

September 30, 2003

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VICE PRESIDENT, ENGINEERING

SUBJECT: Audit Report - Inventory Management – Maintenance Stockrooms
(Report Number AC-AR-03-007)

This report presents the results of our self-initiated audit of spare parts inventory management at maintenance stockrooms (Project Number 01NR002AC003). Our objective was to determine whether inventory stock levels in maintenance stockrooms were appropriate. This audit was a result of our previous audit of Inventory Management and Maintenance Repair Operations at the Topeka Material Distribution Center. (See Prior Audit Coverage.)

Our audit disclosed, as of November 2002, spare parts inventory levels in the Postal Service's maintenance stockrooms exceeded demand by a projected \$131 million, or 50 percent of the inventory, using the Postal Service criteria at the time of our review. Our visits to 11 plants disclosed maintenance personnel routinely ordered more parts than the inventory system's recommended levels; did not perform the required annual reviews to eliminate excess parts; and failed to consistently classify critical parts. In addition, item managers at the Topeka Material Distribution Center made new purchases for some parts with excess balances. As a result, the Postal Service incurred additional costs acquiring new parts when sufficient parts were on hand. The Postal Service should use the excess spare parts at the 103 selected maintenance stockrooms before making new purchases for these parts and require maintenance personnel at the remaining 315 maintenance stockrooms to identify excess inventory balances. Further, if the Postal Service had better managed spare parts inventory, the \$131 million invested in excess inventory could have been used more efficiently.

We made ten recommendations to address inventory management issues. We recommended Postal Service management establish controls over reorder procedures, require management approval for excess quantities, develop a report to track reorder trends, ensure annual reviews are conducted, program the inventory management system to provide analysis reports, identify excess parts, use excess parts before making any new parts purchases, and direct maintenance personnel to return excess parts to the Topeka Material Distribution Center for use by other stockrooms. In addition, we recommended management develop guidelines and establish requirements for designating parts as critical; require maintenance personnel to

annually review parts for proper critical designation; and reprogram the field inventory system to automatically calculate levels for critical parts needed.

Management agreed with all recommendations. Management's actions taken or planned, should correct the issues identified in the report. Management's comments and our evaluation of these comments are included in the report.

The Office of Inspector General (OIG) considers recommendation 6 significant and, therefore, requires OIG concurrence before closure. Consequently, the OIG requests written confirmation when corrective action(s) are completed. This recommendation should not be closed in the follow-up tracking system until the OIG provides written confirmation that the recommendation can be closed.

We appreciate the cooperation and courtesies provided by your staff during the audit. If you have any questions or need additional information, please contact Robert J. Batta, director, Accepting and Processing, at (703) 248-2269 or me at (703) 248-2300.

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EXECUTIVE SUMMARY

Introduction

This report presents the results of our self-initiated audit of spare parts inventory¹ management at maintenance stockrooms. Our objective was to determine whether inventory stock levels in maintenance stockrooms were appropriate.

Results in Brief

Our audit disclosed as of November 2002, spare parts inventory levels in the Postal Service's maintenance stockrooms exceeded demand by a projected \$131 million, or 50 percent of the inventory, using the Postal Service criteria at the time of our review. Our visits to 11 plants disclosed maintenance personnel routinely ordered more parts than the inventory system's recommended levels; did not perform the required annual reviews to eliminate excess parts; and failed to consistently classify critical parts. In addition, item managers at the Topeka Material Distribution Center made new purchases for some parts with excess balances. As a result, the Postal Service incurred additional costs acquiring new parts when sufficient parts were on hand. The Postal Service should use the excess spare parts at the 103 selected maintenance stockrooms before making new purchases for these parts and require maintenance personnel at the remaining 315 maintenance stockrooms to identify excess inventory balances. Further, if the Postal Service had better managed the spare parts inventory, the \$131 million invested in excess inventory could have been used more efficiently.

Summary of Recommendations

We recommended Postal Service management establish controls over reorder procedures, require management approval for excess quantities, develop a report to track reorder trends, ensure annual reviews are conducted, program the inventory management system to provide analysis reports, identify excess parts, use excess parts before making any new parts purchases, and direct maintenance personnel to return excess parts to the Topeka Material Distribution Center for use by other stockrooms. In addition, we recommended management develop guidelines and establish requirements for designating parts as critical; require maintenance

¹ Inventory is material (parts) stored on-hand to support equipment breakdowns and customer requirements. Parts in stockrooms were classified using a source code that identifies the source of supply for the part. Inventories included repairable and consumable parts, parts from the General Service Administration schedules, the Defense Logistics Agency, and commercially purchased parts.

personnel to annually review parts for proper critical designation, and reprogram the field inventory system to automatically calculate levels for critical parts needed.

Summary of Management's Comments

Management agreed with all recommendations to improve inventory management nationwide. Management stated they will establish controls over reorder procedures, require management approval for excess quantities, track reorder trends, and ensure annual reviews are conducted. In addition, management agreed to program the inventory management system to provide analysis reports, identify excess parts, and direct maintenance personnel to return excess parts to the Topeka Material Distribution Center. Management also agreed to develop guidelines and establish requirements for designating parts as critical, require maintenance personnel to annual review parts for proper critical, designation, and reprogram the field inventory system to automatically calculate levels for critical parts needed.

