3] compared to an average downtime of about 7.5 percent across all delivery unit ADUS and SDUS machines.

This audit evaluated how maintenance is performed on the ADUS and SDUS within delivery units and determined its impact on downtime. We judgmentally selected eight delivery units with high and low percentages of machine downtime, when compared to machine run time, for review.[4] See Table 1.

1 The ADUS and SDUS can sort packages weighing up to 30 pounds (with maximum dimensions of 22" x 20" x 18"). However, the SDUS has a much smaller footprint – only requiring 1,500 square feet of space, compared to the larger ADUS, which averages 2,000 square feet. The Phase 2 deployment of SDUS machines was completed in March 2023.
2 Definition for breakdown and equipment downtime from Maintenance Series Handbook MS-63, *Maintenance Operations*, Section 10.6, Equipment Outages (dated June 22, 2006).
3 Run time is the time spent processing mailpieces on a machine.
4 We selected two ADUS and two SDUS delivery units from the top ten worst performing units and conducted site visits. Two ADUS and two SDUS delivery units from the top ten best performing units were also selected where we conducted virtual interviews.

Table 1. Delivery Units Judgmentally Selected Based on Average Machine Downtime From October 1, 2021, Through December 31, 2022

Delivery Unit	Location	Postal Service District	Review Conducted	Machine Reviewed	Average Machine Downtime Percent (%)
Mendell Carrier Annex	San Francisco, CA	California 1	Site Visit	SDUS	25.6%
Royal Oaks Post Office	Sacramento, CA	California 2	Site Visit	SDUS	21.1
Toms River Main Post Office	Toms River, NJ	New Jersey	Site Visit	ADUS	20.9
Paschall Station	Philadelphia, PA	Delaware-Pennsylvania 2	Site Visit	ADUS	12.4
FDR Station	New York, NY	New York 1	Virtual	ADUS	3.2
York Delivery Distribution Center	York, PA	Pennsylvania 1	Virtual	SDUS	1.8
Hayward Main Post Office	Hayward, CA	California 2	Virtual	SDUS	1.2
Irvine Post Office	Irvine, CA	California 4	Virtual	ADUS	0.0

Source: OIG analysis of data pulled from Mail Image and Reporting System (MIRS).

Findings Summary

The Postal Service did not properly perform maintenance on package sorting equipment at the delivery units reviewed to ensure optimum performance and appropriate asset life. Specifically, preventive maintenance[5] was not being completed as required at three of the four delivery units visited. However, we did not find a direct correlation between lack of maintenance and machine downtime at the selected delivery units.

We found the main cause of machine downtime at the selected units was due to personnel improperly using the emergency stop (E-stop) button whenever they needed to stop the machine, including stopping the machine to regularly sweep[6] full bins and to bring more mail to sort on the machine. The machine's data system automatically counts the time between E-stops and re-starts as downtime, even though a breakdown may not have occurred. Further, delivery unit personnel did not properly induct mail on the ADUS machine at both the Toms River Main Post Office and Paschall Station. The improper operation of the package sorting machines was due to insufficient training of personnel, made worse by an overall insufficient number of personnel to optimally staff the machines. See Appendix B for a summarization of the issues identified during our delivery unit site visits.

Finding #1: Routine Maintenance not Performed

The Postal Service did not properly perform maintenance on package sorting equipment at three of the four delivery units visited. Specifically, at one ADUS[7] delivery unit (Paschall Station) and at both SDUS[8] delivery units visited (Mendell Carrier Annex and Royal Oaks Post Office), the Postal Service did not consistently and properly perform preventive maintenance.

Maintaining the ADUS

At Paschall Station, preventative maintenance was not completed at least between two and seven days

5 According to Maintenance Series Handbook MS-63, *Maintenance Operations*, Section 11, Preventive Maintenance (dated June 22, 2006), preventive maintenance is the scheduled (e.g., daily, weekly, etc.), systematic inspection, cleaning, lubricating, adjusting, and servicing of equipment to retain functional capabilities. An effective and efficient preventive maintenance program must be in place to ensure optimum performance, minimum downtime, and appropriate service life of mail processing equipment.

6 Sweeping the machine entails pulling a container from the package sorting equipment when it is full, and quickly replacing so the machine can continue to sort packages into them.

7 All preventive maintenance, including daily maintenance, for ADUS machines in delivery units (i.e., a facility that does not have internal maintenance capabilities) is performed by maintenance personnel from the parent facility (i.e., a facility that does have internal maintenance capabilities).

8 For SDUS machines in delivery units, daily preventive maintenance is performed by delivery unit personnel, while all other preventive maintenance (e.g., weekly, quarterly, etc.) is performed by maintenance personnel from the parent facility.

per week as required.[9] Maintenance personnel stated that they had not performed maintenance on the ADUS due to a lack of clarity of their maintenance assignments[10] and a lack of management oversight to ensure all maintenance assignments were completed. They stated that communications for maintenance assignments did not specify whether work was to be performed on the ADUS machine at the parent site, Philadelphia P&DC,[11] or on the ADUS machine at Paschall Station.

