REVIEW OF THE USE OF
INVENTORY MANAGEMENT SOFTWARE
FEDERAL ACQUISITION SERVICE
REPORT NUMBER A070164/Q/A/P08004

March 21, 2008

REVIEW OF THE USE OF
INVENTORY MANAGEMENT SOFTWARE
FEDERAL ACQUISITION SERVICE
REPORT NUMBER A070164/Q/A/P08004

TABLE OF CONTENTS

U.S. GENERAL SERVICES ADMINISTRATION
Office of Inspector General

Date: March 21, 2008

Reply to
Attn of: Audit Manager, Acquisition Programs Audit Office (JA-A)

Subject: Review of the Use of Inventory Management Software,
             Federal Acquisition Service,
             Report Number A070164/Q/A/P08004

To: James A. Williams
             Commissioner, Federal Acquisition Service (Q)

This report presents the results of the Office of Inspector General's review of the use of Federal Acquisition Service's (FAS') Inventory Management software. The review recognized that it typically takes time to transition an experienced workforce from a system they have used for many years to a more modern one that incorporates new terminology and techniques. This was evidenced at the time of our review by the fact that the majority of Inventory Managers and Store Coordinators were not using the Manugistics software to the fullest extent possible. Most users received training before the software was implemented and again a year later, but believed they needed additional training in using the software and inventory management concepts and terminology. In addition, the review determined that FAS needs to develop specific performance measures that fully realize the benefits of the new software and remove redundant inventory management functionality from the Legacy systems as a means of helping FAS overcome user resistance to change.

The review also identified the following areas that FAS should address to improve the effectiveness of Manugistics software: (1) updating outdated costs, (2) incorporating comprehensive historical data, (3) considering transportation costs, and (4) including contract data. These improvements could increase the accuracy of the software's replenishment recommendations and benefit Inventory Managers, Store Coordinators, and/or FAS management.

Your response to the draft report is included as Appendix A of the report.
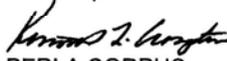
PERLA CORPUS
Audit Manager
Acquisition Programs Audit Office (JA-A)

REVIEW OF THE USE OF
INVENTORY MANAGEMENT SOFTWARE
FEDERAL ACQUISITION SERVICE
REPORT NUMBER A070164/Q/A/P08004

EXECUTIVE SUMMARY

PURPOSE

The objectives of our audit were to determine whether: (1) the Federal Acquisition Service (FAS) was using the Manugistics, Incorporated (Manugistics) inventory management software to the fullest extent possible, and if not, what were the reasons for inconsistent usage; and (2) the Manugistics software could be improved to better manage inventory in the depots and stores.

BACKGROUND

In August 2004, FAS awarded a contract for slightly more than $3 million to Manugistics, for inventory software. Specific contract costs included $1.3 million for the software license, $196,441 annually for two years for maintenance and support, a not-to-exceed time-and-materials cost of $1.2 million for implementation, and a not-to-exceed time-and-materials cost of $133,000 for implementation and training. A contract modification to include travel expenses in the amount of $697,956 occurred on December 10, 2004, which increased the total value of the contract to $3.7 million. Manugistics software was used to assist inventory personnel, which included 37 Inventory Managers and 18 Store Coordinators, by forecasting demand and providing replenishment recommendations for items sold at FAS' two depots and 30 stores. Overall, the goals of the software were to help FAS improve demand forecasting accuracy, reduce inventory levels, and maintain high customer service. As of October 1, 2007, costs paid to Manugistics for services rendered totaled $3.6 million. The Manugistics software was implemented at commodity centers and depots in September 2005.

RESULTS IN BRIEF

The review determined that approximately two years after implementation of the Manugistics software, the majority of Inventory Managers and Store Coordinators were not using it to the fullest extent possible. The review determined that this was partially due to user resistance to change, but that FAS could help overcome this through additional training in using the software, inventory management concepts, and terminology; as well as, developing specific performance measures that fully realize the benefits of the new software and removing redundant inventory management functionality from the Legacy systems.