Management stated they have reservations about the value of the excess inventory being as high as \$131 million; however, they will accept that amount unless implementation of the recommendations identifies a significantly different value. Management also stated the true savings from inventory reduction is the “cost of capital” or the carrying cost of stocking inventory excess of current needs. Management’s assumption of the cost of capital is 10 percent and savings would be approximately \$13 million. Management also stated that basic operations philosophy requires maintenance to ensure that equipment has minimum downtime. Therefore, they will err toward ensuring that spare part shortages do not result in excess downtime and its resultant cost consequences. Management’s comments, in their entirety, are included in Appendix C of this report.

Overall Evaluation of Management's Comments

Management’s actions taken or planned are responsive to all recommendations and should, correct the issues identified in the report.

INTRODUCTION

Background

Postal Service equipment used directly or indirectly in moving the mail, includes items such as facer cancelers, letter sorting machines, remote barcoding machines, and parcel bundle machines. The Topeka Material Distribution Center in Topeka, Kansas, contracts for purchases, stocks, and manages repairable and consumable spare parts inventory to support equipment for maintenance purposes or when breakdowns occur. Maintenance stockrooms personnel maintain an inventory of parts and supplies, initiate replacement of stocked and nonstocked inventory items to control the flow and accountability of material, minimize equipment breakdown, and expedite repairs and routine work.

Maintenance and plant managers at each site are accountable for the inventory stored in their facilities. The Visual Maintenance Activity Reporting and Scheduling System is used for ordering parts and scheduling maintenance on equipment at Postal Service facilities. The system establishes a reorder point when stock should be replenished. When the reorder point is at or below the requisitioning objective, the system automatically recommends a quantity to order based on authorized stock levels.²

Oversupply, or excess stockroom inventory, is defined as any serviceable material stocked and on order that is greater than the installation's needs and the established requisitioning objective for the part. Stockrooms maintain demand-based and nondemand-based parts. Demand based parts are stocked because the plant has a sufficient order history to warrant stocking parts at authorized levels. Nondemand-based parts include critical and insurance parts. Critical parts consist of parts that are important to the operation of the equipment to perform the installation's mission. Insurance parts are stocked due to length of time required to obtain the parts. Local management at each installation designates items critical for their location. Insurance items are designated according to Postal Service Handbook AS-701, Material Management.

² Proper inventory management should keep the range (the number of parts) and depth (quantities) of inventories to the minimum level necessary for effective customer support.

As of accounting period 2, fiscal year (FY) 2003, the Postal Service maintained 418 stockrooms, with an inventory valued at approximately \$260 million.

Objective, Scope, and Methodology

The objective of the audit was to determine whether inventory stock levels in maintenance stockrooms were appropriate.

To review inventory stock levels, we obtained a random sample consisting of on-hand balances in 103 stockrooms as of November 2002 from the Visual Maintenance Activity Reporting and Scheduling System. This system contains inventory data for all repairable, consumable, and other items stored in each stockroom. (See Appendix A for a list of facilities in our sample and the plants we visited.) To determine whether the inventory levels were appropriate or in excess, we applied the range and depth formula from Handbook AS-701, Material Management. We reduced the calculated amount by parts designated critical and insurance parts, at the end of their life cycle,³ and parts with fewer than 13 accounting periods of demand history to support the inventory levels. We also reduced the potential excess amount to allow for stockage of a quantity of the highest month's demand, as requested by Postal Service management. In addition, because we noticed inconsistencies in identical parts designated as critical in several facilities, we analyzed 56 commonly used parts inconsistently designated (critical at some and not at others) at 8 of the 103 facilities.

We interviewed Postal Service officials in the offices of Maintenance Policies and Programs, Supply Management, and Operations. In addition, we interviewed maintenance stockroom personnel at 11 plants to analyze inventory balances, clarify policies and procedures including Postal Service Handbook, MS-63, Maintenance Operations Support, and obtain information on specific parts at those facilities. Information from our analysis and interviews was used to identify potential causes for excess inventory at the 11 plants visited.

Our sample of 103 stockrooms allowed us to statistically project the total inventory value of excess parts. Details of

³ Parts at the end of their life cycle are parts that are no longer needed to support equipment maintenance requirements.

our sampling methodology are in Appendix B.

This audit was conducted from October 2002 through September 2003, in accordance with generally accepted government auditing standards and included such tests of internal controls as were considered necessary under the circumstances. We discussed our conclusions and observations with appropriate management officials and included their comments, where appropriate.

We did not attempt to assess the reliability of the data from the system as part of our audit objective.