Maintaining the SDUS

At both the Royal Oaks Post Office and Mendell Carrier Annex, delivery unit personnel performing daily maintenance tasks, including cleaning the machine sensors and performing a scale validation check, did not fully understand their responsibilities and the purpose for fulfilling these tasks. For example, at the Royal Oaks Post Office, during the scale validation check, the delivery unit personnel are required to observe a five-pound test package passing over the scale, and to verify that the machine feeds, scans, and sorts the package correctly. However, the delivery unit personnel only focused on the latter, how the test package was sorted.

According to Postal Service policy,[12] anyone assigned to perform maintenance on a machine should be familiar with the importance of safe practices, the equipment, the type of work (corrective or preventive), and any required forms of paperwork. At Mendell Carrier Annex and Royal Oaks Post Office, preventive maintenance was an ancillary duty for assigned delivery unit personnel. They admittedly did not have the knowledge of trained maintenance technicians, were not provided with any in-depth training, and were unaware of how to receive additional training.

When preventive maintenance is not performed as required, there is an increased risk of sub-optimal machine performance, increased downtime, and shortened service life of the equipment.

Recommendation #1:

We recommend the **Vice President, Processing and Maintenance Operations** instruct the Philadelphia P&DC to perform and confirm completion of all required preventive maintenance on a consistent basis on the ADUS at Paschall Station.

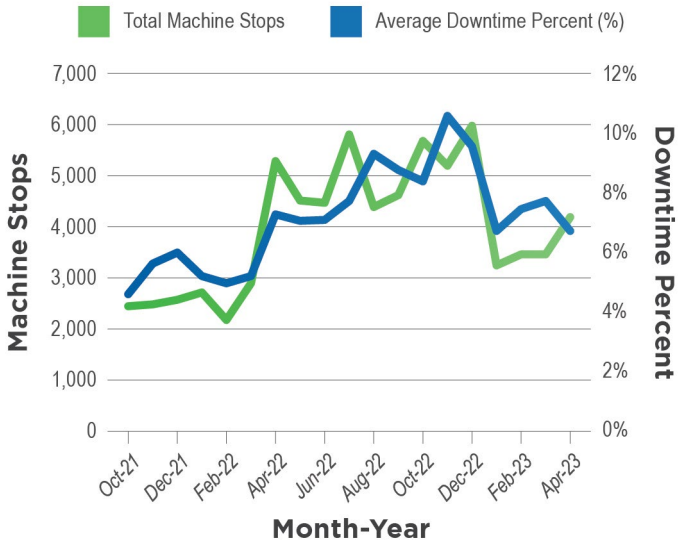
Recommendation #2:

We recommend the **Vice President, Retail and Post Office Operations** provide ongoing informal training for SDUS clerks by a subject matter expert or on-the-job trainer at the unit, where the trainer can instruct personnel in the proper procedures for daily preventive maintenance for the SDUS.

Finding #2: Improper Operation of Package Sorting Equipment

We found the main cause of machine downtime at the selected units was due to delivery unit personnel using the E-stop button whenever they needed to stop the machine, including stopping the machine to regularly sweep full bins and to stage more mail for induction onto the machine (see Figure 1). In addition, personnel did not always induct mail properly onto the package sorting machine, which caused jams and required machine stops.

Figure 1. Total Machine Stops* and Average Machine Downtime at All Delivery Units Selected by Auditors From October 2021 Through April 2023



* Machine stops includes E-stops and normal stops.
** Management noted that they use data from the Maintenance Technical Support Center (MTSC)[13] instead of Web End-of-Run (WebEOR) to calculate machine downtime.
Source: OIG analysis of data pulled from WebEOR.

9 Maintenance Series Handbook MS-63, *Maintenance Operations*, Section 13.2.2, Types of PM Routes (dated June 22, 2006).
10 Electronic Maintenance Activity Reporting and Scheduling System (eMARS) is an electronic maintenance management system that provides the tracking system for parts and labor for Postal Service buildings and equipment. The system is used to generate maintenance assignments and routes.
11 Paschall Station and the Philadelphia P&DC are separate buildings within the same complex.
12 Maintenance Series Handbook MS-45, *Field Maintenance Program*, Section 3.4, Training for the Field Maintenance Program (dated October 10, 2018).
13 The Maintenance Technical Support Center provides national support and maintenance policies for the Postal Service's mail processing equipment. Accurate and complete information is needed by MTSC to maintain an accurate database of known problems and repairs.

Improperly Stopping the Machine

At all four delivery units visited, we found that delivery unit personnel improperly used the E-stop button. Specifically, when stopping the package sorting machines, personnel routinely used the E-stop buttons instead of initiating the proper shut down on the machine's computer terminal.[14] Using the E-stop button to stop the machine kept it in operational mode, with no packages being inducted. The machine's data system automatically counted this as machine downtime even though a breakdown may not have occurred. Two Postal Service maintenance newsletters published in the past two years,[15] emphasized that E-stop buttons should be used in emergencies only and frequent or unnecessary use of E-stops can cause damage to the machinery. Delivery unit personnel stated they were instructed on the proper use of the E-stop button in April 2023, but stated they had not been issued guidance or trained on when it was appropriate to use the E-stop button before then.