The review also identified the following areas that FAS should address to improve the effectiveness of Manugistics software: (1) updating outdated costs, (2) incorporating

comprehensive historical data, (3) considering transportation costs, and (4) including contract data. These improvements could increase the accuracy of the software's replenishment recommendations and benefit Inventory Managers, Store Coordinators, and/or FAS management.

RECOMMENDATIONS

We recommend the Commissioner of the Federal Acquisition Service:

1. Provide additional training related to the proper and practical application of the Manugistics software and inventory management concepts and terminology.

2. Develop meaningful performance measures to fully realize the benefits of the Manugistics software.

3. Remove redundant inventory management functionality from the Legacy systems.

4. Maintain up-to-date procurement and inventory costs in the Manugistics software.

5. Conduct a cost/benefit study related to implementing improvements to transportation management information.

6. Conduct a cost/benefit study related to incorporating contract data in the Manugistics software.

7. Conduct a cost/benefit study related to adding data warehousing to maintain historical data regarding actions taken by Inventory Managers and Store Coordinators and routinely report this information to their supervisors.

REVIEW OF THE USE OF
INVENTORY MANAGEMENT SOFTWARE
FEDERAL ACQUISITION SERVICE
REPORT NUMBER A070164/Q/A/P08004

INTRODUCTION

As part of the General Services Administration (GSA), Office of Inspector General's fiscal year 2007 Annual Audit Plan, we conducted a review of the Federal Acquisition Service's (FAS) use of Manugistics software program to manage inventory at its depots and stores.

Background

In 2001 and 2002, Tompkins Associates performed an analysis of GSA's Supply Business Line to develop an alternative that would align the Office of Supply with commercial best practices. The primary recommendation of their March 12, 2002, report was for GSA to implement a "Best of Breed" supply chain suite of applications that would project demand and plan for inventory replenishment., The report disclosed that the new system would reduce inventory and improve labor efficiency, stocking patterns, and customer service; and establish and maintain key performance indicators.

On May 11, 2004, FAS issued a Statement of Work to two firms for commercial off-the-shelf software for demand forecasting, inventory optimization, and replenishment planning software. On August 31, 2004, FAS placed a Delivery Order with Manugistics, Incorporated using their Information Technology Schedule contract (GS-35F-0388K). The Delivery Order was for slightly more than $3 million ($1.3 million for the software license, $196,441 annually for two years for maintenance and support, a not-to-exceed time-and-materials cost of $1.2 million for implementation, and a not-to-exceed time-and-materials cost of $133,000 for implementation and training). On December 10, 2004, a Delivery Order was issued to add $697,956 for travel costs, bringing the total authorized cost to $3.7 million. As of October 1, 2007, costs paid to Manugistics for services rendered totaled $3.6 million.

Per the Statement of Work, the new software was acquired to replace Legacy inventory management functionality for GSA Global Supply, improve demand forecasting accuracy, reduce inventory levels, and maintain high customer service.

In September 2005, FAS implemented the Manugistics software at the following acquisition centers and depots:

- 37 Inventory Managers and their supervisors in Kansas City, MO; Fort Worth, TX; and New York City, NY, who manage inventory in GSA's depots.

- 18 Store Coordinators and their supervisors in Burlington, NJ; Atlanta, GA; French Camp, CA; and Anchorage, AK, who manage inventory in GSA's stores, which are located at various locations within the United States and overseas.

Objectives, Scope, and Methodology

The objectives of our audit were to determine whether: (1) FAS was using the Manugistics inventory management software to the fullest extent possible, and if not, what were the reasons for inconsistent usage; and (2) the Manugistics software could be better improved to manage inventory in the depots and stores.

To accomplish the objectives of our review, we performed the following steps:

- Reviewed the Statement of Work for the Manugistics software, contract award and cost information, and Manugistics Users Guides;

- Interviewed Central Office FAS officials to understand GSA's purpose for and experience with implementing Manugistics software;

- Interviewed 27 Inventory Managers and acquisition center management officials in Fort Worth, TX; New York City, NY; and Kansas City, MO, regarding Manugistics software and obtained supporting documentation from them;

- Interviewed 10 Store Coordinators and management officials in French Camp, CA, and Burlington, NJ, regarding Manugistics software and obtained supporting documentation from them;

- Interviewed the contractor who serves as the expert on Manugistics software at GSA to understand issues related to implementation and operation of the software;

- Obtained statistical data and reviewed the results of other studies related to inventory management; and

- Observed the application of the software by Inventory Managers and Store Coordinators.

