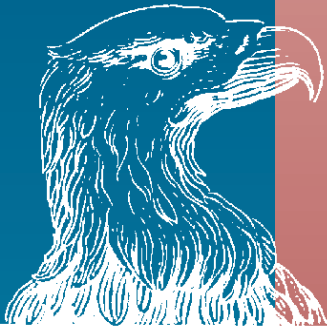
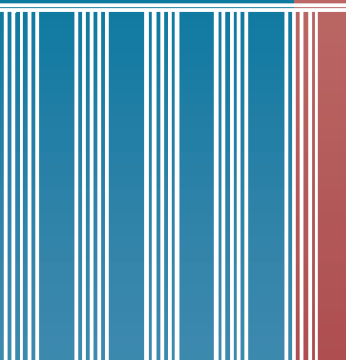


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Policy



*Amor Patriae  
Ducit*

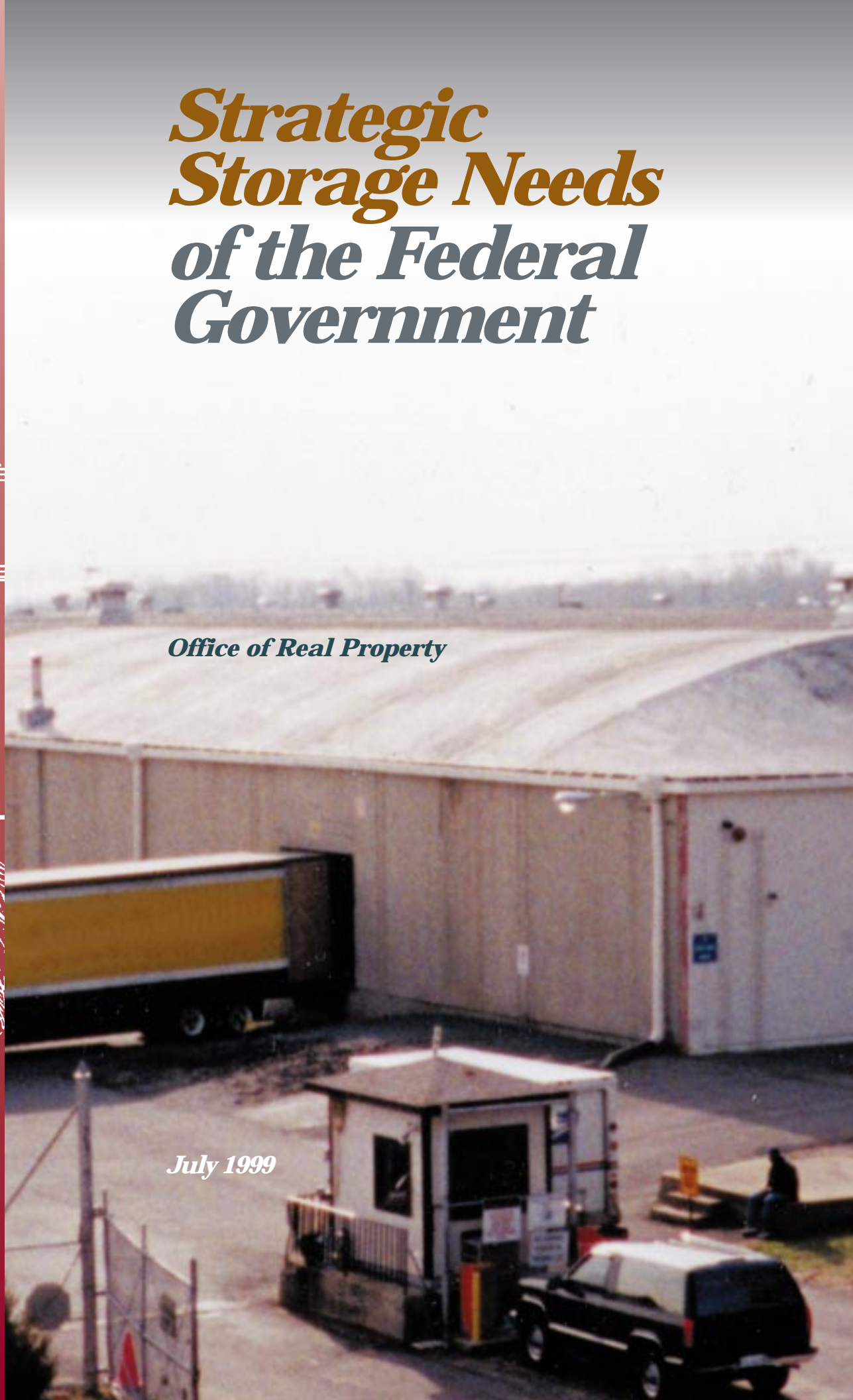


U.S. General  
Services  
Administration

# *Strategic Storage Needs of the Federal Government*

*Office of Real Property*

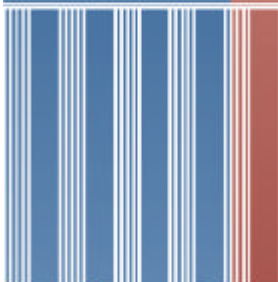
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*(top to bottom)*

*Vegetation Control Storage,  
USDA SE Nut Research Facility,  
Byron, GA*

*Outside Equipment Storage,  
USDA/FS Chattahoochee NF,  
Gainesville, GA*

*Flexible Accessibility Loading  
Dock, Fort Benning, GA*



# *Strategic Storage Needs of the Federal Government*

*Office of Real Property  
Office of Governmentwide Policy  
U.S. General Services Administration*

*July 1999*



# *Strategic Storage Needs of the Federal Government*

# Foreword

**T**he General Services Administration's (GSA's) Office of Governmentwide Policy (OGP) is pleased to issue the Strategic Storage Needs of the Federal Government Report. This document is the result of research, fieldwork and interviews conducted on Federally owned and leased warehouse space as well as that of the private sector.

The goal of this project was to promote interagency communication and the sharing of information relating to best practices and the latest technologies in the warehousing and storage field. The information provided in this document is based upon 54 on-site visits to Federal and private sector facilities in Florida, Georgia and Tennessee.

I want to recognize David L. Bibb, whose Office of Real Property initiated and developed this warehouse study. Under the leadership of Stanley C. Langfeld, Project Sponsor, the Real Property Policy Division led the Strategic Warehousing Inventory Needs Group (SWING) team through

project planning and execution of this collaborative initiative. Project Team Leader Sheldon Greenberg, along with Hank Aldag, both of the Office of Real Property; Gary Thompson of OGP's Office of Transportation and Personal Property; and Michael Wayne of GSA's Federal Supply Service conducted the study, evaluated the findings, identified the best practices, and wrote this report.

I want to personally thank all the dedicated personnel from the Federal agencies' headquarters and regional/local levels involved in our study for their cooperation and assistance. I also want to thank those private sector personnel who agreed to meet with the team to share their experience and expertise. We believe that this collaborative Government and private sector approach to project execution is the formula for success.

We hope the information contained in this report serves its purpose as a useful tool in the management and operation of the Federal Government's warehouse and storage functions.



G. Martin Wagner  
Associate Administrator  
Office of Governmentwide Policy  
U.S. General Services  
Administration



*Strategic Storage Needs of the Federal Government*

*Storage Bins Arranged As An American Flag  
Eglin Air Force Base, FL*



# *Table of Contents*

<b>Executive Summary</b> .....	<b>1</b>
<b>Purpose</b> .....	<b>7</b>
<b>Study Methodology</b> .....	<b>9</b>
<b>Project Development</b> .....	<b>9</b>
<b>Kick-off Meeting</b> .....	<b>9</b>
<b>Field-work Preparation</b> .....	<b>10</b>
<b>On-site Visits</b> .....	<b>11</b>
<b>Observations and Findings</b> .....	<b>13</b>
<b>Overview</b> .....	<b>13</b>
<b>Warehouse Diversity</b> .....	<b>13</b>
<b>Real Property Considerations     in Warehouse Design</b> .....	<b>13</b>
<b>Cubic Space</b> .....	<b>16</b>
<b>Facility and Site Planning</b> .....	<b>19</b>
<b>Facility Access</b> .....	<b>21</b>
<b>Infrastructure Attributes</b> .....	<b>22</b>
<b>Technology</b> .....	<b>28</b>
<b>Personal Property and Supply Management</b> ..	<b>29</b>
<b>Distribution Management</b> .....	<b>34</b>
<b>Safety and Hazardous Storage</b> .....	<b>35</b>
<b>Integration of Storage Functions     and Facility Capabilities</b> .....	<b>35</b>
<b>Grounds Maintenance</b> .....	<b>35</b>
<b>Facilities Operations</b> .....	<b>36</b>
<b>Emerging Concepts and Practices     in Warehousing</b> .....	<b>36</b>



*Table of Contents*

**Opportunities for Real Property Sharing . . . . . 39**  
**Best Practices . . . . . 41**  
**Recommendations . . . . . 43**  
**Glossary . . . . . 47**  
**Appendices . . . . . 53**  
**I. Project Charter . . . . . 55**  
**II. Kick-Off Meeting Letter of Invitation  
& List of Attendees . . . . . 57**  
**III. Matrix of Locations and Storage  
Functions . . . . . 61**  
**IV. Site Visit Summaries and Local  
Points of Contact . . . . . 65**  
**V. Questionnaire Survey and Synopsis . . . . . 97**  
**VI. Additional Sources of Information . . . . . 103**  
**VII. Publication Survey . . . . . 105**

# *Executive Summary*

## **Purpose**

The Office of Governmentwide Policy's (OGP) main objective, as stated in the Project Charter (Appendix I), was to work collaboratively with Federal agencies to review current real property warehouse, storage, and distribution functions and develop a Governmentwide information sharing mechanism for the best practices and lessons learned from the study. To confirm the validity of the project, the team also visited several private sector companies whose operations center on storage and distribution functions. Another goal of the study was to provide opportunities for agencies to share resources and identify potential opportunities for improving the utilization of real property to meet the Federal Government's current and future warehouse needs.