Prior Audit Coverage

We identified one prior OIG report related to the objective of this audit, Inventory Management and Maintenance Repair Operations (Report Number AC-AR-03-002, dated March 28, 2003). Our audit disclosed approximately \$9 million in mail processing equipment spare parts exceeding the demand were in inventory at the Topeka Material Distribution Center as of April 2002. The excess inventory was the result of item managers maintaining stock levels that were above demand and because estimates for initial provisioning of depot spare parts were sometimes overstated. The report concluded the Postal Service should use the \$9 million in mail processing equipment repairable spare parts prior to making any new spare part purchases.

We recommended management reevaluate authorized stock levels to ensure the levels reflect demand data in the Material Distribution and Inventory Management System, coordinate with the Provisioning Improvement team to develop a systematic process for estimating depot spare parts, identify excess repair parts for equipment at the end of its life cycle, and dispose of parts are no longer needed.

Management agreed with the recommendations. Management stated they would review the stocking objective process and develop a solicitation provision that will encourage suppliers to use common parts. In addition, management stated they would identify and dispose of end of life parts, utilize spare parts prior to making any new spare parts purchases, and dispose or repair “Not Ready for Issue” parts.

Management disagreed that \$15 million in excess spare parts were in inventory. Management stated based on their sampling of the highest dollar value inventory items, only \$1.25 million is excess spare parts. The other \$13.75 million consisted of items for initial provisioning, insurance items, and end-of-life items where no external suppliers were available. However, we disagreed with management's assertion that only \$1.25 million of the \$15 million in repairable spare parts should be considered excess. We considered the additional information provided by management identifying \$2 million as items for equipment near its end-of-life and \$4 million as insurance items that can no longer be purchased on the open market. As a result, we revised the total amount of excess spare parts from \$15 million to \$9 million. Management's comments were responsive to the recommendations and their actions, taken or planned, should correct the issues identified in the report.

AUDIT RESULTS

Inventory Balances Exceed Demand

Our audit disclosed as of November 2002, spare parts inventory levels in the Postal Service's maintenance stockrooms exceeded demand by a projected \$131 million, or 50 percent of the inventory, using the Postal Service criteria at the time of our review. Our visits to 11 plants disclosed maintenance personnel routinely ordered more parts than the inventory system's recommended levels; did not perform the required annual reviews to eliminate excess parts; and failed to consistently classify critical parts. In addition, item managers at the Topeka Material Distribution Center made new purchases for some parts with excess balances. As a result, the Postal Service incurred additional costs acquiring new parts when sufficient parts were on hand. The Postal Service should use the excess spare parts at the 103 selected maintenance stockrooms before making new purchases for these parts and require maintenance personnel at the remaining 315 maintenance stockrooms to identify excess inventory balances. Further, if the Postal Service had better managed the spare parts inventory, the \$131 million investment in excess inventory could have been used more efficiently.

Replenishment Orders

Maintenance personnel ordered more parts than the inventory system's recommended quantities, resulting in excess quantities on hand. According to the Handbook AS-701, Material Management, the system uses a reorder point process, which calculates the recommended quantity to order based on authorized stock levels. The system does not have controls to prevent individuals from ordering above recommended stock levels. Therefore, the system relies on personnel to order and maintain the appropriate stock levels. We found personnel were not judiciously managing the order process. As a result, excess inventory existed for parts not used to support current mission needs.

Maintenance personnel at 11 processing and distribution centers indicated they routinely ordered parts in excess of recommendations made by the Visual Maintenance Activity Reporting and Scheduling System. Maintenance personnel stated they ordered extra parts for several reasons:

- Management at one plant instituted a local policy, which allowed 3 months of supply even if on-hand balances exceeded the inventory system's recommendations.
- Managers were concerned that items might not arrive from the Topeka Material Distribution Center within established shipping times.
- Managers believed more parts were needed.
- Managers did not trust the inventory system's recommendations.
- Items were stocked for emergencies and other unforeseen situations.

We judgmentally reviewed six replenishment orders at five processing and distribution centers to determine whether maintenance personnel were able to order parts above stock levels recommended by the Visual Maintenance Activity Reporting and Scheduling System. Our analysis showed the system recommended replenishment requisition totaling \$8,546; however, maintenance personnel increased the orders to \$14,287, an increase of 67 percent. Maintenance personnel stated orders were increased because they were concerned parts would not arrive within established shipping times. To evaluate the validity of this concern, we analyzed 192 shipments of ordered parts to three processing and distribution centers. We found 166 shipments were received on or before the due date and 26 shipments were late. For the late shipments, 16 were received less than a week after the due date, and 10 arrived more than a week late. We concluded that extended shipping times were not a valid reason for excessive reordering.

We judgmentally selected 259 spare parts to perform detailed reviews at five processing and distribution centers. Maintenance personnel agreed that 96 of the 259 parts had excess balances on hand⁴ valued at \$148,592. They also agreed that excess stock should be returned to the Topeka Material Distribution Center or offered to other plants. We also noted that item managers at the Topeka Material

⁴ Some potential excess was not true excess because the parts should have been designated as critical. Also, some parts were provided with equipment as initial spares and should not have been declared excess.