Our review, which was related to the FAS' use of Manugistics software, focused on a two year period (from September 2005 to September 2007). Our fieldwork was conducted primarily from June through September 2007. The audit was conducted in accordance with generally accepted Government auditing standards.

<center>**RESULTS OF REVIEW**</center>

Brief

We recognize that it typically takes time to transition an experienced workforce from a system they have used for many years to a more modern one that incorporates new terminology and techniques. This was evidenced at the time of our review by the fact that the majority of Inventory Managers and Store Coordinators were not using the Manugistics software to the fullest extent possible. Most users received training before the software was implemented and again a year later, but the majority of users felt they needed additional training in using the software, inventory management concepts, and terminology. In addition, FAS needs to develop specific performance measures that fully realize the benefits of the new software, as well as remove redundant inventory management functionality from the Legacy systems. These actions may help FAS overcome user resistance to change.

We also identified the following areas that FAS should address to improve the effectiveness of Manugistics software: (1) updating outdated costs, (2) incorporating comprehensive historical data, (3) considering transportation costs, and (4) including contract data. These improvements could increase the accuracy of the software's replenishment recommendations and benefit Inventory Managers, Store Coordinators, and/or FAS management.

Findings and Recommendations

Finding 1 - FAS' Use of Manugistics Software

When we interviewed 27 Inventory Managers and 10 Store Coordinators (a total of 37 individuals) from June 5 through August 24, 2007, there were varying degrees of usage of the Manugistics software. A few Store Coordinators did not use the software at all, and other Store Coordinators and Inventory Managers used the software inconsistently. As a result, the software's ability to help FAS improve the accuracy of demand forecasts, minimize inventory levels, and maintain high customer service was reduced.

At the time of our review, three of the ten Store Coordinators we interviewed (30 percent) did not use the software at all.   The Inventory Managers and Store Coordinators who did use the Manugistics software used it inconsistently.   Examples included:

- 6 of 7 Store Coordinators who used the Manugistics software did not use its automatic replenishment feature or used it only minimally because they did not trust the system to automatically place orders in

<center>7</center>

the correct quantities, and they wanted to review and recompute the software-generated order quantities[1].

- 5 of 7 Store Coordinators and 15 of 27 Inventory Managers used GSA's older Customer Supply Center and FSS-19 systems to manually recalculate replenishment recommendations generated by Manugistics' fulfillment module, and thereby verify the reasonableness of Manugistics replenishment recommendations. The users advised that they were skeptical of the software's output and did not fully understand how it made its projections and recommendations. Their recalculation of replenishment amounts circumvents some of the time savings that could accrue through use of the Manugistics software.

- 5 of 7 Store Coordinators and 21 of 27 Inventory Managers overrode Manugistics' demand numbers (historical and projected) on the plan analysis screen of the demand module and replenishment recommendations generated by the fulfillment module with numbers they believed to be correct. There are legitimate reasons to override these numbers (such as when an item is new and the demand is unknown, when demand spikes occur due to things like a troop surge, or when purchases of an item are allocated among more than one supplier[2]). However, the users also indicated that they overrode Manugistics' projections and recommendations when they doubted the new software's output.

- The Store Coordinators and Inventory Managers worked with the Manugistics software in very different ways. They either never adjusted data in the demand module (such as locking or overriding historical or forecast demand figures, and/or changing the various parameters and factors used by the software to project demand and make replenishment recommendations), rarely made changes, or constantly manipulated the parameters, factors and demand numbers until the software generated the replenishment recommendations they desired.