Three distinct functional areas of expertise were represented on the General Services Administration's (GSA) project team — real property (OGP's Office of Real Property), personal property (OGP's Office of Transportation and Personal Property), and supply distribution (GSA's Federal Supply Service (FSS)). This teaming effort, therefore, represented the major functional components of the facilities studied and is the first Governmentwide study to combine these aspects of warehousing functions.

## **Study Methodology**

Based on data from the Federal Government's Worldwide Inventory Database, participant Federal agencies were identified through a

query for storage, warehouse and industrial inventory within the continental United States. The database revealed that Federal agencies located in the states of Florida, Georgia and Tennessee offered the most potential for a successful study.

A Strategic Warehousing Needs Inventory Group (SWING) project kick-off meeting was held on May 7, 1998. All Federal landholding agencies identified within the geographic study area were invited, as well as other major landholding agencies, and member agencies of the Federal Real Property Council (Appendix II). Twenty-one Federal agencies were represented at the meeting and invited to participate in the study. After presentation of the project's purpose and goals, a question-and-answer session enabled the Federal agency attendees to gain a better understanding of the project.

On-site visits (Appendix III and IV), including project briefings and interviews were made to 16 Federal agencies in Florida, 25 in Georgia, and 13 in Tennessee. In addition, real and personal property questionnaires were provided to the local points of contact to provide the team with further information on the sites (Appendix V). The facilities visited ranged in size from 10,000 square feet (sq. ft.) to several million sq. ft., and contained a total of approximately 39.3 million sq. ft. of storage space. Private sector entities operating large warehouse and distribution facilities in Florida and Georgia also participated in the study.

To supplement the team's exposure

to professionals in warehouse and storage functions, visits were also made to GSA's FSS Southwest Distribution Center in Fort Worth, Texas, where the major supply function currently operates out of multiple buildings. A visit was also made to the Industrial Engineering Division at Wright-Patterson U.S. Air Force Base, Dayton, Ohio. This unit is responsible for providing engineering and design services for all Air Force materials handling and warehouse functions worldwide. Additional sources of information on warehouse and materials handling functions are provided in Appendix VI.

### Observations and Findings

Examples of good concepts and practices were found through the site visits and discussions with the agency and private sector representatives. In many instances these concepts have been developed and are being used to successfully address location-specific real and personal property issues. Simple modifications, such as the addition of natural lighting (skylights), placement of large stand-alone fans for air movement on the warehouse floor and use of higher racking systems provide for more efficient warehouse operations. Other, more technical or structural changes, such as using moveable/accordion storage units, vacuum lift systems and computerized high-density storage racking systems, have improved the operating efficiency of the facilities.

The Federal Government warehouses a variety of materials to support its multi-faceted mission. A cross section of items warehoused

includes office supplies, electrical test equipment, telecommunications equipment, enriched uranium, nuclear and fossil fuel power plant parts, hazardous materials, military vehicles, wind tunnel parts, archived records, clothes, household goods, medical supplies, and many others.

In warehouse operations, the Government is moving more towards the use of the International Merchant Purchase Authorization Card (IMPAC) or Government Purchase Card for small orders of office-related supplies. This Government issued credit card enables the holder to buy directly from vendors either by going to local supply stores or ordering through the internet or telephone. The Government is also using "just-in-time" and prime vendor contracting. These methods provide a less costly and more efficient way for Federal agencies to buy goods and services directly from the vendor instead of processing requests through Government procurement offices. In most instances, this has significantly reduced the need for warehouse space without a corresponding reduction in space occupied. It should be noted that as supply marketplace and ordering patterns have changed in the recent past, GSA's FSS has been able to reduce its occupied storage needs and has gone from over 20 major warehouse facilities to four large warehouse operations and seven smaller warehouses. In the last two years alone, FSS has reduced its warehouse space by approximately 1.5 million sq. ft.

Many of the locations visited were not fully utilizing warehouse capacity. Several agencies had

indicated that they were in the process of leasing additional space, when it appeared that better use of the existing space would resolve the space problem. Potential improvements to space utilization include adding additional levels of storage racking, improving inventory control of excess personal property, and better use of technology in place of stockpiling hard copy forms and publications.

The scope of this project did not include cost estimates and cost-benefit analysis associated with better space utilization at the facilities visited. Due to the enormous variety of mission needs, items stored, as well as operational equipment and systems in use within the many different storage facilities, it is not feasible to estimate specific savings to the Federal Government. Facilities visited during the execution of this project included open-sided sheds, World War II brick and wooden buildings in need of repair, and new and highly mechanized distribution centers. Without knowing the strategic plans and budgetary programs of the occupying agencies, it is also not feasible to develop estimates of site-specific savings and recommendations. Case-by-case analysis would be required to determine potential savings for any actions taken.

The project covered 8.4% of the Federal Government's approximately 467 million sq. ft. of warehouse space (448 million sq. ft. owned and 19 million sq. ft. leased) within the 50 states. Based on this sampling, the team strongly believes that if these same conditions and

situations are representative nationwide, the Federal Government could save substantial sums in reduced rents, utilities, repairs, labor, transportation, and damage to merchandise. Further, the Government could generate additional revenues through the increased sales of both surplus real and personal property.

Many civilian agency representatives indicated that working with GSA to process excess property seemed like a long and complicated process. This can be attributed to owner agency internal screening processes, as well as the time needed to complete the various GSA sales methods. However, others like the National Aeronautics and Space Administration (NASA) and the Tennessee Valley Authority (TVA) were pleased with the property program.

It should be noted that currently, Federal agencies lack incentives to dispose of personal property because proceeds from these sales must be deposited in the miscellaneous receipts of the U.S. Treasury. However, GSA is developing proposed changes to the Federal Property and Administrative Services Act (Property Act) of 1949, as amended, to authorize Federal agencies to retain proceeds from the sale of surplus personal property to cover direct and indirect disposal costs.

### **Best Practices**

The team observed many state-of-the-art initiatives being implemented by both the Federal and private sectors. They are identified and discussed in the



section of the report entitled “Best Practices.”

### **Opportunities for Real Property Sharing**

During the development of this project it was hoped that, in addition to finding the best practices and lessons learned in Government warehousing programs, the team would discover opportunities for the sharing of Federal real property. Three opportunities did come to light, and one (National Archives and Records Administration (NARA), East Point, GA) has the potential for realization. There were other locations visited that had space available for sharing, but there were no other Federal agencies within a reasonable distance with which to share the space. While outleasing the available space to the private sector was an option; security, access and remoteness of the locations severely limited this option.

The three sharing opportunities found are:

1. Naval Air Station (NAS) Pensacola and Eglin Air Force Base, FL. However, after viewing the space, personnel from Eglin indicated the Air Force required a larger, open floor area to accommodate their storage requirements and the distance between locations made its use impractical.
2. Jacksonville Air National Guard and GSA vacant leased space in Jacksonville, FL. However, when the Air National Guard contacted the GSA regional office, they were advised that the lease had already been terminated.

3. NARA, Office of Regional Records Services, Southeast Region, East Point, GA, and GSA/FSS Southeast Distribution Center, Palmetto, GA have entered into a shared space relationship. NARA's present facility is a World War II vintage facility that is in need of repair, and is too small to facilitate NARA's mission. Simultaneously, GSA/FSS had released and vacated approximately 465,000 sq. ft. of space, which was suitable for NARA's use. NARA's urgent need and the vacant facility appeared to be a good match. During the week of June 20, 1999, the SWING team had been advised that NARA has agreed to occupy the vacated GSA/FSS space. NARA will use this space to relocate a portion of the East Point archives, as well as archives from other NARA facilities. As a result of this space sharing; NARA will realize a cost saving of approximately \$500,000 annually in reduced rental payments for that portion of the East Point facility that will be moved. GSA will have a rental payment pass-through of approximately \$1,400,000 per year into the Federal Buildings Fund on the vacant space.

Other sharing opportunities that the study found are the TVA Hartsville Investment Recovery Center, Hartsville, TN, and the Department of Energy (DOE), East Tennessee Technology Park, Oak Ridge, TN. In these cases, each agency is working with the local community to form economic “Enterprise Zones.” Generally, this arrangement enables Federal agencies to provide separate

and secure access to unused warehouse space for outlease by a local community at favorable rental rates and may require minor building repair. Due to the security requirements found at some Federal installations, these partnership agreements can be cumbersome to coordinate. Additionally, direct outleasing by the owner agency may be another method to provide sharing opportunities that may generate revenue to the owner agency.

## **Recommendations**

The following recommendations are the result of the team's site visits, discussions and observations. These recommendations are being made in order to improve the effectiveness and efficiency of the Federal Government's real and personal property asset management.

- **Make the initial investment; it will save money in the long run.**

Many of the warehouse personnel indicated that many of the warehouse limitations and inefficiencies were the result of a lack of investment in the warehouse project planning process. Many of the flexibilities desired (i.e., additional height, power and automated equipment, computer technology, employee comfort, etc.) are more economical to include in the planning process than to add as a change order during construction, and even more expensive as a renovation once the facility is in operation. In addition, once programmed into a facility, budgetary allowances must be included for the maintenance of all facility systems.

- **Maximize the full space of the storage facility.**

Many of the facilities visited, especially those of the civilian Federal agencies, were not maximizing their warehouse space. Space was poorly allocated; racks were not sized to storage load; facility heights were inefficiently used; items were obviously in "long term" or "dead" storage modes; and/or publications were being stored which appeared to be out-of-date. With the emerging trends of "just-in-time" ordering, desk top delivery services, the widening use of the Government Purchase Card and desk top publishing, agencies are finding that their warehouses are no longer in the office supply business. In light of streamlining Federal budgets and reduction in staffing, Federal agencies can reduce real and personal property outlays by more proactively planning and managing their existing facilities. Specifically, agencies should explore alternatives prior to requesting additional storage space and look for opportunities to reduce space.