Distribution Center had made new purchases totaling \$28,431 for the line items with excess balances because they were unaware of the excess in the field.⁵

As stated earlier in our report, maintenance personnel were ordering more parts than the field inventory system recommended. In the OIG's March 28, 2003, report on inventory management at Topeka, item managers maintained on-hand inventory stockage levels of three to five accounting periods to supply parts requested from field maintenance personnel. Maintenance personnel continuing to order parts in excess of the system's recommended quantity results in Topeka item managers initiating actions. These actions include new part purchases to ensure their established stock levels are sufficient to supply parts to field maintenance personnel. Consequently, the Postal Service incurred additional costs in purchasing and storing unneeded spare parts with funds that could have been spent more efficiently.

Annual Reviews

Maintenance personnel in the 11 plants we visited had never performed the required annual reviews of inventory levels. Personnel stated they were not able to use a report generated from the inventory system, which identified excess parts, to perform these reviews. Postal Service Handbook MS-63, Maintenance Operations Support, requires each part in the stockroom be reviewed at least annually to determine whether the part can be declared excess. As a result, maintenance personnel continued to stock parts, creating excess inventory and increased administrative costs to manage and store excess parts.

The field inventory system currently has a Low/Demand Report, which highlights infrequently used parts for each site. This report could be used to identify parts for excess reporting. However, maintenance personnel stated they did not use the report because it was voluminous. We reviewed the reports at three sites and found the reports were voluminous because they contained both demand-based and nondemand-based parts.⁶ A modification to the report

⁵ Officials at the Topeka Material Distribution Center use the Material Distribution Management Information System to manage inventory. This system is updated with the inventory system used by field maintenance personnel.

⁶ Demand based parts are stocked because the plant has a sufficient order history to warrant stocking parts at authorized levels. Nondemand-based parts include critical and insurance parts. Critical parts consist of parts that are important to the operation of the equipment to perform the installation's mission. Insurance parts are stocked due to length of time required to obtain the parts.

distinguishing demand-based and nondemand-based parts would be beneficial to maintenance personnel.

We noted personnel at the Denver Processing and Distribution Center had begun a program that included regular inventory reviews. However, the program had not been in place long enough to produce significant inventory reductions at the time of our visit.

Designation of Critical Parts

Maintenance personnel failed to properly designate critical parts because no policy and procedures existed to consistently identify these parts. Handbook AS-701, Material Management, states critical parts are nondemand-based that are used rarely and stock levels should be monitored to prevent excess. Because these parts were not properly identified, some parts appeared to be excess when they were required because of critical requirements.

Our review of inventory data for 103 Postal Service facilities showed a wide disparity in the designation of critical parts in the maintenance stockrooms. Two processing and distribution centers located in Boston, Massachusetts, and Oakland, California, each had over \$2 million in spare parts inventories. The Boston Processing and Distribution Center had no parts designated as critical, while the Oakland Processing and Distribution Center had over \$1 million in parts identified.

To further review this issue, we judgmentally selected 56 commonly used stock numbers at eight processing and distribution centers⁷ for review. These stock numbers were selected because maintenance personnel at a minimum of 80 of the 103 Postal Service facilities in our sample had designated them about equally as critical or noncritical in the Visual Maintenance Activity Reporting and Scheduling System and none of them were consistently coded in the system at the eight centers in our review. We discussed this with plant managers at the eight centers and they agreed that 152 of the 448 stock numbers (56 stock numbers at eight centers) were not designated correctly in the system and should be changed.

⁷ Processing and distributions centers at Austin, Texas; Kansas City, Missouri; Orlando, Florida; the Northwest Massachusetts Center, Waltham Massachusetts; Phoenix, Arizona; the M. L. Sellers Center, San Diego, California; Denver, Colorado; and Spokane, Washington.

Maintenance personnel stated that stock numbers were misclassified because they had not considered the full implications of critical part designation. In some cases, new employees did not know why stock numbers were not classified correctly. In addition, maintenance personnel at processing and distribution centers in Denver, Colorado; Spokane, Washington; and the M. L. Sellers Processing and Distribution Center, San Diego, California, agreed that 36 of 168 stock numbers (the 56 stock numbers multiplied by the 3 plants) were critical but still had excess balances on hand, valued at approximately \$19,000.

We also met with the acting manager,⁸ Office of Maintenance Policies and Programs, to determine how many of the 56 stock numbers in our sample should be designated as critical. The acting manager and local maintenance personnel at the eight processing and distribution centers agreed that 33 of the 56 stock numbers were critical. However, because Handbook AS-701, Material Management, is very general in nature, opinion was divided as to how many of the remaining 23 stock numbers were critical. The proper classification of critical spare parts is essential to ensuring that excess inventory does not exist.

Recommendation	<p>We recommend the vice president, Engineering:</p> <ol style="list-style-type: none"> 1. Establish controls within the inventory system to limit normal replenishment orders to quantities recommended by the Visual Maintenance Activity Reporting and Scheduling System.
Management's Comments	<p>Management agreed with the recommendation and stated they will change the inventory ordering system to require supervisory/management approval to exceed the system generated "recommended reorder quantity" by the end of quarter 3, FY 2004.</p>
Recommendation	<ol style="list-style-type: none"> 2. Require management approval for orders in excess of inventory system requirements; these orders should include documented reasons for ordering a larger quantity.