- Four software users believed they fully understood the parameters, factors and forecasts, as well as the effect of changes to them, but the

---

[1]Automatic replenishment became available for Store Coordinators on August 24, 2006, and as of October 17, 2007, only about 1 percent of items in the stores were designated for automatic replenishment. FAS officials advised us that this number has increased slightly since then. Automatic replenishment only became available to all Inventory Managers on August 13, 2007, so their usage of that feature was not large at the time of our review. Accordingly, only 15 percent of items in the depots were on automatic replenishment by October 17, 2007, but FAS officials advised us that this number has increased since then.

[2] Purchases of some items are allocated among more than one National Industries for the Blind workshop.

remaining 30 users we interviewed indicated that they did not feel fully knowledgeable about the software's features or completely confident about making changes to them.

Based on our interviews of the Inventory Managers, Store Coordinators, and other FAS officials, the inconsistent use of the Manugistics software was attributed to the following factors:

- Not enough training related to the correct and practical application of the software and inventory management concepts and terminology,

- No specific performance measures to fully realize the benefits of the new software, and

- Continued availability of inventory management features in the Legacy Systems.

Software Training: A primary reason for the Inventory Managers and Store Coordinators not using Manugistics consistently was due to insufficient training in the proper use of the software. They felt that they were not sufficiently trained, and, therefore, did not understand how the software made its demand forecasts and replenishment recommendations or the impact of their changes to the various factors and parameters, such as forecast demand, seasonality, and safety stock. As a result of their lack of full understanding and comfort with the Manugistics software, they preferred to use the Legacy systems they were already accustomed to, and believed these older systems were more user-friendly and less cumbersome, and contained pertinent features and information. For example, they liked that the Legacy systems presented pricing information and displayed data on one screen. Because the Manugistics software presents more data, they must look at multiple screens to view the data.

Initial training for most users was provided before Manugistics' implementation in September 2005 (July and August 2005). One year later (July and August 2006), FAS provided most users with a second training session. The initial training was conducted in a classroom setting and followed a pre-defined agenda. Managers at the depots and acquisitions centers were allowed to specify the form the second training session would take. Personnel in Fort Worth, TX; Kansas City, MO; and Burlington, NJ opted once again for a classroom setting, whereas those in New York City, NY and French Camp, CA opted for one-on-one training. With the one-on-one training, the user was given an opportunity to ask questions about software features they did not understand.

Manugistics developed User Guides prior to the initial training sessions and updated the User Guides in July 2006. In October 2006 and August 2007, they issued supplements to describe changes in the software, and they continuously distribute Release Notes for system changes. The contractor advised us that to make the User Guides more beneficial, they could be updated, and a section could be added to explain more features.

Inventory Managers and Store Coordinators advised that this initial training was too technical and not geared to the practical application of the software, inventory management concepts, and terminology. In addition, the training was not conducted in one location (Hawaii), one user advised us that she was absent for the training, and FAS officials advised that the duration of the one-on-one training was not enough to fully address user issues with the software. Further, the software continues to evolve and has changed in significant ways since they received training. Examples of features that were added after completion of the last training sessions were automatic replenishment for the stores and the acquisition centers; order approval for the acquisition centers; and new parameters related to minimum and maximum safety stock, economic order quantity, and maximum order quantity.

Therefore, Inventory Managers and Store Coordinators felt a need for additional training to help overcome their apprehension in using the features of Manugistics. Specifically, they wanted training that covers practical application of the software and inventory management concepts and terminology. Additionally, according to the Inventory Managers and Store Coordinators, the User Guides for the new software were far too technical in understanding how the software could assist them in demand forecasting and replenishment recommendations. With additional training, users believe that they would learn how to confidently use the new software properly and consistently.

Evidence of Software Benefits: The second reason noted by users for inconsistent use of Manugistics was that the software's goals of improved demand forecasting, reduced inventory levels, and maintained high customer service have not been demonstrated to users through improvement in key performance measures, and no specific performance measures were developed to measure the benefits of the new software.

At the time of our review, 23 of the 37 experienced Inventory Managers and Store Coordinators we interviewed did not see much benefit to using the Manugistics software and preferred the Legacy systems they were comfortable with using. Some features of the Manugistics software represented significant enhancements over the Legacy systems' capabilities (such as considering a longer demand history when making replenishment recommendations). However, FAS did not develop specific performance measures that would demonstrate to users that the new software had helped them improve inventory management accuracy and timeliness.