- **GSA should review the Federal Property Management Regulations (FPMR) and the Property Act to recommend changes that streamline and add value to the personal property disposal process.**

GSA is currently working collaboratively with Federal agencies to rewrite the FPMRs relating to personal property into plain language and to eliminate those regulations that do not add value to the disposal process. In addition, GSA has developed a

legislative proposal to change the Property Act to provide Federal agencies more flexibility in disposing of personal property.

Throughout the course of the study, the team saw Federal warehouses that are being used for dual purposes: (1) for receipt, storage, and issuance of newly procured items; and (2) for turn-in and storage of excess personal property. The primary objective of most warehouses is the care and custody of newly procured items that meet the mission needs of the agency. Less care and concern are devoted to the proper storage of excess personal property. This approach to handling excess property indicates a lack of proper implementation of the personal property disposal processes. This can be addressed through the following:

Federal agencies should use current regulations, especially relating to abandonment or destruction of personal property (CFR 101-45, Sale, Abandonment or Destruction of Personal Property), in an effort to process excess property in a timely manner.

Federal agencies should use, to the fullest extent practical, the Memorandum of Agreement between GSA and the Defense Logistics Agency (DLA), that allows them to turn-in excess personal property to the nearest Defense Reutilization Marketing Office (DRMO).

Federal agencies should take a more proactive approach to inventory reviews and controls in order to screen items that are candidates for excess. In addition, agencies can use existing technologies (i.e., high-speed printers, Internet worldwide web sites, higher capacity computer memory) to produce hard copy documentation as needed, rather than maintaining space and cost-consuming hard copy inventories.

GSA should continue to pursue changes to the Property Act to enable Federal agencies to retain the proceeds from the sale of surplus personal property. This would provide Federal agencies with an incentive to be more proactive in their inventory review processes.

- **Federal agencies should first consider GSA negotiated supply contracts before using local vendor sources.**

GSA's Federal Supply Service provides Federal agencies worldwide with everything from office supplies to medical, safety, and fire fighting equipment. Agencies are provided discount prices, and guaranteed desk top delivery in one to three days through the GSA Advantage and Customer Service Center programs. Since FSS is a self-funding organization, purchases made through this program ensure the continued availability of these discounts. Accordingly, Federal agencies should maximize their use of these GSA programs.

### ***Chairs Ready For The Personal Property Disposal Process***

# Purpose

The Office of Governmentwide Policy's (OGP) main objective, as stated in the Project Charter (Appendix I), was to collaboratively work with Federal agencies to review current real property warehouse, storage, and distribution functions and develop a Governmentwide information sharing mechanism for the best practices and lessons learned from the study. To confirm the validity of the project, the team also visited several private sector companies whose operations centered on storage and distribution functions. Another goal of the study was to provide opportunities for Federal agencies to share resources to meet the Federal Government's storage needs, and identify potential opportunities for improving the utilization of real property required to meet the Federal Government's current and future warehouse space needs.

The completion of this project and issuance of this report provides Federal agencies with best practices for their consideration, as well as points of contact to further the information sharing process.

Three distinct functional areas of expertise were represented on the General Services Administration's (GSA) project team — real property (OGP's Office of Real Property), personal property (OGP's Office of Transportation and Personal Property), and supply distribution (GSA's Federal Supply Service (FSS)). This teaming effort, therefore, represented the major functional components of the facilities studied and is the first Governmentwide study to combine these aspects of warehousing functions.

This report represents the findings, insights, and collective thoughts of those individuals, as well as those Federal and private sector representatives participating in the project. Since the purpose of each storage, warehouse, and distribution operation is mission specific, certain best practice concepts may be more applicable than others. The use of any information from this report to enhance the efficiency and effectiveness of the Federal Government's storage and warehouse programs validates the time and effort contributed by the study participants to produce this report.



*Strategic Storage Needs of the Federal Government*

*Pallet Racking  
Naval Air Station,  
Pensacola, FL*



# Study Methodology

## Project Development

During the development of this project, several criteria were adopted to provide project guidelines:

1. The team would work collaboratively and cooperatively with other Federal occupant agencies in order to ensure the success of the project.
2. The study area would consist of three to four states within a localized geographic area.
3. The team would base the study on storage, warehouse and industrial (distribution) facilities of at least 50,000 square feet (sq. ft.) based on the Worldwide Inventory Database for 1996 (latest available information).
4. Site visits would be made to all facilities.
5. The team would require one week to complete site visits in each state.
6. Active participation of Federal agencies was solicited and welcomed for the facility visits.

In order to accomplish the intent and purpose of this project, OGP worked with the Federal Government's Worldwide Inventory Database (based on Federal agency input using GSA Form 1166) to determine the Federal Government's owned and leased warehouse, storage and industrial inventory within the continental United States. Based on the most up-to-date information available, the states of Florida, Georgia and Tennessee offered the most potential for a successful study.

While a four-state area was initially considered, it was determined that a three-state area was optimal for this project. The three contiguous states selected for the study had a large amount of storage space occupied by many different landholding agencies. These parameters satisfied the objectives for potential real property sharing opportunities.

## Kick-off Meeting

A Strategic Warehousing Inventory Needs Group (SWING) project kick-off meeting was held on May 7, 1998. All Federal landholding agencies identified within the geographic study area were invited, as well as other major landholding agencies and member agencies of the Federal Real Property Council (Appendix II).

Twenty-one Federal agencies were represented at the meeting. After a presentation of the project purpose and goals, a question-and-answer session was held to enable Federal agency attendees to gain a better understanding of the project. At the conclusion of the meeting, comments from the Federal agency representatives suggested that the information resulting from this project would be of value, and all agreed to provide the team with local points of contact for the fieldwork. The team was cautioned, however, that based on the geographic distances between locations, the tentative schedule of site visits and project completion timeframes would be insufficient. Relying on the information provided, the team modified the site visits and project completion schedule.

### Field Work Preparation

The states in which the study was to be conducted were Florida, Georgia, and Tennessee. Based on the information contained in the Worldwide Inventory Database, an itinerary of sites was established and appointments were made for facility visits. At this stage it became apparent that the time required for the site visits, personnel briefings and interviews, and distances between facility sites would not permit the team to complete its fieldwork in each state within a one-week timeframe as originally planned.

After completion of the Florida site visits, the team also realized that the 50,000 sq. ft. facility threshold limited the sites mainly to those of the military components of the Department of Defense. Most civilian Federal agencies were occupying warehouse space at a lower square footage threshold. Accordingly, the team decided to lower the threshold parameter to 10,000 sq. ft. to increase the diversity of Federal agencies participating. This also added to the number of sites identified in the two remaining states; Georgia and Tennessee.

### World Wide Database Excerpt

Instl#	Installation Name	Installation Address	Zip	Typ	Ag	Bu	St	Cty	Cnty	Rec	Usage	From	To	#Bldg	Sq Ft
51600	VMAC Bay Pines FL	10000 Bay Pines Blvd	33504	G	36	09	12	0185	103	30	40	1932	1970	2	20624
07322	Subtropical Agricultural Res	2249 Chinsegut Hill Road	33512	G	12	05	12	0390	053	30	40	1932	1982	11	28829
24407	Cape Canaveral AFS	Cape Canaveral AFS		G	57	00	12	0455	009	30	40		1996	224	677796
16121	Cape Canaveral Air Station	Cape Canaveral Air Station	32890	G	80	00	12	0455	009	30	40	1955	1986	23	109571
16121	Cape Canaveral Air Station	Cape Canaveral Air Station	32890	G	80	00	12	0455	031	30	40	1955	1963	5	147351
60200	NAS Cecil Field FL	Cecil Field Florida	3E+08	G	17	00	12	0485	031	30	40	1943	1989	18	206268
60200	Cecil Field FL NAS WPNSAX	Cecil Field FL NAS WPNSAX		G	17	00	12	0485	031	30	40	1959	1961	5	14215
24366	Eglin AFB	Aglin AFB		G	57	00	12	0935	091	30	40		1996	239	924034
FL264	Commerce Center FL2968ZZ	3560-A NW 53rd Street	33310	L	47	04	12	1050	011	30	40			1	11500
15602	Medical & Veterin Entomology	1700 SW 23rd Dr POB 4565	32608	G	12	05	12	1130	001	30	40	1972	1977	7	10579
37697	Gainesville JCC	5301 North Waldo Road	32609	G	16	16	12	1130	001	30	40	1980	1993	4	10140
24037	Homestead AFB	Homestead AFB		G	57	00	12	1441	025	30	40		1996	29	260292
67004	Jax FL Blount Island	Jax FL Blount Island		L	17	00	12	1510	031	30	40			3	261600
00207	NAS Jacksonville FL	Jacksonville Florida	32212	G	17	00	12	1510	031	30	40	1940	1995	55	1411059
00207	NAS Jacksonville FL	Jacksonville Florida	32212	G	17	00	12	1510	031	30	40	1940	1940	1	12257
68931	PWC Jacksonville FL	Jacksonville Florida	3E+08	G	17	00	12	1510	031	30	40			6	17899
FL019	Central Park FL2048ZZ	3728 Phillips Highway	32202	L	47	04	12	1510	031	30	40			1	33888
14585	John F Kennedy Space Ctr	John F Kennedy Space Ctr	3E+08	G	80	00	12	1567	009	30	50	1963	1993	74	889297
14585	John F Kennedy Space Ctr	John F Kennedy Space Ctr	3E+08	G	80	00	12	1567	009	30	50	1977	1987	5	362554
00213	Key West FL NAS Truman An	Key West FL NAS Truman An		G	17	00	12	1580	087	30	40	1974	1974	4	35716

The same process used in Florida, of establishing an itinerary and setting up appointments, was repeated for the remainder of the project.

### **On-Site Visits**

Due to the magnitude of the project, it was necessary for the SWING team to conduct seven separate trips for facility visits. Six trips (two each to Florida, Georgia, and Tennessee) were related directly to the geographic area of the project. One additional trip entailed a visit to the Wright-Patterson Air Force Base, located in Dayton, Ohio, to meet with personnel of the Air Force Research and Development Division. Air Force personnel interviewed during the project indicated that it would be informative and beneficial for the team to meet with the Industrial Engineers who are responsible for the development and implementation of all warehouse automation functions for the Air Force. Also on this trip, the team toured GSA's Southwestern Distribution Center in Ft. Worth, Texas. This tour gave the team a perspective of a distribution operation that utilizes several buildings, rather than one consolidated location.