⁸ When the audit was conducted the official was acting manager, a permanent manager has been hired.

Management's Comments	Management agreed with the recommendation and stated based on their actions taken in recommendation 1, any automatic routine reorders above the recommended amount in the inventory system will be precluded. Management stated that any orders exceeding the normal reorder point will be routed for "higher level approval." Orders will require supervisory access levels in the inventory system and a short justification. Management stated this action will be completed by the end of quarter 3, FY 2004.
Recommendation	We recommend the vice president, Engineering: 3. Develop a report for managers to use in tracking reorder trends above the normal stock recommended by the Visual Maintenance Activity Reporting and Scheduling System.
Management's Comments	Management agreed with the recommendation and will develop a report, which shows inventory ordering exceptions. This report will be implemented by the end of Quarter 3, FY 2004.
Recommendation	4. Direct the manager, Maintenance Policies and Programs, to ensure maintenance stockroom personnel comply with the requirement to conduct annual reviews of inventory levels.
Management's Comments	Management agreed with the intent of the recommendation. The policy requiring these annual reviews the Handbook, MS-63, <u>Maintenance Operations Support</u> , is currently being revised. As part of the revision process, management will reissue national policy on this requirement and ensure line management responsibility is clearly delineated. This action will be completed by the end of quarter 3, FY 2004.
Recommendation	5. Program the Visual Maintenance Activity Reporting and Scheduling System to provide useful reports for analyzing inventory, which separate demand-based items from critical or nondemand-based stock.
Management's Comments	Management agreed with the recommendation. Management reports will be developed to assist management in analyzing inventory. These reports will separate demand stock items from nondemand stock items. This will be completed by the end of quarter 3, FY 2004.

Recommendation	We recommend the vice president, Engineering:
	6. Require personnel from the 418 stockrooms to conduct a review to identify excess spare parts Postal Service-wide and use the excess parts before making new purchases.
Management's Comments	Management agreed with the recommendation. Management stated in addition to requiring personnel at the local level to review inventory on an ongoing basis, they will initiate a national effort to identify excess spare parts. This effort will be completed by the end of FY 2004.
Recommendation	7. Direct maintenance personnel to return excess spare parts to the Topeka Material Distribution Center for use by other stockrooms.
Management's Comments	Management agreed with the intent of this recommendation. Management stated this situation is complicated by the fact that not all stockroom parts come from the Topeka Material Distribution Center. Some are from General Service Administration, direct vendor delivery, and local purchases. Management stated they intend to use the national review of stock levels, noted in recommendation 6, to provide sites with specific directions on disposition or specific parts that are excess to their needs. This action will be completed by the end of FY 2004.
Recommendation	8. Develop guidelines for determining whether maintenance spare parts are critical and designate a central point of contact to oversee the process.
Management's Comments	Management agreed with the intent of the recommendation. Management stated that as part of the national review of stock levels, equipment specialists at the maintenance technical support center will identify "insurance" or "critical" items. As a result of this review, the Postal Service will publish a listing of recommended "critical" and "insurance" parts. Management will also provide a report in the inventory system that will highlight parts in local inventories that do not comply with this listing for review and approval by local management. This will be completed by the end of quarter 3, FY 2004.

Recommendation	<p>We recommend the vice president, Engineering:</p> <p>9. Require all maintenance personnel to review parts for the proper critical designation at least annually.</p>
Management's Comments	<p>Management agreed with the intent of this recommendation. Management stated this review will be based on the report noted in recommendation 8. This will be completed by the end of quarter 3, FY 2004.</p>
Recommendation	<p>10. Reprogram the Visual Maintenance Activity Reporting and Scheduling System to automatically calculate levels for critical parts to allow stocking no more than one critical part in the absence of sufficient demand for that part. As with demand-based stockage, allowances should be made for management to override the system when necessary, with proper documentation.</p>
Management's Comments	<p>Management agreed with the recommendation. Management stated that these programming changes to the inventory system will be completed by the end of quarter 3, FY 2004.</p>
Evaluation of Management's Comments	<p>Management's comments are responsive to recommendations 1 through 10. Management's actions taken or planned, should correct the issues identified in the report.</p>

**Matters for Postal
Service Management
Consideration**

During the audit, we observed that many spare parts with low demand are stocked because they are critical to mission accomplishment. We believe that in concentrated metropolitan areas such as Chicago, New York, and other areas with many plants located close to each other, funds used to support these inventories could be reduced if low-demand critical parts were stocked by one plant in the area. This would eliminate the need for every plant to stock backup supply for low-demand parts. During our audit, we noted many parts with no demand for at least 1 year; these parts would be good candidates for consolidated inventory. We can provide management with a list of parts and locations to be considered for stockroom consolidation, at their request.