In addition, all four delivery units visited stopped the machine more frequently because they had insufficient staffing – due to both hiring challenges and starting machine runs too early before the appropriate number of personnel was on hand to perform the three primary functions of the package sorting machines. According to Postal Service guidance,[16] the optimal staffing[17] for these machines include: two people putting mail onto the machine (facer), one person bringing mail to the machine (stager), and one person changing out sorting bins when they get full (sweeper, who is not required at initial start-up).

However, at the Toms River Main Post Office (see Figure 2) and Royal Oaks Post Office, one delivery unit person was performing all three functions of the machines. At Paschall Station, there were two facers, and one sweeper but no stagers (see Figure 3). At the Mendell Carrier Annex, there were two facers, and an additional delivery unit person was assigned to manually sort packages in the reject bin, but there was no stager or sweeper.

Figure 2. ADUS Operated by One Person to Face, Stage, and Sweep

Source: Picture taken by OIG at Toms River Post Office on April 18, 2023, at 2:44 p.m.

Figure 3. ADUS Operated With an Ineffective Sweeper

Source: Picture taken by OIG at Paschall Station on April 20, 2023, at 9:00 a.m.

14 There are multiple E-stop buttons located around the induction point and along the length of the machine at regular intervals. See Appendix C.
15 Maintenance Technical Support Center (MTSC) Maintenance Update Newsletter, Volume 24, No. 11, dated March 2, 2022, and MTSC Maintenance Update Newsletter, Volume 25, No. 20, dated April 26, 2023.
16 SDUS Process and Standard Work Instructions Training, dated April 19, 2012, and ADUS Process and Standard Work Instructions Training, dated August 8, 2018.
17 Staffing on both the ADUS and SDUS can fluctuate depending on the type of sortation being performed, the number of bins, mail volume, machine layout, etc.

Improperly Inducting Mail Onto the Machine

In addition, at both ADUS delivery units visited (Toms River Main Post Office and Paschall Station), personnel did not induct mail properly onto the package sorting equipment. For example, packages were not faced properly so the barcode could be read, were not centered on the induction belt, and/or were not placed on each opening of the induction belt lengthwise and not widthwise – all key points addressed in the standard work instructions for the package sorting machines.[18] This led to excessive rejects occurring that initiated numerous machine stops to replace full reject bins, packages jammed the machine, and packages backed up onto the conveyor, which could potentially increase missorted packages and mechanical rejects, and can damage the conveyor. Delivery unit personnel, including supervisors, stated that outside of the initial training provided during machine installation, no additional training had been offered. They also stated that if someone did not attend the initial training, the learning process was on-the-job training or self-taught.

As a result of the improper operation of the package sorting machines, downtime was incorrectly reported and lower throughput[19] achieved (see Table 2). Conversely, when delivery units use the E-stop correctly, machine downtime is lower, and a higher throughput is achieved (see Table 3). Throughput at the four delivery units with high machine downtime was, on average, 566 pieces per hour lower than at the four delivery units with low machine downtime.

> "Delivery unit personnel, including supervisors, stated that outside of the initial training provided during machine installation, no additional training had been offered."

Table 2. Machine Stops Per Run Hour and Average Throughput for Delivery Units With High Machine Downtime From October 1, 2021, Through May 5, 2023

Delivery Unit	Run Hours	Machine Stops	Machine Stops per Run Hour	Average Throughput (Pieces per Hour)
Mendell Carrier Annex	2,213	11,756	5.31	1,628
Royal Oaks Post Office	1,920	7,502	3.91	1,840
Toms River Main Post Office	2,483	13,709	5.52	1,880
Paschall Station	5,246	25,521	4.86	1,814
Total	**11,862**	**58,488**	**4.93**	**1,790**

* Machine stops includes E-stops and normal stops.
Source: OIG analysis from data pulled from WebEOR.

Table 3. Machine Stops Per Run Hour and Average Throughput for Delivery Units With Low Machine Downtime From October 1, 2021, Through May 5, 2023

Delivery Unit	Run Hours	Machine Stops	Machine Stops per Run hour	Average Throughput (Pieces per Hour)
FDR Station	5,528	11,231	2.03	1,924
Irvine Post Office	1,767	1,095	0.62	2,448
Hayward Main Post Office	2,288	1,913	0.84	2,003
York Delivery Distribution Center	1,574	2,215	1.41	3,049
Total	**11,157**	**16,454**	**1.47**	**2,356**

* Machine stops includes E-stops and normal stops.
Source: OIG analysis from data pulled from WebEOR.

18 SDUS Facer – Standard Work Instructions, dated November 21, 2020, and ADUS Facer – Standard Work Instructions, dated August 9, 2019.
19 Throughput is the number of packages processed per hour on the machine.

Table 4 summarizes how throughput (or efficiency) could potentially increase (i.e., opportunity throughput) at each of the four delivery units visited if machine downtime and idle time[20] is reduced through optimally staffing the machine and training delivery unit personnel to properly operate the machine.

Table 4. Summary of Potential Increases to Machine Throughput

Delivery Unit	Run Time Throughput (Pieces per Hour)	Operational Time* Throughput (Pieces per Hour)	Opportunity Throughput (Increase in Pieces Per Hour)
Mendell Carrier Annex	1,603	1,346	256
Royal Oaks Post Office	1,746	1,447	299
Toms River Main Post Office	1,805	1,500	305
Paschall Station	1,804	1,491	313
Average	**1,740**	**1,446**	**293**

* Operational time includes downtime and idle time (run time does not).
Source: Table created by audit team using data from WebEOR from October 1, 2021, through May 5, 2023.