At the onset, FAS did not develop a Business Plan with corresponding performance measures to assess how well results would compare to the program's intended purpose and to establish a mechanism for making changes when needed. As a result of not developing a Business Plan and tracking the software's performance, management was unable to demonstrate to users that Manugistics software was meeting its goals such as improved demand forecasting.

As directed by the Government Performance and Results Act of 1993, Federal agencies are held accountable for achieving program results. Accordingly, FAS needs to focus its efforts at this juncture in developing meaningful performance measures for evaluating the effectiveness of the Manugistics software.

FAS officials stated that they could have anticipated user opposition to the new software better through the development and implementation of a written transition plan. In particular, serious concerns over job security and extreme resistance to change from users were some of the difficulties that could have been alleviated had FAS initially addressed them.

Legacy Systems: The third reason noted by users for inconsistent use of Manugistics centered on FAS allowing the continued use of the Legacy systems. They offered some of the same inventory management capabilities as the Manugistics software. Some Store Coordinators and Inventory Managers continued using their Legacy systems, because they were more comfortable with using them than the new Manugistics software.

FAS officials advised us that they were aware the Legacy systems' continued availability could impede full adoption of the new Manugistics software, and they need to discontinue inventory management aspects of the Legacy systems.

Assessment of Software Performance: In the absence of performance data to measure the benefits of the Manugistics software, we attempted to determine whether Manugistics software had improved performance in certain key areas (backorders, stock turns, fill rates, inventory levels, and customer satisfaction).

At the time of our review, only one acquisition center was able to respond with information on backorders, stock turns, and fill rates. It indicated that performance by the center had not improved in these key areas since the new software was implemented, as follows:

Performance Data for One Acquisition Center			
Performance Item	May 1, 2005	August 10, 2007	Improved?
Back orders[3]	947	1125	No
Stock Turns[4]	4.64	3.69	No
Fill Rate[5]	98.1 Percent	98.1 Percent	No

Source: Fort Worth Acquisition Center

---

[3]Back orders = Orders that could not be filled from stock

[4] Stock Turns = Annual Sales / Inventory Value

[5] Fill Rate = Percentage of the time an order can be filled from stock on hand

It should be noted that the change in performance shown in this and subsequent tables in this report is not solely attributable to the implementation of the Manugistics software, but also partly due to unforeseen events that would not be fully overcome by any automated system, such as troop surges, an unusually active fire season, and loss of staff in the aftermath of Hurricane Katrina. However, the data indicates that the benefits envisioned by the implementation of Manugistics software have not been fully achieved.

Nationwide, based on data provided by FAS, fill rates worsened in Fiscal Year (FY) 2006, but improved in FY 2007, and stock turns worsened after Manugistics was implemented, as indicated below:

Performance at One Acquisition Center				
Performance Item	2005	2006	2007	Improved Since Manugistics Implemented?
Fill Rate	94.2%	93.5%	96.3%	Yes
Stock turns	3.9	4.0	3.5	No

Source: Financial Management Specialist, Office of Global Supply

In addition, since the Manugistics software was implemented in September 2005, the nationwide value of GSA's Global Supply Inventory varied due to numerous factors, as shown below:

Value of Global Supply Inventory		
Date	Value (in millions)	Improvement Since Manugistics Implemented?
September 30, 2005	$176.0	N/A
September 30, 2006	$198.5	No
September 30, 2007	$166.8	Yes

Source: Financial Management Specialist, Office of Global Supply

Customer satisfaction has improved in some areas since implementation of the Manugistics software, but not in others, as shown in the following table:

Customer Satisfaction				
Performance Item	Percent Satisfied			Improved Since Manugistics Implemented?
	2005	2006	2007	
Overall satisfaction	77%	80%	81%	Yes
Satisfaction ordering supplies from GSA	81%	84%	85%	Yes
Customers whose orders typically had at least one out of stock item	65%	69%	78%	No