The on-site visits (Appendix III and IV) commenced with a briefing and interview with the facility manager, base commander, or other personnel responsible for the maintenance or operation of the facility. Agency personnel were provided with introductory information packages which included copies of agency specific letters of invitation to the May 7, 1998, kick-off meeting, a

copy of the team's project charter, as well as questionnaires related to both real and personal property issues particular to that facility (Appendix V).

At this meeting, the goals of the project were explained and questions of the host agency were answered. From here, a "walk and talk" tour of the facility was conducted. During these tours, discussions with agency personnel provided many interesting perspectives of warehousing which have been included in the Observations and Findings, and Best Practices sections of the report.

The amount of storage space toured varied from 10,000 sq. ft. to several million sq. ft., and the time spent with agency representatives varied from approximately 90 minutes for the smaller facilities, to a full day at NASA, Kennedy Space Center, FL, and DOE, Oak Ridge, TN. The SWING team conducted on-site visits to 16 locations in Florida, 25 locations in Georgia, and 13 locations in Tennessee. Based on the information in the Worldwide Inventory Database, the team toured facilities containing a total of approximately 39.3 million sq. ft. of storage space.

The team also developed a listing of organizations available to provide information on warehousing, storage, supplies, materials handling equipment, and information systems (Appendix VI). Contacting them or other private sector organizations will provide the reader with additional information and insight into warehouse and storage functions.



*Strategic Storage Needs of the Federal Government*



***Bulk Storage  
GSA/FSS, Southwest Regional  
Distribution Center,  
Fort Worth, TX***

# *Observations and Findings*

## **Overview**

As discussed previously, the project focused on three distinct areas of property expertise: real property, personal property and distribution. The team found examples of good concepts and practices through site visits and discussions with the agency and private sector representatives. In many instances, these concepts have been developed and used to successfully address location-specific real and personal property issues. In some cases, simple modifications, such as the addition of natural lighting (skylights), placement of large stand-alone fans for air movement on the warehouse floor, and using higher racking systems, provide for more efficient warehouse operations. Other, more technical or structural changes, such as using moveable/accordion storage units, or vacuum lift systems, have also shown improvement in the operational efficiency of the facility.

The Federal Government warehouses a variety of materials to support the multifaceted missions of its agencies. A cross section of items warehoused includes office supplies, electrical test equipment, telecommunications equipment, enriched uranium, nuclear and fossil fuel power plant parts, hazardous materials, military vehicles, wind tunnel parts, archived records, clothes, household goods, medical supplies, and many others.

The following paragraphs describe many of the specific attributes of the Federal storage and warehouse operations identified through the

course of this project and responses to questionnaires provided by the local points of contact. In some cases the report identifies some of the locations where the attributes were found.

## **Warehouse Diversity**

Due to the varying Federal agency missions and functions, agencies have special warehouse needs that are unique to their agency. This uniqueness does not suggest a cure-all blueprint for warehouse space, materials handling, equipment, or warehousing methods. Rather, this diversity necessitates that each warehouse facility determine its own requirements for an effective and efficient operation. This point is significant as reductions in Federal warehousing costs can help offset corresponding FTE and budget constraints by utilizing labor, warehouse space, and warehouse equipment more effectively.

## **Real Property Considerations in Warehouse Design**

The physical space or real property is an integral part of the warehousing function. This space can consist of anything from a wooden lean-to structure used for mechanical equipment or other outdoor supply storage (Southeast Fruit Tree Research Lab, Byron, GA; Jimmy Carter Plant Material Center, Americus, GA; Chattahoochie National Forest, Clarkesville, GA; and Smoky Mountain National Park, Gatlinburg, TN), to a highly mechanized and efficiently utilized

## Observations and Findings

distribution center like that of the Army Air Force Exchange Service, Ft. Gillem, GA.

Warehouse design should incorporate materials handling equipment and information systems that specifically address handling requirements for the type of inventory/stock received, stored, selected, and shipped. For example, an operation that handles parts for nuclear reactors (DOE, Oak Ridge, TN) will have a different design, materials handling equipment, and data requirements than one that handles office supplies or whose function is a mass distribution operation (GSA/FSS Southeast Distribution Center, Palmetto, GA). Each individual situation is unique and must be designed with the types of storage and handling of the specific class of products in mind.

Adequate space for receiving, staging, and shipping functions are an important consideration when designing a new warehouse or evaluating the adequacy of an existing warehouse. The design of the receiving and shipping areas depends on the configuration of the space and the amount of stock received and shipped. The design should include space to stage receipts (for in-checking) and shipments. The preferred location for these activities is directly behind the dock locations where the receipts/shipments are to be received/shipped. This physical relationship reduces manpower requirements by reducing the number of times the stock is handled and the amount of materials handling equipment required. In some instances, the same space can be configured to

handle both receiving and shipping. However, there needs to be a clear distinction between when receiving and stock put-away occurs, and when shipping occurs. For example, in some instances receiving can occur during the morning and shipping can occur during the afternoon within the same spatial area.

Aisle width, column spacing, and storage area type are other considerations that directly relate to warehouse space requirements. Space requirements are also dependent upon the type of forklift to be used, including its mast height, and the density of a storage area. Another consideration is the cubic space or full volume (see Cubic Space below for more details) of the stock to be handled. These considerations must be weighed against the corresponding increase/decrease in construction/rental costs associated with each option. Storage area needs involve decisions as to what storage category (bulk floor storage, racking, gravity flow shelving, carousels, bin shelving, replenishment, or other method) makes sense for the particular situation.

Storage flexibility should be considered as much as possible when designing a warehouse and determining types of materials handling equipment and information systems to be used. Accessibility for people and shipping/receiving capabilities are additional areas of consideration. Attention should also be given to present and future data and communication requirements. Designing a warehouse with

flexibility will help reduce renovation costs and operational disruption in the future. Some examples of storage flexibilities observed include:

Ken Holliway, Civil Engineer, at Fort Benning, GA, indicated that the Army develops plans based on a 100-year use and builds for a 200-year building life.

Tom Channell, Industrial Engineer at Fort Benning, GA, spoke about providing additional conduit and cabling capacity during warehouse planning and construction. This foresight is considerably less costly than adding this capacity when warehouse operations are underway.

The SWING team was told about how the Army is incorporating “velocity management” in its planning and facility design. This is the Army’s program to provide logistic support to the soldiers as fast as possible, by finding and eliminating any source of logistic unavailability or delay. Velocity management will revolutionize the Army’s approach to logistics impacting on the space requirements and methods used to manage material. As such, adding building flexibility with low attributable cost is prudent since facilities will likely incur mission/scope changes during their lifetimes. Ft. Benning has been able to accomplish this with central columns to accommodate potential future changes in rack size requirements, the ability to utilize administrative areas in a production capacity, service doors located throughout the facility to accommodate mass issue of material, and use of nonrestrictive

sprinklers to accommodate varying rack placement.

Clark Langston, Civil Engineer at Naval Air Station Jacksonville, FL, feels that “everybody in the warehouse needs to be cross-trained to do seven jobs at any given time.”

For economy and reuse potential, movable walls should be used for office construction within the warehouse. However, as Bill Libbey, Base Supply Officer at Tyndall Air Force Base, FL, warned, be cautious of “office creep” where too many offices are located in the warehouse and functionally limit the efficiency of warehouse operations. Any office space should be located away from the warehouse’s functional activities

Optimization of warehouse space, manpower, material, and equipment can reduce square footage requirements, as well as reduce requirements for manpower, material and equipment. This effort may result in the release of a

### ***“Office Creep” In A Warehouse Building***







*High Ceilings  
Maximizes Cubic Space  
NASA, Kennedy Space Center*

portion of the occupied space, provide for possible future expansion by the user agency, or provide space for shared use with another Federal agency, resulting in reduced warehousing costs to the Government.

Use of appropriate personnel (both internal and external) and/or organizations knowledgeable in the field of warehouse layout and materials handling equipment selection can also lead to improved efficiencies. This expertise is best utilized when warehouse design and equipment selection is done in consultation with those employees involved in the day-to-day warehouse operations. This process provides the best source of location-specific information on how the warehouse presently functions and enhances chances for success by providing a “buy-in” approach from an operational perspective. This collaborative effort produces a warehouse design that meets the needs for the movement of materials and supplies, and the storage needs of the organization. In our discussions with the Industrial Engineers at Wright-Patterson Air Force Base, Dayton, OH, this process was described as the best operating procedure to follow. When designing from an off-site location, many site-specific situations are not accounted for.

In developing a warehouse specification, the question of height becomes a central issue. As with any building project, the roof and foundation are expensive components. Adding height to the walls is relatively inexpensive in the planning stages. The higher the ceiling the greater the capacity

within the building’s square foot template. This is known as “cubic footage” (see below). This increase in height provides for a higher density use of the building site and reduces overall project dollar cost per cubic foot. In areas of high land values, higher ceilings can often reduce the acquisition cost of the building site, and/or allow for the allocation of a greater portion of the site to truck egress and ingress.

### **Cubic Space**

For purposes of maintaining an accurate space inventory, leasing of space, and describing construction costs, “square feet” is the generic term used to describe the floor template area. However, warehouse professionals use the term “cubic feet” when referring to warehouse capacities.

The concept of cubic feet focuses on the use of the floor plate area as well as vertical space; in other words, using as much of the height of the warehouse as is safe. Many of the older Federally owned warehouses, including those built back in the 1940’s (GSA and FEMA, Thomasville, GA; and Holston Army Ammunitions Plant, Kingsport, TN), were generally not built with height in mind. Heights to ceiling joists of 15-20 feet were common. After lighting fixtures were hung, then later with the addition of water sprinklers, the vertical height or “cube” space limited the versatility of the facility. Newer, more modern facilities (Mayport Naval Station, Mayport, FL) are built with much higher ceiling/joist heights and have light and sprinkler systems incorporated into the structural components of the

roof. This provides for much more efficient utilization of cubic space.