Recommendation #3:
We recommend the **Vice President, Processing and Maintenance Operations** widely distribute — to include delivery units with package sorting equipment — a policy on the proper usage of emergency stop buttons.

Recommendation #4:
We recommend the **Vice President, Retail and Post Office Operations** develop a plan to provide the delivery units visited with the resources needed to effectively run their operations, and in the interim, develop a plan to best use the resources on hand, taking into account optimal start times for machines based on employee availability and mail volume.

Recommendation #5:
We recommend the **Vice President, Retail and Post Office Operations** to require anyone assigned to operate package sorting machines within delivery units to receive training on the proper operation of that machine — including start up and shut down procedures and inducting mail onto the machine.

Finding #3: Package Machine Not Entered Into the Electronic Maintenance Activity Reporting and Scheduling (eMARS) System Timely

At the Royal Oaks Main Post Office, we found that the SDUS was not entered into the eMARS in a timely manner. According to management, the machine was installed at Royal Oaks in March 2022, but was not entered into eMARS until a year later: March 30, 2023.

This occurred due to the lack of overall Postal Service guidance relating to the timely entry of new machines in eMARS, and local management's misunderstanding of the process. In discussion with Maintenance Operations Support (MOS),[21] the process to initiate entry of new machines into eMARS is manual. The acquiring delivery unit is required to complete a locally developed "Equipment, PM, or Checklist Changes" form, and submit it to MOS for entry into eMARS. However, even with the use of the local form, there are no checks in place to ensure machines are entered into eMARS in a timely manner.

As a result of not entering the machine into eMARS, the system could not generate maintenance assignments and route those assignments to maintenance personnel for weekly preventive maintenance, as well as other quarterly and semi-annual maintenance tasks for that machine. As indicated in the maintenance logbook and as discussed with local management, weekly preventive maintenance did not start until April 7, 2023, (after the machine was entered into eMARS on March 30, 2023). Failing to perform weekly and other required maintenance tasks may lead to increased issues with the machine in the long term, including increased machine downtime.

After the site visit was conducted, Postal Service management stated they were aware of challenges in effectively tracking and documenting the

20 Idle time includes 1) the difference between the time the sort plan is loaded and the time of the first scan; 2) the difference between the last scanned package and when the sort plan is stopped on the SDUS computer; and 3) if the time between two package scans is greater than 30 seconds, then the idle time equals the time difference between the scans minus two seconds – all issues that may arise due to improper training and insufficient staff.
21 Maintenance Operations Support includes planning, scheduling, analyzing, and documenting maintenance requirements for equipment, buildings, building equipment, and custodial functions.

deployment, relocation, and modification of equipment across the Postal Service network and have a project to update and simplify this process, which would address the issue we found. Completion and implementation of this project is critical as machines will be installed across the country, as part of the Postal Service's 10-year plan.

Recommendation #6:

We recommend the **Vice President, Processing and Maintenance Operations** complete the ongoing project to effectively track and document changes, including the deployment of new equipment across the Postal Service network, to ensure that all machines are entered into eMARS timely.

Finding #4: Ineffective Communication Amongst Operation and Maintenance Personnel

We found that communication between delivery unit and maintenance personnel, as well as within each of those groups, was not adequate to increase awareness of maintenance issues and efficiency of operations. Specifically:

- The delivery units did not have a process to communicate directly with maintenance personnel regarding potential issues not significant enough to enter an MTCS ticket. This included a means to report any unusual or unsafe conditions, knowledge of persistent issues and solutions.
- All four delivery units did not have direct communication from supervisors to delivery unit personnel operating the machines on their performance (e.g., reject rate, throughput, downtime, etc.). Huddle boards, which are required to be updated daily and reviewed with personnel prior to machine start-up, were also not used. Daily performance and goals were not communicated because supervisors either were not aware of how to obtain copies of existing reports or did not understand the information presented in the reports to pass along. Staff assignments were also not communicated prior to start up, due to a lack of management oversight.
- Two of four delivery units did not communicate/document machine issues and the solutions identified through MTSC tickets, as required. Additionally, tickets that were submitted included incomplete and unreliable information. Per Postal Service policy,[22] a delivery unit is required to notify a parent facility (i.e., the maintenance capable facility) within 30 minutes of discovering a machine issue. If the issue cannot be resolved over the phone, a technician will be dispatched to the delivery unit. If the technician has done everything possible to isolate and repair the issue to no avail, or the issue is not fully resolved within two hours, then the parent site opens a ticket. Tickets need to provide complete, accurate descriptions of the problem and any diagnostic activities, results, developments, resolutions, or additional problems. Such descriptions must be entered timely to ensure communication of the current state.[23] However, at the Royal Oaks Post Office, maintenance personnel indicated that they only create a ticket if an issue needs to be escalated to be resolved, without regard to downtime. Further, at Paschall Station, a ticket was closed with an incomplete solution description that did not describe what action was taken.

> "Communication between delivery unit and maintenance personnel, as well as within each of those groups, was not adequate to increase awareness of maintenance issues and efficiency of operations."