APPENDIX A FACILITIES SELECTED FOR ANALYSIS

Altoona P.O., Pennsylvania	Anchorage PDC, Alaska	Austin PDC, Texas*
Bakersfield PDC, California	Baltimore PDC, Maryland*	Baton Rouge PDC, Louisiana
Boston PDC, Massachusetts	Brooklyn PDC, New York	Buffalo GMF, New York
Burlington PDF, Vermont	Cape Girardeau PDF, Missouri	Carol Stream PDC, Illinois
Charlottesville PDF, Virginia	Chicago BMC, Illinois	Columbus PDC, Ohio
Dallas BMC, Texas*	Denver PDC, Colorado*	Detroit PDC, Michigan
Duluth REC, Minnesota	Dominick V. Daniels PDC, New Jersey	East Valley DDC, Arizona
Erie PDC, Pennsylvania	Evansville PDC, Indiana	Flint PDC, Michigan
Frederick PDF, Maryland	Ft. Meyers PDC, Florida	Ft. Worth PDC, Texas
Gary PDC, Indiana	Grand Junction P.O., Colorado	Grand Rapids Annex, Michigan
Great Falls P.O., Montana	Greensboro PDC, North Carolina	Harrisburg PDC, Pennsylvania
Hickory PDF, North Carolina	Jamestown P.O., New York	Jersey Shore DDC, New Jersey
Kalamazoo PDC, Michigan	Kansas City PDC, Missouri*	Kinston PDF, North Carolina
Lansing PDC, Michigan	Little Rock PDC, Arkansas	Long Island City P.O., New York
Madison PDC, Wisconsin	Manchester PDC, New Hampshire	Mansfield P.O., Ohio
Marysville PDF, California	McAllen PDF, Texas	Merrifield PDC, Virginia
Miami ISC, Florida	Miami PDC, Florida	M. L. Sellers PDC, California*
Mobile PDC, Alabama	Monmouth PDC, New Jersey	Muncie PDF, Indiana
New Jersey INT & BMC, New Jersey	North Metro PDC, Georgia	North Texas PDC, Texas
NW Massachusetts PDC, Massachusetts*	Oakland PDC, California*	O'Hare AMF, Illinois
Omaha PDC, Nebraska	Orlando PDC, Florida*	Palatine PDC, Illinois

Patterson PDC, New Jersey	Pensacola PDC, Florida	Philadelphia PDC, Pennsylvania
Phoenix PDC, Arizona*	Pocatello P.O., Idaho	Portland PDC, Maine
Providence PDC, Rhode Island	Raleigh PDC, North Carolina	Reading PDF, Pennsylvania
Richmond PDC, Virginia	Roanoke PDC, Virginia	Royal Oak PDC, Michigan
Salt Lake City PDC, Utah	San Bernardino PDC, California	San Francisco BMC, California
San Jose PDC, California	San Juan PDC, Puerto Rico	Santa Ana PDC, California
Santa Clarita PDC, California	Seattle PDC, Washington	Shawnee Mission P.O., Kansas
South Bend PDC, Indiana	South Florida PDC, Florida	South Jersey PDC, New Jersey
Southeastern Pennsylvania PDC, Pennsylvania	Spokane PDC, Washington*	Springfield GM-BC, Massachusetts
St. Louis PDC, Missouri	St. Paul BMC, Minnesota	Stamford PDC, Connecticut
Suburban Maryland MSC, Maryland	Tallahassee PDF, Florida	Tulsa PDC, Oklahoma
Waterbury PDF, Connecticut	Westchester PDC, New York	Wheeling P.O., West Virginia
White River Junction PDC, Vermont	Winston-Salem P.O., North Carolina	Wichita Falls Annex, Texas
Yonkers P.O., New York		

*Asterisk denotes that plant visit was made to conduct detailed review.

P.O. – post office.

PDC – processing and distribution center.

GMF – group mail facility.

PDF – processing and distribution facility.

BMC – bulk mail center.

REC – remote encoding center.

DDC – distribution and delivery center.

ISC – international service center.

INT – international.

AMF – airmail facility.

GM-BC – group mail and bulk center.

MSC – mail service center.

APPENDIX B STATISTICAL SAMPLING AND PROJECTIONS FOR REVIEW OF FIELD INVENTORY MANAGEMENT

Purpose of the Sampling

One of the sub-objectives of this audit was to identify the value of excess maintenance spare parts on hand at field stockrooms. In support of this sub-objective, the audit team employed a stratified cluster sample of spare parts. The sample design allows statistical projection of the total inventory value of parts in excess of the demand-based quantity (excluding initial spare parts, parts with less than 13 accounting periods of demand data, critical parts, parts needed for insurance reasons, and parts at the end of their life cycle), using the Postal Service criteria and formula for the inventory calculation.

Calculation of Excess

Excess quantity was calculated based on Chapter 4 of Handbook AS-701, Material Management, and adjusted to represent undocumented changes to the equation currently used in the Visual Maintenance Activity Reporting and Scheduling System. The manager of Maintenance Policy and Programs provided changes.

$$EXCESS = [on\ hand + on\ order] - [max\ (maximum\ demand, requisitioning\ objective)]$$

where

$$Requisitioning\ objective = (Average\ demand)(pipe/28) + (0.25)(Average\ demand) + 2(Average\ demand)$$

Average demand was the average historical demand for accounting periods, calculated over a maximum of 13 accounting periods. Maximum demand was the maximum demand for a single accounting period over the 13 previous accounting periods.