Another benefit of having high ceilings is that more items can be stored within a shorter travel distance inside the warehouse. A shorter travel distance to retrieve or “pick” items saves time and allows items to be “picked” quicker, thereby saving FTE hours. An example of this is best illustrated by comparing two different warehouse configurations. The first warehouse has a floor template of 315,000 sq. ft. with a 12-foot high ceiling. The second warehouse is 94,500 sq. ft. with a 40-foot high ceiling. Both warehouses have the same amount of cubic feet. However, when an item is in the far corner of the first building, warehouse personnel need to go almost half a mile (2,100 linear feet), while in the second warehouse, personnel travel only 95 linear feet. Thus, the second warehouse is much more efficient.

The amount of Government warehouse capacity can be reduced with better utilization of warehouse cubic (height) space. Better use of cubic space will result in additional storage capacity with relatively low cost as compared to other alternatives. Storage aids are also available to facilitate the use of warehouse height. Local materials handling equipment suppliers and distributors are available for consultation in making decisions about what works best in a particular situation. This is also true for other materials handling equipment applications. Due to the age and construction height of some of the Federal Government’s storage facilities, the use of cubed space may be limited. However, from the

team’s observations, the use of cubed storage space can usually be improved, which may result in cost savings to the Government.

Better use of empty space can be achieved by providing additional storage levels where cubic space is not fully utilized. For instance, a full pallet height rack storage location that is consistently stocked with half-pallet loads can be converted into two half-pallet positions. This can be accomplished by adding another set of cross beams in the empty space, thereby doubling the number of half pallets stored. Pallets can be stacked on top of each other or mezzanines can be built (MacDill Air Force Base, Tampa, FL). Shelving can also be adjusted as necessary between adjacent bays of storage racks and/or bins. Examples of innovative

### ***Racking System Over Loading Dock Doors Fort Gillem, GA***



## Observations and Findings

cube uses include racking systems installed on wall space above an internal forklift and/or personnel door, as well as above the loading dock doors.

Using all the available height can greatly increase storage capacity. For example, adding one additional storage level (six feet) of racking to a 50,000 sq. ft. floor-plate warehouse can yield an additional 300,000 cubic feet of storage space (see below). The cost of leasing 300,000 cubic feet of warehouse space (10,000 sq. ft. floor plate with 30 feet of useable ceiling height) without a racking system is approximately \$50,000 annually. This cost is based on an average rental rate of \$5.00 per square foot for warehouse space. This low-end estimate excludes the cost of

utilities, according to Carol M. Bravo, Director of Finance and Marketing, Phillips & Company, Jacksonville, FL.

This estimate of potential savings does not include the cost of the required additional racking system; however, the one-time cost would easily be amortized with savings realized in the long run. Also, the logistics are more efficient as only one warehouse is occupied versus two. Nevertheless, a detailed cost-benefit analysis should be made to determine the cost effectiveness of implementing any potential labor or other cost saving initiatives.

Continuous review of the storage space allocated versus the actual space required should be an ongoing process. In modern storage theory, available storage space should be used as required, even if it means storing an item in several locations. Computer based tracking systems can readily identify the various locations.

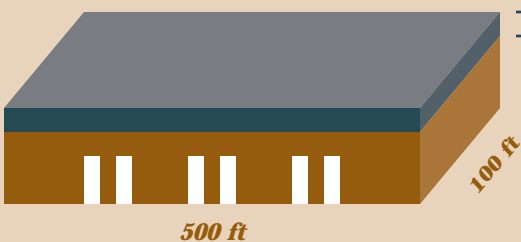
Several of the private sector companies the team spoke to (PEP Boys, McDonough, GA; and Mid-Florida Freezer Warehouse, LTD, Cape Canaveral, FL), as well as many of the newer Federally owned facilities, utilized the more efficient higher ceiling warehouses. In some cases, Federal agencies occupying older, lower cubic space facilities recognized their limitations and are working within these limitations by using available wall space or adjusting rack size to fit pallet needs. Also, the team found other situations where Federal agencies could be doing a better job utilizing their facilities to full capacity.

The incorporation of automation

### Increasing Available Cubic Storage Space

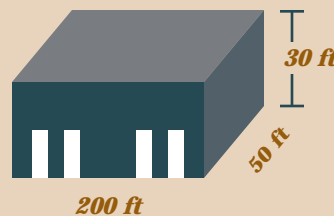
*Instead of acquiring additional warehouse space, increase the height of the storage.*

*50,000 sf building*



$500 \text{ ft} \times 100 \text{ ft} = 50,000 \text{ sf}$   
 $50,000 \text{ sf} \times 6 \text{ ft} = 300,000 \text{ cubic ft}$

*10,000 sf building*



$200 \text{ ft} \times 50 \text{ ft} = 10,000 \text{ sf}$   
 $10,000 \text{ sf} \times 30 \text{ ft} = 300,000 \text{ cubic ft}$

*In a 50,000 sf warehouse, just increase the height of the storage space by one “rack,” or 6 feet, and that space is equal to an additional 10,000 sf warehouse that has a 30 foot high ceiling.*



also can enable more efficient use of cubic feet in a warehouse. Two technological innovations used are computer-controlled, high-density, robotic storage shelving units (Dobbins Air Reserve Base, Marietta, GA) and moveable track shelves (Arnold Air Force Base, TN). The shelving units span from the floor to the ceiling and have a robotic tray/draw puller. Based on a pre-determined item code, the system will pull the correct tray/draw, bring it to an area for the operator to pull an item, then return the tray to the proper location. The moveable track shelves save space as the area allocated for items is adjusted to current need. Using electronic forklifts with a shelving system works well by enabling the storage of items in the racking system at adjustable heights.

The scope of this project did not include cost estimates and cost-benefit analysis associated with better space utilization at the facilities visited. Due to the enormous variety of mission needs, items stored, as well as operational equipment and systems in use within the many different storage facilities, it is not feasible to estimate specific savings to the Federal Government. Facilities visited during the execution of this project included open-sided sheds, World War II brick and wooden buildings in need of repair, and new, and highly mechanized distribution centers. Without knowing the strategic plans and budgetary programs of the occupying agencies, it is not feasible to develop site-specific savings and recommendations. Case-by-case

analysis would be required to determine potential savings for any actions taken.

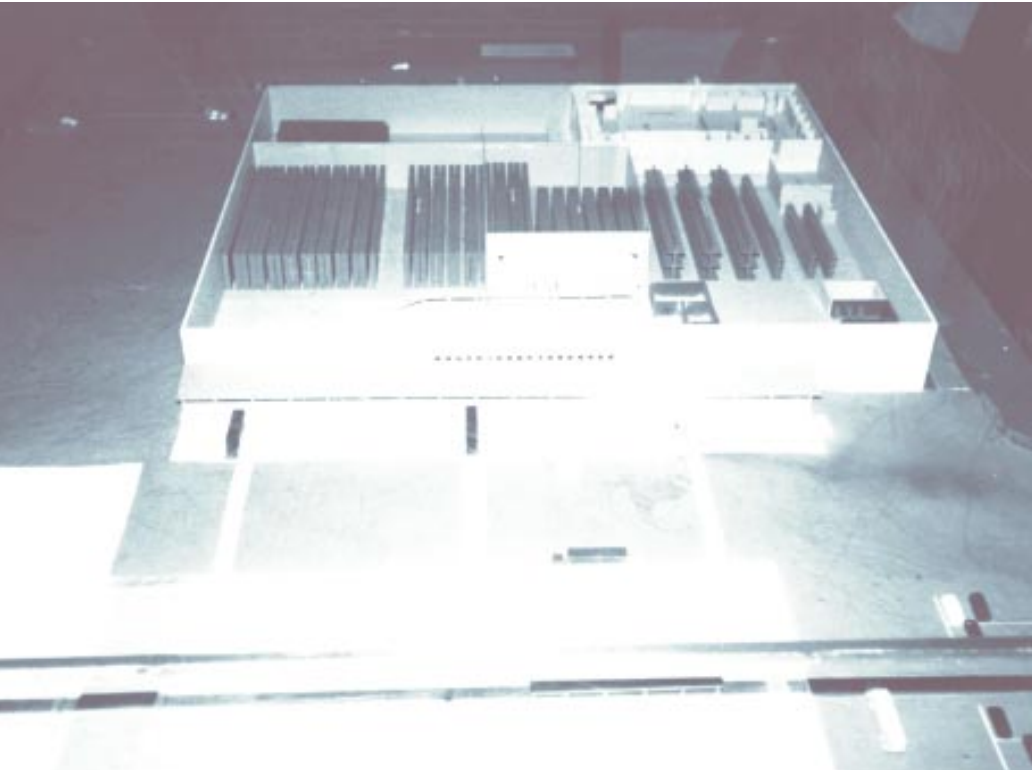
The project covered 8.4% of the Federal Government's approximately 467 million sq. ft. of warehouse space (448 million sq. ft. owned and 19 million sq. ft. leased) within the 50 states. Based on this sampling, the team strongly believes that if these same conditions and situations are representative nationwide, the Federal Government could save many millions of dollars in reduced rents, utilities, repairs, labor, transportation, and damage to merchandise. Further, the Government could generate additional revenues through the increased sales of both surplus real and personal property.

### **Facility and Site Planning**

By their nature, warehouse operations have significant amounts of truck traffic, both in and out of the facility, as well as providing short-term holding areas for truck trailers. Accordingly, when developing a plan for a warehouse site, major consideration must be given to its accessibility to interstate roadways. In addition, due to the high volume of commerce, consideration must also be given to airport accessibility. The availability of rail service is no longer a major concern to most warehouse operations. The only exception that the team observed is the Ford Parts Distribution Plant in McDonough, GA, where the facility was built to include a rail spur leading into the warehouse. This was designed to permit rail cars to



## Observations and Findings



***A Scaled Facility Model  
Cape Canaveral AFS, FL***

***Efficient Facility and Loading  
Dock Accessibility***

***Pensacola Naval Air Station, FL***

deliver car and truck parts directly into the storage facility for unloading.