As a result of inadequate communication between and within pertinent groups responsible for maintenance issues, transfer of knowledge was limited; supervisors and Postal Service management were not able to track package sorting machine performance or address any performance issues with their personnel or with maintenance; and there was no awareness of what date a machine issue occurred, how long the machine was down, or what solution was identified to fix the issue, including what part (if any) was replaced.

22 Per Maintenance Management Order 072-21, *Guidelines to Request Maintenance Support for ADUS, SDUS, and SIPS* (dated February 11, 2022).
23 Per Maintenance Management Order 084-20, *Procedures for Obtaining Maintenance Support From the National Technical Support Network,* Section 3.0 (dated September 10, 2020).

Recommendation #7:
We recommend the **Vice President, Retail and Post Office Operations** consider directing local management at the four delivery units visited to develop and maintain a method of communication between operations and maintenance personnel to improve transfer of knowledge of identified issues and solutions.

Recommendation #8:
We recommend the **Vice President, Retail and Post Office Operations** instruct local management at the four delivery units visited to improve communication — to include the use of huddle boards — and oversight of package sorting machine performance to increase efficiency of the operation.

Recommendation #9:
We recommend the **Vice President, Processing and Maintenance Operations** periodically reinforce to personnel at the four delivery units visited the need to open a MTSC ticket with complete and accurate information of identified maintenance issues, when required.

Management's Comments

Management agreed with all nine recommendations and findings 1, 3, and 4. Management disagreed with finding 2 due to the auditor's use of WebEOR data to calculate machine downtime. Specifically, management disagreed that the use of the E-stop button was the primary cause of true machine downtime. Management stated since pushing an E-stop results in stopping the belts, it would follow that there would be a direct relationship between E-stops and "down time" reported to WebEOR, but the machine's data system automatically counted this as machine downtime, even though a breakdown may not have occurred. See Appendix D for management's comments in their entirety.

Regarding recommendation 1, management will instruct the Philadelphia P&DC to perform and confirm completion of all required preventive maintenance on the ADUS at Paschall Station. The target implementation date is October 31, 2023.

Regarding recommendation 2, management will provide additional informal training on the proper daily preventative maintenance procedures for SDUS distribution clerks. The target implementation date is September 30, 2024.

Regarding recommendation 3, management will reissue the current policy regarding the proper use of emergency stop buttons to Processing personnel. Management will also provide the policy to the Vice President, Retail and Post Office Operations, for distribution to delivery units. The target implementation date is October 31, 2023.

Regarding recommendation 4, management provided documentation to show the sites are properly staffed, and the issues observed by auditors were the result of attendance and availability issues. This recommendation is considered closed with the issuance of the report.

Regarding recommendation 5, management will reissue resource documents to SDUS distribution clerks regarding the start-up and shut down procedures and inducting mail onto the machine. The target implementation date is October 31, 2023.

Regarding recommendation 6, management reports a project was completed that outlined a new process to improve the time to enter equipment into the system. For the interim, they assigned an employee to assist with processing these requests in the current system. The target implementation date is January 31, 2024.

Regarding recommendation 7, management will have local management validate that the Visual Factory Aid referenced in Maintenance Management Order MMO-072-21 is accurate and complete at each of the four delivery units visited by the audit team. This will ensure the site's ability to obtain maintenance support from their Maintenance Capable Office and MTSC, as needed. The target implementation date is January 31, 2024.

Regarding recommendation 8, management provided documentation showing that local management at the four delivery units visited were instructed to improve communication, including the use of huddle boards to share information on the performance of package sorting machines to increase awareness. This recommendation is considered closed with the issuance of the report.

Regarding recommendation 9, management provided documentation showing they disbursed Maintenance Management Order, MMO-084-20 *Procedures for Obtaining Maintenance Support*, from the National Technical Support Network. This was followed up with Maintenance Management Order, MMO-072-21 *Guidelines to Request Maintenance Support, for ADUS, SDUS, and SIPs*. Both Maintenance Management Orders provide field sites with guidance for obtaining maintenance support for impacted equipment and systems. This recommendation is considered closed with the issuance of the report.

Evaluation of Management's Comments

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

Regarding finding 2, we used WebEOR data to identify sites with high amounts of reported downtime. In our report, we noted using the E-stop button to stop the machine kept it in operational mode, with no packages being inducted, but the machine's data system automatically counted this as machine downtime even though a breakdown may not have occurred. As a result, downtime was incorrectly reported. We believe that implementing our recommendations will reduce this reported downtime.

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

Appendices

Appendix A: Additional Information

Scope and Methodology

The scope of this audit was to assess maintenance operations on the ADUS and SDUS package sorting machines at select delivery units, based on average machine downtime from October 1, 2021, through December 31, 2022.

To accomplish our objective, we:

- Analyzed and evaluated data from the Postal Service's Enterprise Data Warehouse, WebEOR, and Mail and Image Reporting System (MIRS) to determine SDUS or ADUS machine downtime.
- Reviewed applicable policies and procedures related to SDUS or ADUS operations.
- Interviewed management at four judgmentally selected delivery units with a low percentage of downtime compared to run time for the ADUS and SDUS to identify possible best practices for limiting machine downtime.
- Performed site observations at four judgmentally selected delivery units with a high percentage of downtime compared to run time for the ADUS and SDUS to identify root causes for excessive machine downtime.
- Observed and evaluated machine operations to determine effectiveness of maintenance/repairs performed.