Customers who said GSA was timely in filling out of stock orders	70%	69%	71%	Yes

Conclusion

At the time of our review, the majority of Inventory Managers and Store Coordinators were not using the Manugistics software to the fullest extent possible. As a result, the software's ability to help FAS improve the accuracy of demand forecasts, minimize inventory levels, and maintain high customer service was reduced. The inconsistent use of the Manugistics software was attributed to the need to conduct additional training, develop meaningful performance measures to fully realize the benefits of the new software, and remove redundant inventory management functions in the Legacy Systems. Therefore, the benefits of Manugistics will not be fully realized if the reasons for inconsistent usage of the software are not addressed.

Recommendations

We recommend the Commissioner of the Federal Acquisition Service:

1. Provide additional training related to the proper and practical application of the Manugistics software and inventory management concepts and terminology.

2. Develop meaningful performance measures to fully realize the benefits of the Manugistics software.

3. Remove redundant inventory management functionality from the Legacy systems.

Finding 2 – Possible Improvements to Manugistics Software

We determined that the Manugistics software could be improved to better manage inventory in the depots and stores by:

- Updating outdated costs;
- Improving historical data;
- Incorporating transportation costs; and
- Including contract data

These improvements could increase the accuracy of the software's replenishment recommendations and benefit Inventory Managers and Store Coordinators, and/or FAS management.

Outdated Costs: We determined that procurement and inventory cost numbers, were very outdated. These costs are used by the software to compute the Economic Order

13

Quantity, so outdated costs can result in the Manugistics software recommending inaccurate order quantities and order frequencies.

The costs loaded to the software were computed in 1983 based on data for all of FY 1982. Using the Consumer Price Index, prices paid by urban consumers for a representative basket of goods and services have more than doubled (up 108 percent) from 1982 through September 30, 2007. Also, during that period, the organization of FAS changed considerably, including a large reduction in the number of depots, and a substantial increase in the number of stores.

Personnel from the FAS Office of the Controller explained that they recomputed procurement and inventory holding costs for GSA items in 1985, 1986, 1990, and 1995, and again in 1999. However, because of other priorities and projects, FAS officials advised us that they have not incorporated the revised cost figures into GSA's automated systems.

Updating the procurement and inventory costs that are used by the Manugistics software to calculate an item's Economic Order Quantity could improve the accuracy of the replenishment recommendation, thereby potentially reducing FAS inventory levels and backorders, and increasing stock turns and customer satisfaction.

Historical Data: The Manugistics demand and fulfillment software modules did not maintain an audit trail of the factors and parameters that are changed by the Inventory Managers and Store Coordinators. This data could benefit supervisors of the Inventory Managers and Store Coordinators.

Manugistics software bases its demand forecasts and replenishment recommendations on various parameters and factors, including the following:

- Minimum and maximum safety stock,
- Lead times,
- On-hand quantity,
- Demand overrides and locks,
- Maximum seasonal terms, and
- Economic Order Quantity.

For most parameters, such as safety stock duration, economic order quantity, forecast overrides and locks, the software shows that a change has been made, but there is no record of when the change was made or who made the change. The demand and fulfillment modules of the Manugistics software are planning tools and do not maintain transaction level and audit detail. Accordingly, a data warehouse would need to be created to store audit and transaction detail regarding when changes were made and by whom and what on-hand quantities were as of a specific date.

Maintaining this information was initially considered, but it was deemed too costly to develop the necessary data warehousing capabilities. Supervisors of Inventory

Managers and Store Coordinators agreed that knowing when, where, how, and by whom changes were made would be useful for monitoring the work of their staff.

Transportation Costs: The Manugistics software did not factor in transportation costs for in-bound freight when computing replenishment frequency and quantities, and FAS has never had this information to help them manage inventory. FAS did not incorporate in the contract with Manugistics a requirement that the software consider transportation costs when developing replenishment recommendations. According to inventory personnel, adding this information to the equation could reduce the costs of replenishing stock, because purchasing larger quantities less frequently could enable use of lower truckload rates instead of higher less-than-truckload rates. Manugistics offers a transportation management module, but GSA chose not to adopt it. FAS officials advised us that they expect to implement significant transportation management improvements as part of their Supply Operations Business Model Modernization initiative.