Rail service can sometimes be a less expensive alternative to “over-the-road” deliveries. Use of rail may be a more practical means of transportation especially when shipping and receiving large parts or machinery such as trucks, military hardware, or large engines. Rail service should be evaluated as to its feasibility versus other modes of transportation and the products

handled by the warehouse.

In developing a site plan, allowances must be provided for adequate turnaround and ramp space, as well as short-term parking space for truck traffic to access all loading dock areas. Parking lot construction should include consideration of truck wheel load.

Due to increasing storage needs, an open storage area was required adjacent to a warehouse at the Naval Air Station, Jacksonville, FL. From a logistics point of view, the physical location of this storage facility could impact the accessibility of truck traffic. When the number of loading/unloading docks have been determined for the facility, it is counter-productive not to be able to utilize all of the doors at the same time. If the staging area is insufficient, use of loading docks will be limited, resulting in manpower productivity losses and the inability to utilize “flow through” operations. In several locations visited, this situation prevented the simultaneous loading and unloading of trucks and had an adverse impact on the efficiency of shipping/receiving operations.

In long-range planning for a warehouse facility with more than one building, consideration should be given to the physical location of the multiple buildings. In several locations agencies used the close



proximity of the buildings to enclose and connect them. In one case, ramps were leveled to form a connective bridge.

Agencies with landholding authority should evaluate the economics of ownership versus leasing. Ownership over the long run may be more economical than leasing; however, many factors such as land cost, utilities, and projected term of occupancy must be considered prior to making a final decision. Due to the long lead-time of the Federal budgetary process and annual budgetary constraints, leasing has become a viable option for most Federal agencies. Often an agency will lease a turnkey warehouse facility and have the lessor provide the warehouse building and associated infrastructure, including all the necessary business fixtures. The agency merely pays rent.

### Facility Access

There are certain infrastructure concepts in the design of a warehouse that are key components to a successful operation. From discussions and observations during the project it became obvious as to the importance of proper planning for these factors, especially in relation to the integration of human resources, automated equipment, and operational requirements.

Some of the real property best practices observed were conceptually innovative and assisted in providing better warehouse operations. Also, real estate design characteristics helped facilitate the best practices in warehousing. Often, best practices resulted from just planning ahead.

While warehousing operational efficiencies center on internal working components, no warehouse could function without loading docks and doors. As Captain Patrick Wall of the U.S. Marines at Blount Island, FL, stated, "The better the flow of materials, the greater the reduction of materials being stored."

The initial point of entry, whether for personnel or receiving of merchandise, is at the door. The number and location of these doors are critical for the efficient workflow of the facility. In order to minimize construction/rental costs, the number of doors in a warehouse should reflect the present and anticipated workflow processes.

- **Loading Dock Doors** - Usually the doors are located overhead (similar to a garage door). The placement of the loading dock doors can enable multiple operations to be executed simultaneously. One of the best examples of this is at the U.S. Army Base in Fort Benning, GA. One of the warehouse buildings has overhead doors on each of its four sides. According to Thomas Channell, Industrial Engineer at Fort Benning, GA, this placement permits rapid emplacement and displacement of supplies and materials by allowing flow through and straight through (in one door and out another) warehousing deployment.
- **Dent resistant overhead doors** - These doors are made of high impact plastic that is flexible, but do not dent or break. The door consists of plastic panels and includes insulation to

## Observations and Findings

### *Dent Proof Overhead Door, With Dock Leveler, Shelter and Trailer Latch*

*US Marine Corps Distribution  
Depot, Albany, GA*



conserve on utility (HVAC) expenses. These overhead doors also have a flexible track that will allow a truck or other object to knock the overhead door off the track without damaging the door or the track that holds the door in place.

- **Door height** - Ensure that the height of the overhead loading dock door is high enough to accommodate a loaded forklift. Generally, loading dock overhead doors should be at least nine feet high to prevent forklift and loading problems.
- **Electric overhead doors** - The use of infrared automatic features are both labor and time saving devices on doors used infrequently. This equipment allows one person to open and close a loading dock door without getting off a forklift or out of a truck. This type of door also conserves energy and provides an additional level of warehouse security.
- **Dock levelers** - Loading docks and their ramps are built to various specifications. Trucks are also built to various loading specifications. Dock levelers are the medium by which they function. These devices enable a smooth transition from the warehouse to the truck bed. Dock levelers come in different types and sizes. Most of the warehouses the team visited used seven foot wide dock levelers, although others were four to five feet wide. However, from conversations with warehouse and operation personnel, the team was advised that these

smaller sized levelers do present problems with some of the newer, wider forklifts.

- **Loading dock seal/loading dock shelter** - This form of shelter/enclosure has several practical benefits: protecting the overhead door and building from inclement weather; providing warehouse security by sealing the opening of the loading dock and truck trailer; and also acting as an energy conservation tool for the warehouse.
- **Trailer latches** - To prevent the possible movement of trailers while they are docked for loading and unloading, trailer latches should be used. The two types of trailer latches seen were a spring-activated latch and an electrically operated latch. Both are effective safety features that were recommended for use in any loading dock operation.
- **Trailer maneuverability** - Sufficient ramp and driveway space leading to the loading dock area is essential for trailers to operate. In addition, adequate parking space for "over-the-road" trailers is also critical for trucks that will not be used immediately or for overnight stays.

### **Infrastructure Attributes**

The overall facility operation, including materials handling equipment requirements, should be integrated with the proper building features. The interface between these two areas is critical to ensure a fully functional warehouse. Areas where special attention needs to be focused include:

### **Ceiling Joist Size**

The ceiling joists hold up the roof of the structure, as well as provide support to some of the operational equipment. These joists need to be designed to ensure support for the building structure and any ceiling-hung equipment such as conveyor systems.

### **Electrical Service**

Sufficient power must be available to provide for building systems, materials handling equipment, office functions, and lighting. The amount of electric power required to operate a warehouse can be deceptive. Good lighting, HVAC (as appropriate), forklift battery charging areas, computer systems, phone systems, conveyor systems, vacuum assisted lifting devices (U.S. Marine Base, Blount Island, Jacksonville, FL), electric tools and doors, etc., are all examples of items that use large amounts of electricity. As much as 1,400 amps could be required to run a conveyor system alone. At several military supply locations, humidity control was required to protect the sensitive electronic equipment (U.S. Marine Base, Albany, GA; and Eglin Air Force Base, FL). Built-in flexibility will enable changing mission needs to be met with minimal difficulty. For example, the addition of a transformer will enhance the flexibility of the facility (TVA's Hartsville Investment Recovery Center, TN).

### **Lighting**

Illumination in a warehouse makes a tremendous difference in the performance of the employees. In almost all of the warehouses that

the team visited, it was quite evident how poor lighting affected worker productivity. Research has proven that low lighting levels increase the stress level of employees. Several of the warehouses painted the walls and ceiling with white paint (Naval Air Station, Pensacola, FL; and Patrick Air Force Base, FL). The white surface helped spread the existing light throughout the warehouse. Several warehouses used on-off motion detector switches for the lighting system (National Archives and Records Administration, Office of Regional Records Services, Southeast Region, East Point, GA) as an energy conservation method.

### **Other Light Enhancing Methods**

- **Gas Lights** - Energy efficient gas (e.g., halogen and sodium vapor) fixtures (Naval Support Activity, Mid-South, Millington, TN) are also available and used to provide a productive work environment. Fluorescent lights are commonly being used in older warehouses. However, Don Perry, Head of Storage and Maintenance Branch, Fleet Support Division, USMC, Albany, GA, noted that the U.S. Environmental Protection Agency recently determined that, depending upon the manufacturer, and date of production, the standard fluorescent light tube and ballast may have to be handled as hazardous materials. Ballasts produced prior to 1978, of which there are still many in use, contain PCB's and disposal of 20 or more at one time requires special handling.



## Observations and Findings



*Skylights Combined With  
Energy Efficient Light Fixtures*

*Mayport Naval Station,  
Mayport, FL*

While some fluorescent light tubes do not contain Mercury, those fluorescent light tubes that do contain Mercury must be handled as a hazardous material when disposing of more than one tube at a time.

The above information regarding fluorescent light tubes and ballasts has been verified by GSA's National Capital Region in Washington, DC.

- **Skylights** - Skylights received a mixed review. Some warehouse personnel thought that the skylights were a best practice while others thought they were detrimental. In hot sticky climates, such as South Florida, the skylights added to the amount of heat in the warehouse, provided a breach in security, and sometimes leaked. However, in other climatic conditions, skylights save on utility costs and provide the convenience of additional light. Captain Fred Culveyhouse, Kings Bay Naval Submarine Base, GA, thought the use of skylights saved energy and helped employee morale and productivity.

### **Floor Load**

Sufficient floor load capacity is required to handle the combined weight of stored inventory, any stacking/racking equipment, and materials handling equipment. Insufficient floor load design will result in buckling, cracking and/or crumbling of the concrete floor. Dead or non-moving storage exerts a tremendous amount of pressure on the ground it sits on. For example, two stacked pallets with a total of eight 55-gallon drums of oil require a floor load of at least 250 pounds per square foot, whereas a standard office space floor load is built to 50 pounds per square foot. The warehouses visited were built with floor loads varying from 250 pounds per square foot (Health and Human Services/Centers for Disease Control, Atlanta, GA; Department of Veterans Affairs, Johnson City, TN and Atlanta, GA) to almost 3,000 pounds per square foot (Air National Guard, McGhee, TN). To enhance the weight bearing capabilities of these concrete floors, their construction may include structural I-beams, steel re-bars, and/or a deck cabling



*Floor Load Notice  
Posted In Warehouse*

*U.S. Marine Corps,  
Albany, GA*



system in the cement. The warehouse managers interviewed were very knowledgeable regarding these factors.

### ***Aisle Spacing***

Adequate aisle space is needed for the materials handling equipment to be employed at the facility.