In planning and conducting the audit, we obtained an understanding of the delivery units' processing and maintenance operations 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 the following four components were significant to our audit objective:

- Control Environment
- 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 that were significant within the context of our objectives. Our recommendations, if implemented, should correct the weaknesses we identified.

We conducted this performance audit from March through August 2023 in accordance with generally accepted government auditing standards. 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 objectives. We discussed our observations and conclusions with management on July 6, 2023, and included their comments where appropriate.

We assessed the reliability of WebEOR and MIRS data by performing comparisons to other systems for accuracy and performing completeness checks. We determined that the data for WebEOR and MIRS were sufficiently reliable for the purposes of this report. We also assessed the reliability of eMARS and MTSC data by interviewing knowledgeable personnel and reviewing the accuracy and completeness of available documentation. During our audit, we found that eMARS data was incomplete for one of the delivery units visited. Specifically, the SDUS at Royal Oaks Post Office was not entered into the system for over a year after the machine was installed and was therefore not sufficiently reliable for the purposes of this report. eMARS data for the remaining three delivery units visited were sufficiently reliable.

Further, we examined MTSC data for the four delivery units we visited and discovered two of the four units did not enter all maintenance issues into the system. Additionally, issues entered for those sites were incomplete and/or inaccurate. Postal Service management may rely on insufficient or incomplete data for reporting and decision making. As such, we determined that the data for MTSC was not sufficiently reliable for the purposes of this report.

Prior Audit Coverage

Report Title	Objective	Report Number	Final Report Date	Monetary Impact (millions)
Automated Delivery Unit Sorter Cost Savings	Determine if the U.S. Postal Service's Automated Delivery Unit Sorter achieved projected cost savings.	20-095-R21	10/1/2020	NA
Small Package Sorting System Performance	Evaluate the performance of the Postal Service's SPSS machines.	20-052-R20	7/29/2020	$9.0
Postal Service's Non-Career Employee Turnover Follow-up	To assess Postal Service's ongoing actions to reduce non-career employee turnover rates.	22-180-R23	4/18/2023	$14.5

Appendix B: Issues Identified at the Four Delivery Units Visited

Table 5 provides a summarization of the issues identified or observed during our delivery unit site visits that either caused reported machine downtime or could impact machine downtime in the future.

Table 5. Summary of Issues at the Four Delivery Units Visited

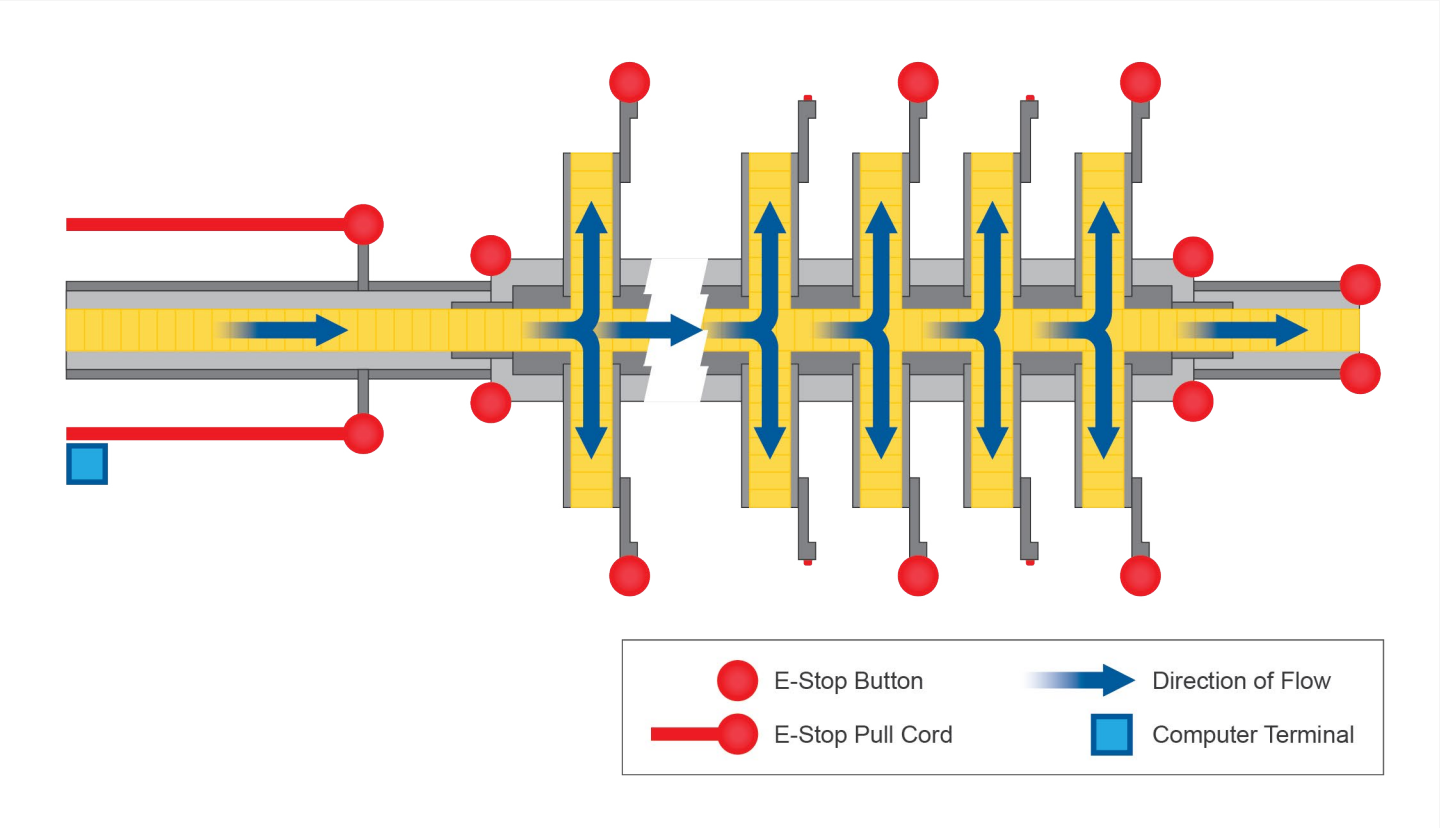
Delivery Unit	Maintenance Not Consistently Performed	Improper Operation		Machine Not Entered into eMARS	Insufficient Communication		
		Machine Not Stopped Properly	Mail Not Inducted Properly		Maintenance Log Not Maintained	Huddle Boards Not Used	MTSC Tickets Not Completed/ Accurate
Mendell Carrier Annex	✖	✖			✖	✖	
Royal Oaks Post Office	✖	✖		✖	✖	✖	✖
Toms River Main Post Office		✖	✖			✖	
Paschall Station	✖	✖	✖		✖	✖	✖