FAS officials estimated that transportation costs averaged four percent for in-bound freight and six percent of sales for out-bound freight, so changes to transportation costs could make a significant difference in GSA's profitability.

It should be noted that Inventory Managers and Store Coordinators can set minimum, maximum, and incremental order quantities in the Manugistics software so its recommended order quantity is in certain order quantities (pallet, truckload, sea van, etc.), thus optimizing transportation costs. FAS officials advised us that some Store Coordinators and Inventory Managers already do this for paper products.

Contract Coverage: The Manugistics software did not contain information on whether items in the depots and stores have contract coverage. FAS officials advised us they requested this data when the software was implemented, but there was not a reliable way to identify contract coverage because no single field existed in FSS-19 for this information.

GSA inventory management personnel stated that the accuracy of replenishment recommendations is affected by whether an item has contract coverage, so incorporating contract coverage data would improve the software and inventory management at GSA. Orders for items without contract coverage or soon-expiring coverage might need to be placed much sooner and/or for larger quantities. They advised that while contract coverage is available from other sources, it would be easier if this could be shown by the Manugistics software, and that applying this information to Manugistics' replenishment recommendations could make the recommendations more timely and accurate.

Many items did not have contract coverage as of October 4, 2007, as shown in the table on the following page:

Acquisition Center	Items Without Contract coverage	Total Items Managed by Acquisition Center	Percent of Items Without Contract Coverage
New York	247	1,631	15.1[6]
Kansas City	131	1,819	7.2 [7]
Fort Worth	159	1,437	11.1

Source: Inventory Management Section Chief, GSA Heartland Global Supply

Conclusion

The Manugistics software could be improved to manage inventory in the depots and stores by updating procurement and holding costs, and incorporating transportation costs and contract coverage information. By making these improvements, the Manugistics software could generate more accurate replenishment recommendations, increase Inventory Manager/Store Coordinator reliance on the system and reduce the frequency of changes to the recommended amounts. Furthermore, improving the historical data maintained by the software could enhance managers' ability to oversee Inventory Manager and Store Coordinator changes.

Recommendations

We recommend that the Commissioner of the Federal Acquisition Service:

4. Maintain up-to-date procurement and inventory costs in the Manugistics software.

5. Conduct a cost/benefit study related to implementing improvements to transportation management information.

6. Conduct a cost/benefit study related to incorporating contract data in the Manugistics software.

---

[6]The Director of the Inventory and Commodity Management Division in New York stated that the number was 39 percent when expired National Stock Numbers were included (664 out of 1,702 items).

[7]In February 2007, the Kansas City acquisition center reported 19.5 percent of items without contract coverage (357 out of 1,829 items).

7. Conduct a cost/benefit study related to adding data warehousing to maintain historical data regarding actions taken by Inventory Managers and Store Coordinators and routinely report this information to their supervisors.

Management Comments

The Commissioner agreed with our findings and recommendations and is in the process of taking corrective action. The Commissioner's comments are included as Appendix A to this report.

Management Controls

The examination of management controls was limited to those necessary to achieve the specific objectives and scope of the audit. Our results are identified in the body of this report.

APPENDICES

GSA

GSA Federal Acquisition Service

March 17, 2008

MEMORANDUM FOR KENNETH L. CROMPTON
DEPUTY ASSISTANT INSPECTOR GENERAL
FOR ACQUISITION AUDITS (JA-A)

FROM: JAMES A. WILLIAMS
COMMISSIONER
FEDERAL ACQUISITION SERVICE (Q)

SUBJECT: GSA Draft Report, "Review of the Use of Inventory Management
Software, Federal Acquisition Service" (A070164)

My staff and I have reviewed the subject report and concur with the report
recommendations. We commend the efforts of the auditors and appreciate their
recommendations for improvements as a result of their review. The draft audit report
provides a thorough and balanced review of our current use of the tool, taking into
account the situations where manual intervention is warranted due to unforeseen events
that no software can predict. The report also addresses the change management
issues involved with the implementation and natural employee fears we need to
overcome relative to job security and the use of any new process/software. Our
comments to the specific recommendations are provided in the attached statement.