### ***Towveyor System***

This automated cart towing system is usually designed as a loop operation and is installed at the time of construction (GSA/FSS Southeast Distribution Center, Palmetto, GA). Its inception was thought to be a resource saver as the materials were automatically moved around the warehouse. However, many of the warehouses visited were not using the existing towveyor system because it was too slow (sometimes taking 90 minutes to complete one full loop). Other representatives told the team that the need for extensive and expensive maintenance was too

much of a strain on their operating budgets. Still others told the team that the warehouse operation had changed since its original design, and the towveyor could not be reconfigured or adapted to the new requirements. Finally, some warehouses have stopped using the towveyor because other types of automation recently introduced in warehousing are being used.

### ***Conveyor Belt System***

The decision to include a conveyor system can be costly in terms of installation and operation. Sufficient electrical supply is only one major consideration. If the system is to be an overhead (ceiling supported) system, the initial design of the ceiling joists should include steel bracing (or material of similar strength) to be able to accommodate the extra weight. Due to budgetary constraints and the rapid changes in technology, Federal agencies may want to include the requirements for any

### ***Conveyor Belt System***

***Fort Gillem, GA***

major conveyor system installation within the design requirements of the facility, and amortize those costs during the term of the projected leasehold occupancy. This way, the leasehold occupant may not be responsible for the removal of the system and/or restoration of the premises.

### **Internal Height**

Adequate internal height must allow for building systems and materials handling equipment, such as a ceiling hung conveyor, mobile materials handling equipment, and racking/storage systems. In areas with weather extremes, locating building heating, ventilation and air conditioning (HVAC) units inside may add to the height requirement. Additionally, proper clearance must be provided for personnel and safety devices on and around conveyors and conveyor support structures, such as catwalks. Allowance for sprinkler fire protection systems must also be incorporated in any facility plan.

### **Roof**

The design and construction of the warehouse roof and ceiling area have an important role in clear stacking height limitations and heat load disbursement inside the warehouse. Roof construction can be flat or slanted; the roof structure can be made of wood, concrete or steel, and covered with asphalt or rubber membrane. Several other items related to the roof include:

- **Ceiling vents** - Ceiling/roof vents and ceiling fans are one of the best ways to reduce heat build-up within the warehouse. This is critical in geographic areas where high temperatures

and humidity could impact employee productivity, as well as the materials stored.

- **Insulation** - Wall and ceiling insulation provides a degree of comfort as it limits penetration of outside elements. An insulated warehouse also protects the materials stored. Insulation lowers utility expenses, and when combined with an HVAC system, enables more efficient temperature control.
- **Sprinklers** - Sprinklers are necessary for the safety of warehouse operations. Sometimes they seem to be in the way and limit the amount of cubic space available for warehousing operations. On the other hand, they are necessary to ensure the preservation of the structure. A sprinkler system can save millions of dollars of materials and structure in the event of a fire. The sprinkler system should be engineered so that it is as close to the ceiling as possible. The fire code requirements for sprinkler systems vary, and local codes for sprinklers sometimes differ from location to location. These codes dictate whether sprinkler heads are to spray from a proximal or distal placed sprinkler head and the height of the pipe off the ceiling or the top of the storage racks. An incorrect placement of a sprinkler system can have a detrimental impact in the event of a fire. Breaking off a poorly placed sprinkler head or forgetting to include needed sprinkler heads in the calculations for racks and conveyors can be very expensive



to remedy. One best practice observed in several locations was sprinklers piped through the centerline of back-to-back racks. This was done to prevent the possibility of pallets hitting a sprinkler head.

- **Drains** - Coordinate the location of inside roof drain pipes with the materials handling contractor(s).

### **Fire Rated Walls**

Concrete, cinderblock, or other fire retardant walls must be used in the construction of any storage or warehouse facility. Due to fire codes, these walls must have at least a two-hour fire rating. This is generally considered sufficient to protect materials located in adjacent bay areas in the event of a fire or other emergency situation that could compromise the integrity, safety, or security of the premises.

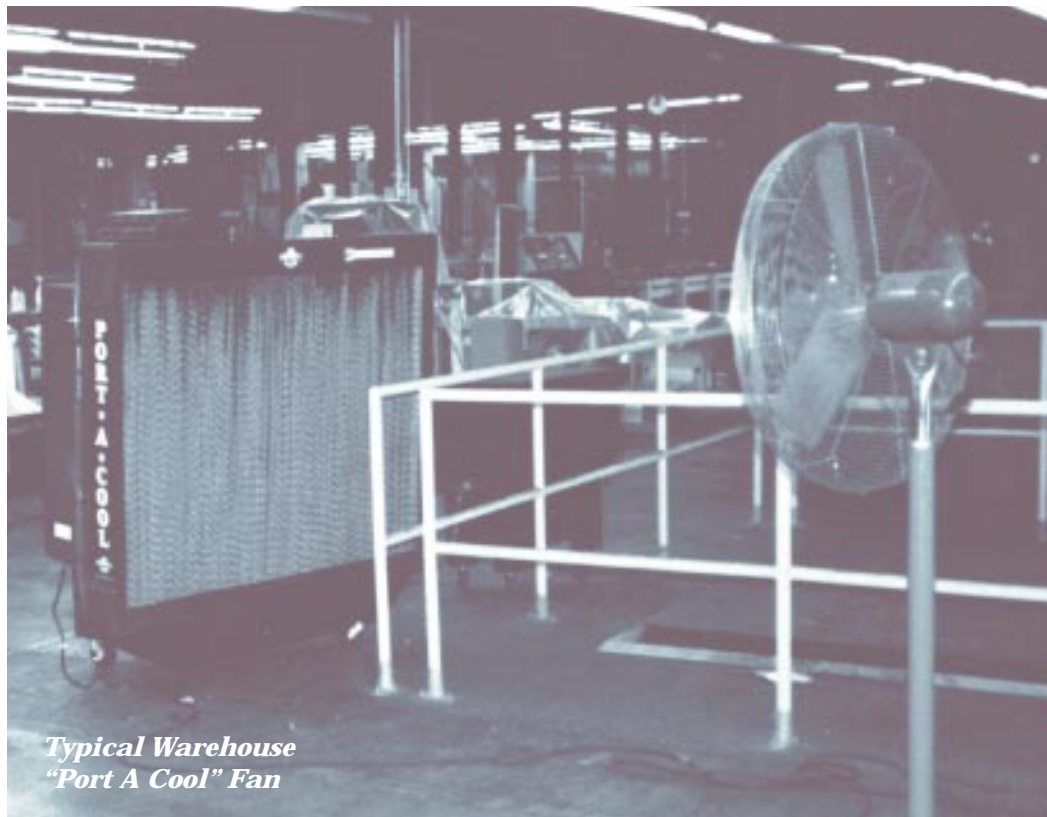
### **Ventilation**

The comfort of employees plays a key role in their productivity. As most warehouse operations are performed in large open bay areas, special consideration is required in providing for the movement of air at the floor or work area level. In areas with high temperature and humidity levels, such as in the three states covered by this project, the team saw several methods used to mitigate these problems. These methods include: air conditioning of the floor area, evaporator fans to remove humidity, "port-a-cool" fans to cool and move air, large standing fans to move air, and air conditioned break rooms. Geographic areas with low temperatures and humidity levels

will also have problems that need to be dealt with using various heating and humidifying methods.

### **Related Office Functions**

Adequate space for office functions should be provided within the warehouse, as some office-related operations are necessary in conjunction with warehousing functions. However, where a warehouse supports another function, such as a medical center or a large distribution operation, it is important to avoid "office creep" where office personnel start to move into the warehouse. This reduces efficiency in the operation of the warehouse by reducing the space available for the actual warehousing function.



*Typical Warehouse  
"Port A Cool" Fan*



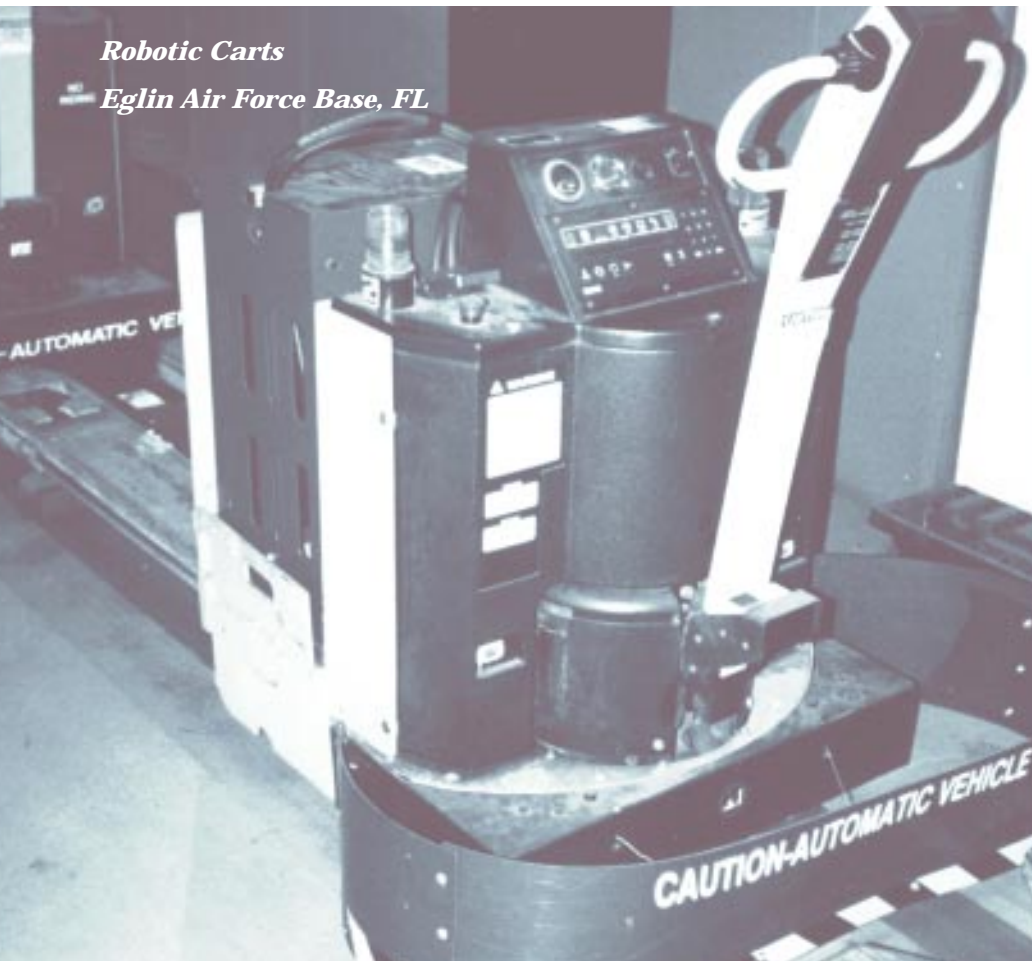
### Technology

Automation can enhance the productivity of a facility. However, automation itself can restrict workflow and flexibility, and is expensive. Therefore, the use of automation must be proven as a necessary expense before implementation. Not only should the purchase cost of materials handling systems be considered, but also the operating and maintenance costs over their life cycles. Life cycle costs must be included in the investment analysis decision process since they can have a

significant impact on the equipment bought and the total expense incurred.