Source: OIG summarization of issued identified/observed during site visits from April 17 through April 21, 2023.

Appendix C: Emergency-Stop Locations on an ADUS and SDUS

Figure 4 shows the numerous locations of emergency-stop (E-stop) buttons and pullcords along the length of the ADUS and SDUS machines. Proper start-up/shut down of the machines should occur at the computer terminal.

Figure 4. Visual Diagram of E-stop Buttons and Pullcords Along the ADUS and SDUS



Source: OIG figure created from picture obtained from a MTSC System Overview Training document.

Appendix D: Management's Comments

UNITED STATES POSTAL SERVICE

August 1, 2023

JOHN CIHOTA
DIRECTOR, AUDIT SERVICES

SUBJECT: Management Response: Repair and Maintenance of Package Sorting Machines at Delivery Units (Report Number 23-089-DRAFT)

Thank you for providing the Postal Service with an opportunity to review and comment on the findings and recommendations contained in the draft audit report, Repair and Maintenance of Package Sorting Machines at Delivery Units. The OIG's Audit Objective was to evaluate how maintenance is performed on package sorting equipment within delivery units.

Management agrees with all Findings except for Finding #2 which indicates the main cause of machine downtime at the selected units was due to delivery unit personnel using the E-stop button whenever they needed to stop the machine, including stopping the machine to regularly sweep full bins and to stage more mail for induction onto the machine.

- Web End of Run (WebEOR) data by the OIG to calculate downtime was incorrectly used to determine the impact on machine downtime. There are "downtime" data elements in the WebEOR reports for the package sorting machines that are based upon the total belt stop times. These are not all a result of unit personnel using the E-stop button.

- Since pushing an E-stop results in stopping the belts, it would follow that there would be a direct relationship between E-stops and "down time" reported to WebEOR as indicated in the graphs in the audit report. However, the conclusion that the use of E-stops is the primary cause of true machine downtime is unsupported for reasons which were clearly stated by the OIG in their audit report: Using the E-stop button to stop the machine kept it in operational mode, with no packages being inducted. The machine's data system automatically counted this as machine downtime even though a breakdown may not have occurred.

Following are Managements comments on each of the nine (9) Recommendations.

Recommendation 1:
We recommend the Vice President, Retail and Post Office Operations instruct the Philadelphia P&DC to perform and confirm completion of all required preventive maintenance on a consistent basis on the ADUS at Paschall Station.

Management Response/Action Plan:
Management agrees with this Recommendation if a correction is made for the responsible official/organization assigned by the OIG. As discussed during the Exit Conference, the Vice President, Retail and Post Office Operations is not responsible for maintenance on the ADUS.

The Vice President, Processing and Maintenance Operations will instruct the Philadelphia P&DC to perform and confirm completion of all required preventive maintenance on a consistent basis on the ADUS at Paschall Station.

Target Implementation Date: 10/31/2023

Responsible Official: Senior Director, Maintenance Operations

Recommendation 2:
We recommend the Vice President, Retail and Post Office Operations provide ongoing informal training for SDUS clerks by a subject matter expert or on-the-job trainer at the unit, where the trainer can instruct personnel in the proper procedures for daily preventive maintenance for the SDUS.

Management Response/Action Plan:
Management agrees with this Recommendation. Management currently requires SDUS preventative maintenance training be completed by SDUS Distribution Clerks before they are allowed to conduct maintenance on SDUS equipment. Additional informal training on the proper daily preventative maintenance procedures will be provided by a subject matter expert to SDUS Distribution Clerks.