A demand-based excess number of parts was calculated for each unique part (stock number) and then multiplied by the price of the part to determine the value of excess.

Critical spare parts and parts needed for insurance reasons were designated separately for each stockroom using critical and insurance designations in the Visual Maintenance Activity Reporting and Scheduling System in addition to a list of catastrophic parts for all stockrooms. Each unique part was designated separately.

Initial spare parts were designated as any parts that had been in inventory for less than 13 accounting periods or any parts shown on a list of provisioning parts for all stockrooms. Each unique part was designated separately.

Definition of the Audit Universe

The audit universe consisted of all maintenance spare parts located at 418 field stockrooms nationwide with a total inventory value greater than zero. Sample data were obtained as close to the end of accounting period 2, 2003 as possible. The audit universe was defined at the end of accounting period 2, 2003. Inventory values obtained from the sample sites were used to adjust the exact end of the accounting period 2 inventory audit universe to account for changes between the actual data call at sample sites and the summary for the end of accounting period 2. The adjusted inventory value of the audit universe was \$263,176,136.

Sample Design and Modifications

For the purposes of sampling, each field stockroom was considered a cluster of maintenance spare parts. The clusters were stratified into four strata based upon the total inventory value of the cluster at the end of FY 2002. The strata were defined as described below. Clusters in the first stratum were selected with certainty, and clusters in strata two through four were selected at random (simple random sample). A total of 103 clusters (stockrooms) was selected in the sample.

Stratum	Total Value	Universe Size	Sample Size
1	Greater than \$2 million	11	11
2	Between \$1 and \$2 million	78	35
3	Between \$.5 and \$1 million	112	30
4	Less than \$.5 million	217	27

The sample size was based on a stratified random sample design. We calculated the sample size for a two-sided confidence interval, at the 95 percent confidence level and 8 percent precision, based on an attribute measure with expected occurrence rate of 50 percent. The allocation to the strata was based on our judgment. (We had no data regarding variability on which to base a sample size or calculate an allocation for a variable sample.)

Statistical Projections of the Sample Data

For the projection of the total excess inventory value in the audit universe, the sample data were analyzed using the formulas for estimation of a population total using a ratio estimator as described in Chapter 8, Elementary Survey Sampling, Scheaffer, Mendenhall, and Ott, ©1990.

Results

Based on the sample results, the point estimates, bounds for a 95 percent confidence interval, and achieved relative precision are as shown in the summary table.

Estimate	Point Estimate	Bounds	Achieved Relative Precision
Excess less initial spare parts, critical, insurance, and end-of-life items	\$131,148,139	\$123,860,974 to \$138,435,304	+/- 5.56 percent

APPENDIX C. MANAGEMENT'S COMMENTS

THOMAS G. DAY
VICE PRESIDENT
ENGINEERING



September 25, 2003

KIM H. STROUD
DIRECTOR
AUDIT OPERATIONS AND FOLLOW-UP
OFFICE OF THE INSPECTOR GENERAL

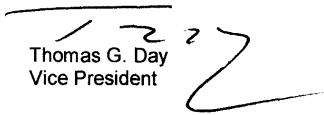
SUBJECT: Draft Audit Report-Inventory Management –
Maintenance Stockrooms (Report Number AC-AR-03-DRAFT)

We appreciate the opportunity to review and comment on the subject draft audit report. Generally, we are in concurrence with the report's recommendations and Attachment A provides specific responses to each recommendation.

While we have reservations that the value of excess inventory is as high as the \$131 million identified, we will accept that amount unless, through implementation of these recommendations, we identify a significantly different value. We believe that implementation of your recommendations will assist in improving inventory management in maintenance stockrooms nationwide. Also, we must clarify that the true savings from inventory reduction is the "cost of capital" or the carrying cost of stocking inventory excess of current needs. Assuming a 10 percent carrying cost, savings would be approximately \$13 million.

Another critical factor that must be stated is that the Postal Service has a basic operations philosophy that requires maintenance ensure that our equipment has minimum downtime. The cost of machine unavailability is extremely expensive to our operations. Therefore, we will err toward ensuring that spare part shortages do not result in excess downtime and its resultant cost consequences.

We do not believe that this report contains any proprietary or business information and may be disclosed pursuant to the Freedom of Information Act (FOIA). If you have questions, Earl Jones, of Maintenance Policies and Programs, will monitor implementation of report recommendations and can be reached at 703-280-7905.


Thomas G. Day
Vice President

Attachment

cc: John A. Rapp
Keith Strange
Edward L. Gamache
Walter F. O'Tormey
Gordon MacMahon
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8403 LEE HIGHWAY
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ATTACHMENT A
Engineering Responses
OIG Report AC-AR-03-DRAFT
Inventory Management – Maintenance Stockrooms
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OIG Recommendation

1. Recommendation: Establish controls within the inventory system to limit normal replenishment orders to quantities recommended by the VMARS system.