Please call me at (703) 605-5400 if you have any questions. Your staff may contact
Cathy Fick at (703) 605-5452 or catherine.fick@gsa.gov for additional information.

Attachment

cc: Andrew Patchan (JA)

U.S. General Services Administration
2200 Crystal Drive
Arlington, VA 20406-0003
www.gsa.gov

**FEDERAL ACQUISITION SERVICE COMMENTS
ON THE GSA DRAFT REPORT, "REVIEW OF THE USE
OF INVENTORY MANAGEMENT**

Recommendation 1:

Provide additional training related to the proper and practical application of the Manugistics software and inventory management concepts and terminology.

Response:

Agree. We believe training should be an ongoing effort. The training should include a combination of both on-the-job and formal training to ensure that all users are developing an understanding of how to use the software and increasing their overall knowledge of the inventory management theories, principles and concepts. Our most recent training was developed based on user input. Although we used a number of theoretical scenarios as examples and challenges to derive solutions, this audit has revealed the need for a more formally structured inventory management instructional course for some users. We will develop future training requirements to include both informal and formal instruction to include inventory management theory, principles and concepts.

Recommendation 2:

Develop meaningful performance measures to fully realize the benefits of the Manugistics software.

Response:

Agree. The report clearly identified the need to identify specific performance measures to fully demonstrate the benefits of the Manugistics software. While the current overarching performance measures defining how well we manage inventory would apply regardless of the software platform, we believe the 'how' behind achieving an acceptable level of performance would be the targeted measure, such as due-in management, and monitoring activities.

Recommendation 3:

Remove redundant inventory management functionality from the Legacy systems.

Response:

Agree. We have begun and will continue the process of identifying and removing redundant inventory management functionality from legacy systems. Another step we are pursuing is to identify the continued need for the various legacy system reports and either import the functionality into Manugistics, combine legacy system reports providing similar functionality, or delete reports no longer needed.

Recommendation 4:

Maintain up-to-date procurement and inventory costs in the Manugistics software.

Response:

Agree. The current procurement and inventory cost study we requested for this fiscal year is being finalized by the Office of the Controller (QB). Once completed, the costs will be used to update the procurement and inventory costs in the Manugistics software and other GSA-supported applications.

Recommendation 5:

Conduct a cost/benefit study related to incorporating improvements to transportation management information.

Response:

Agree. We believe opportunities for improvements to transportation management would be identified through conducting such a study. We are currently comparing alternatives intended to lower our transportation costs. Our assessment will consider implications of the alternatives and feasibility of modifications to Manugistics.

Recommendation 6:

Conduct a cost/benefit study related to incorporating contract data in the Manugistics software.

Response:

Agree. We believe linking contract data directly to the forecasting and replenishment process would definitely improve our inventory management accuracy rate. We will conduct an analysis with CIO to determine the cost associated with these changes against the benefits derived as recommended.

Recommendation 7:

Conduct a cost/benefit study related to adding data warehousing to maintain historical data regarding actions taken by Inventory Managers and Store Coordinators and routinely report this information to their supervisors.

Response:

Agree. Historical data would prove valuable to evaluate/measure employee performance and actions. We will conduct an analysis with the CIO to determine the costs associated with these changes against the benefits derived as recommended.

REVIEW OF THE USE OF
INVENTORY MANAGEMENT SOFTWARE
FEDERAL ACQUISITION SERVICE
REPORT NUMBER A070164/Q/A/P08004

<u>REPORT DISTRIBUTION</u>

	<u>Copies</u>
Commissioner, Federal Acquisition Service (Q)	3
Assistant Inspector General for Auditing (JA & JAO)	2
Assistant Inspector General for Investigations (JI)	1
Internal Control and Audit Division (BEI)	1
Deputy Assistant Inspector General for Acquisition Audits (JA-A)	1
Deputy Assistant Inspector General for Contract Audits (JA-C)	1