Target Implementation Date: 09/30/2024

Responsible Official: Manager, Retail Operations - Strategy, Planning and Optimization

Recommendation 3:
We recommend the Vice President, Processing and Maintenance Operations widely distribute — to include delivery units with package sorting equipment — a policy on the proper usage of emergency stop buttons.

Management Response/Action Plan:
Management agrees with this Recommendation. The Vice President, Processing and Maintenance Operations will reissue the current policy regarding the proper use of emergency stop buttons to Processing personnel and provide the document to the Vice President, Retail and Post Office operations for distribution to delivery units.

Target Implementation Date: 10/31/23

Responsible Official: Senior Director, Maintenance Operations

Recommendation 4:
We recommend the Vice President, Retail and Post Office Operations develop a plan to provide the delivery units visited with the resources needed to effectively run their operations, and in the interim, develop a plan to best use the resources on hand, taking into account optimal start times for machines based on employee availability and mail volume.

Management Response/Action Plan:
Management agrees with this Recommendation. Management provided information that validated the sites were properly staffed – and that there were simply employee attendance/availability issues during the time the audit was conducted.

Management requests closure at issuance of the final report.

Target Implementation Date: 10/31/2023

Responsible Official: Vice President Area, Retail and Delivery Operations

Recommendation 5:
We recommend the Vice President, Retail and Post Office Operations to require anyone assigned to operate package sorting machines within delivery units to receive training on the proper operation of that machine — including start up and shut down procedures and inducting mail onto the machine.

Management Response/Action Plan:
Management agrees with this Recommendation. Management currently requires training before an SDUS Distribution Clerk can operate the SDUS equipment. Management will reissue resource documents to SDUS Distribution Clerks regarding the start-up and shut down procedures and inducting mail onto the machine. All documents are currently located on the internal SDUS resource page.

Target Implementation Date: 10/31/2023

Responsible Official: Manager, Retail and Post Office Operations

Recommendation 6:
We recommend the Vice President, Processing and Maintenance Operations complete the ongoing project to effectively track and document changes, including the deployment of new equipment across the Postal Service network, to ensure that all machines are entered into eMARS timely.

Management Response/Action Plan:
Management agrees with this Recommendation. A project was completed that outlined a new process to improve the time to enter equipment into the system. In the interim, we've assigned an employee to assist with processing these requests in the current system.

Management requests closure at issuance of the final report.

Target Implementation Date: 1/31/24

Responsible Official: Senior Director, Maintenance Operations

Recommendation 7:
We recommend the Vice President, Retail and Post Office Operations consider directing local management at the four delivery units visited to develop and maintain a method of communication between operations and maintenance personnel to improve transfer of knowledge of identified issues and solutions.

Management Response/Action Plan:
Management agrees with this recommendation. Retail and Post Office Operations will coordinate with Processing and Maintenance Operations to have local management validate that the Visual Factory Aid (VFA) referenced in Maintenance Management Order MMO-072-21 (Released on 2/11/22) is accurate and complete at each of the four delivery units visited. The VFA will ensure the site's ability to obtain maintenance support from their Maintenance Capable Office and MTSC (if needed.)

Target Implementation Date: 1/31/2024

Responsible Officials: Manager, Retail Operations - Strategy, Planning and Optimization and Senior Director, Maintenance Operations

Recommendation 8:
We recommend the Vice President, Retail and Post Office Operations instruct local management at the four delivery units visited to improve communication — to include the use of huddle boards — and oversight of package sorting machine performance to increase efficiency of the operation.

Management Response/Action Plan:
Management agrees with this Recommendation. Local Management was instructed at the four delivery units visited to improve communication. This communication included the use of huddle boards. The performance of package sorting machines will be shared on the huddle boards to increase awareness and the efficiency of the operation.

Management requests closure at issuance of the final report.

Target Implementation Date: 10/31/2023

Responsible Official: Vice President Area, Retail and Delivery Operations

Recommendation 9:
We recommend the Vice President, Processing and Maintenance Operations periodically reinforce to personnel at the four delivery units visited the need to open a MTSC ticket with complete and accurate information of identified maintenance issues, when required.

Management Response/Action Plan:
Management agrees with this Recommendation. Management released a Maintenance Management Order, MMO-084-20 Procedures for Obtaining Maintenance Support from the National Technical Support Network (NTSN) on 9/11/20, that provides Field Sites guidance for obtaining maintenance support for impacted equipment and systems. The MMO also outlines the site's responsibilities to ensure timely and accurate support is provided. Management also released MMO-072-21 Guidelines to Request Maintenance Support for ADUS, SDUS and SIPs on 2/11/22. Documents are attached for reference.

Management requests closure at issuance of the final report.

Target Implementation Date: 10/31/23

Responsible Official: Senior Director, Maintenance Operations

E-SIGNED by Elvin Mercado
on 2023-08-01 13:11:18 CDT

Elvin Mercado
Vice President, Retail & Post Office Operations

E-SIGNED by Michael.L Barber
on 2023-08-01 13:18:11 CDT

Michael L. Barber
Vice President, Processing & Maintenance Operations

cc: *Corporate Audit & Response Management*

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

1735 North Lynn Street, Arlington, VA 22209-2020
(703) 248-2100

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