Management agrees with this recommendation. The current system provides a "recommended reorder quantity" which can be edited by local personnel prior to transmitting the order. We will change the inventory ordering system to require supervisory/ management approval to exceed the system generated "recommended reorder quantity." This will be completed by the end of Q3FY04.

2. Recommendation: Require management approval for orders in excess of inventory system requirements; these orders should include documented reasons for ordering a larger quantity.

Management agrees with this recommendation. As noted above, automatic or routine reorders above the recommended amount will be precluded. The eMARS system will have a means of placing "non-routine" orders. The intent of this feature is to provide the capability to order parts in unusual situations such as overhauls, equipment modifications, or catastrophic failures. In this portion of the system, if an attempt is made to place an order for parts where the present balance on hand plus "due in" quantity exceeds the normal reorder point, the order will be routed for "higher level approval." Release of these orders will require a supervisory access level to eMARS and a short justification statement. This will be completed by the end of Q3FY04.

3. Recommendation: Develop a report for managers to use in tracking reorder trends above the normal stock recommended by the VMARS system.

Management agrees with this recommendation. A report which shows inventory ordering exceptions will be developed and implemented by the end of Q3FY04.

4. Recommendation: Direct the Manager, Maintenance Policies and Programs (MPP), to ensure maintenance stockroom personnel comply with the requirement to conduct annual reviews of inventory levels.

Maintenance agrees with the intent of this recommendation. The policy requiring these annual reviews is in place (MS-63, Section 751). The MS-63 is currently being revised. As part of the MS-63 revision process, we will reissue national policy on this requirement and ensure line management responsibility is clearly delineated. This will be completed by the end of Q3FY04.

5. Recommendation: Program the VMARS system to provide useful reports for analyzing inventory which separate demand-based items from critical or non-demand based stock.

Management agrees with this recommendation. Appropriate eMARS reports will be developed to assist management in analyzing inventory. These reports will separate demand stock items from non-demand stock items. This will be completed by the end of Q3FY04.

ATTACHMENT A
Engineering Responses
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Inventory Management – Maintenance Stockrooms
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6. Recommendation: Require personnel from 418 stockrooms to conduct a review to identify excess spare parts Postal Service-wide and use the excess parts before making new purchases.

Management agrees with this recommendation. In addition to requiring personnel at the local level to review inventory on an ongoing basis we will initiate a national effort to identify excess spare parts. A team from Maintenance Management and Material Management will analyze line items presently used in the field to determine which line items are obsolete, which line items should be designated "critical" or "insurance" and which line items are demand-based and being stocked in excess quantities relative to demand. Definitive instructions will then be issued to the field with regard to disposition of obsolete and excess items. These instructions will include an end date to complete the disposition process. This effort will be completed by the end of Fiscal Year 2004.

7. Recommendation: Direct maintenance personnel to return excess spare parts to the Topeka Material Distribution Center for use by other stockrooms.

Management agrees with the intent of this recommendation. This situation is complicated by the fact that not all stockroom parts come from Topeka. Some are from General Services Administration, some are DVD (Direct Vendor Delivery) either through Topeka or eBay, and some are local purchases. As a component of implementing Recommendation 6 above, the team will identify selected parts appropriate for return to Topeka and direct such returns. Other excess parts may be used locally, shared between facilities, or disposed of using appropriate procedures defined by Material Management. We intend to, as noted in Recommendation 6 above, make a national review of stock levels and provide sites with specific directions on disposition of specific parts that are excess to their needs. This will be completed by the end of Fiscal Year 2004.

8. Recommendation: Develop guidelines for determining whether parts are critical and designate a central point of contact to oversee the process.

Management agrees with the intent of this recommendation. As part of the national review of stock levels discussed to above, we will have all line items identified as "insurance" or "critical" reviewed by equipment specialists at MTSC. As a result of this review, we will publish a listing of recommended "critical" and "insurance" parts. We will also provide a report in eMARS that will highlight parts in local inventories that do not comply with this listing for review and approval by local management. This will be completed by the end of Q3FY04.

9. Recommendation: Require all maintenance personnel to review parts for the proper critical designation at least annually.

Management agrees with the intent to this recommendation. The review will be based on the report described in Response 8 above. This will be complete by the end of Q3FY04.

10. Recommendation: Reprogram the VMARS system to automatically calculate levels for critical parts to allow stocking of no more than one critical part in the absence of sufficient demand for that part. As with demand-based stockage, allowances should be made for management to override the system when necessary, with proper documentation.

Management agrees with this recommendation. It will be implemented with the other programming changes in eMARS by the end of Q3FY04.

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OIG Matters for Postal Service Management Consideration

As suggested in the report, we will actively explore centralizing low demand spare parts in metropolitan areas where concentrated operations exist. Also, as suggested, we would appreciate the list of parts and locations to be considered for consolidation that is referenced in the draft report.