Eglin Air Force Base, FL, has successfully incorporated robotic carts using fiber optic and wire guided operating systems in their main supply warehouse. The Supply Asset Tracking System is able to more effectively operate and manage the supply function within the warehouse and has saved the Air Force FTE and materials movement time. However, warns Joe Reed, Deputy Chief of Supply for the 96th Air Base Wing, on-site maintenance is a must to maintain the system's efficiency and prevent mechanical breakdowns.

Bar coding is a technological innovation used in warehousing for cost reduction. Bar coding technology allows for greater employee productivity, accurate "real time" inventory accounting, and location identification. This limits the need for physical inventories due to an increase in order selection accuracy. The use of "real time" inventory accounting also provides an accurate information link between inventory management and operational personnel. This direct computer "real time" interface leads to quicker handling of "emergency" orders; more accurate stock and order status; and "real time" manifesting, packing list generation, and reports. Several of these functions no longer require human intervention. As Mark DeMary, Information Systems Manager of Mid-Florida Freezer Warehouse (MFFW), Cape Canaveral, FL, pointed out, it is more efficient to have the computer do it.



*Robotic Carts*

*Eglin Air Force Base, FL*

With recent advances in Internet capabilities, the international flow of information is now easier to accomplish than ever before. MFFW frequently attaches Electronic Data Interchange information to e-mail messages regarding the processing of shipments and orders. Furthermore, customers can send information to MFFW using the same method.

Computers and their increasing storage capacity, as well as Internet technology can be used to reduce the amount of storage required for agencies responsible for publications. Instead of having thousands of copies of handbooks, newsletters, forms, or other pamphlets in storage for months or even years, today's in-house printing technology enables the printing of documents on demand. Alternatively, documents can be uploaded onto an agency's worldwide web site for "real time" accessibility. This would reduce warehouse costs and the storing of out-of-date documents.

### **Personal Property and Supply Management**

The management of personal property is a major function of Federal agencies, and it is only part of the supply management function. Supply management consists of the full life cycle of an item from requirement determination, acquisition, and accountability, to disposal. Acquisition initiates responsibilities for inventory management, including maintenance of stock and financial records. Accountability focuses on the receipt, inspection, storage, and

shipment of materials, while disposal deals with the disposition of unneeded property.

The scope of this project relates to the utilization and disposal of the personal property associated with the Federal warehouses in the study area. The scope of the project did not address the potential sales dollar value associated with a more efficient disposal process.

The Federal utilization and disposal program, one of the largest property management programs in the Federal Government, encompasses redistribution, utilization, donation, sale, and abandonment or destruction of Federal Government owned personal property. Considering that the Federal Government purchases more supplies and materials than any other entity in the world, it is only logical that it also disposes of more personal property than any other entity as well. In this regard, the Government is continually challenged by the enormous problem of effectively and efficiently using and disposing of huge quantities of property that are purged on an ongoing basis from every Federal activity and storage facility.

The Federal utilization and disposal program is mandated by the Federal Property and Administrative Services Act of 1949, as amended, and the related Federal Property Management Regulations (FPMR), Subchapter H (41 CFR 101-42 through 49, except for 47 (real property)). The FPMR guides Federal agencies by prescribing policies, procedures and delegations of authority on the

management of personal property.

For a variety of reasons, including FTE limitations and the existing cumbersome disposal process, agencies appear to minimize the importance of property utilization and disposal, and place greater emphasis on the procurement of new items. Personal property management is just as much a duty and responsibility as procurement and the delivery of and accountability for supplies and materials. The Government's investment in personal property amounts to billions of dollars annually; and property initially purchased for a single purpose or agency, that is in good condition, has great potential for reuse by other agencies when no longer needed. Property and items are often not reused because of the poor and inefficient manner in which they are received, recorded, or described in property inventory records. The concurrent buying and selling of personal property, as the result of an agency being unaware of what is available at other agencies or within its own agency, has led to poor use of new procurement dollars. In the end, valuable dollars and property are lost because of inadequate knowledge and/or training in the current personal property policy and procedures.

### ***Excess Property***

Based on the team's visits and discussions with personal property managers, the team found that while there is no single cause for the generation of large amounts of excess and surplus property, the following are the primary reasons:

- **Use.** Each item in the Government's active inventory will eventually become unserviceable or uneconomical to maintain.
- **Termination or change in program.** The changing mission of the Federal Government's programs result in property that no longer meets mission requirements.
- **Modification of existing equipment.** The Government continually makes improvements to its operational supplies and equipment, resulting in the generation of a wide variety of items, parts, supplies, and materials that become excess in the system.
- **FTE limitations.** Past and current personnel reduction efforts have resulted in the generation of large amounts of excess and surplus property.
- **Obsolescence.** Technological developments and advancements make certain items or entire systems obsolete. This was evident at almost every location visited and especially true of computer and related equipment.
- **Cost reduction programs.** Military base closures, consolidations, and a variety of other budget reduction efforts impact the utilization and disposal process.

### ***Property Disposal***

The Federal Government has several means of accommodating disposal of excess and surplus property: exchange/sale, reuse, transfer, donation, sale, and

abandonment or destruction. Most agencies are familiar with the Federal disposal program and the authorities used to dispose of personal property. However, many civilian agency representatives indicated to the team that working with GSA to excess the property seemed like a long and complicated process. This can be attributed to owner-agency internal screening processes, as well as the time to complete the various GSA sales methods. Others, like NASA and TVA, were pleased with the results of the property sales program.

It should be noted that Federal agencies lack incentives to dispose of personal property because the proceeds from these sales must be deposited in the miscellaneous receipts of the U.S. Treasury. However, GSA is in the process of developing proposed changes to the Property Act to authorize Federal agencies to retain proceeds from the sale of surplus personal property to cover direct and indirect disposal costs.

In addition to the FPMRs, many of the civilian agencies have cited Executive Order 12999, "Educational Technology: Ensuring Opportunity for All Children in the Next Century," as a method to donate computers to schools. This is being accomplished either through direct donation to individual schools or through the Computers for Learning worldwide web site. However, just as the changing technology impacts the amount of excess personal property generated by the Federal Government, this also impacts the donation process as schools are looking for the latest technology,



which usually remains in the Federal community. In almost every warehouse visited, the team observed many computers that could not be given away because they were not Pentium-class computers.

The observations below were common within civilian agencies. It is apparent that an increased awareness of the value of the disposal program, through its potential cost savings, must be conveyed to top management to provide the necessary resources to support the disposal program.

- Agencies tend to carry an inventory of non-mission-essential items. Many of these items have not been issued or used for a long period of time and have been dubbed as "slow moving" or "dead stock." Federal

### ***Surplus Personal Property Auction***

***NASA, Kennedy Space Center, FL***



## Observations and Findings



### **Computers Available for Donation or Sale**

**HHS/CDC, Atlanta, GA**

agencies must be encouraged to manage their inventories more efficiently through proper monitoring within their own internal reviews. If there is no recurring need, items should be declared excess and disposed of through the proper disposal program, thus freeing up additional warehouse space.

- Excess personal property storage does not undergo the same stringent controls as does new procurement and inventoried stock. There is a lack of attentiveness in housekeeping excess stock, and there is no consistency in storage practices (i.e., items are not stored by commodity type). Once property is declared excess, it loses its mission essentiality, and the care and handling becomes secondary.

Property managers and warehouse custodians should understand that the supply management function is not completed until the final disposition of the property is accomplished either through reuse, transfer, donation, sale, abandonment, or destruction.

- The internal procedure for screening property during the reuse cycle is long and tedious. This procedure is performed using item lists passed to each bureau within a Department or agency. The process can take up to 180 days before the property is reported to GSA as “excess.” Currently, GSA maintains the Governmentwide database for all excess and surplus property. For efficiency, Federal agencies should consider methods of automating their internal screening process to reduce the number of days property remains on their records. The GSA Federal Disposal System (FEDS) could be a viable system to assist the agency internal screening process through worldwide web site enabled technology, which would make the disposal reporting process seamless.

The Navy personnel at Kings Bay, GA, told the SWING team that they use a computer program to screen the supply items on a quarterly basis in order to determine which items are “hot” and which may be potential excess.

- To the extent practical, Federal agencies should use the Memorandum of Understanding between GSA and the Defense

Logistics Agency's Defense Reutilization Marketing Office (DRMO) in their local area to turn in excess property. The DRMO provides disposal support to GSA for the disposition of Federal excess property. Recently, GSA has considered the re-establishment of Personal Property Centers, but determined that the costs are too prohibitive at this time. Accordingly, Federal agencies should weigh potential costs of performing the disposal activity on their own versus the cost charged by the DRMO to accept the property. When consideration is given to storage, care and handling costs, as well as rent, salary, electricity, etc., it is conceivable that turning the property over to the DRMO is more economical than retention by the owner agency.

The Defense Reutilization and Marketing Service (DRMS) is developing an Internet based system to

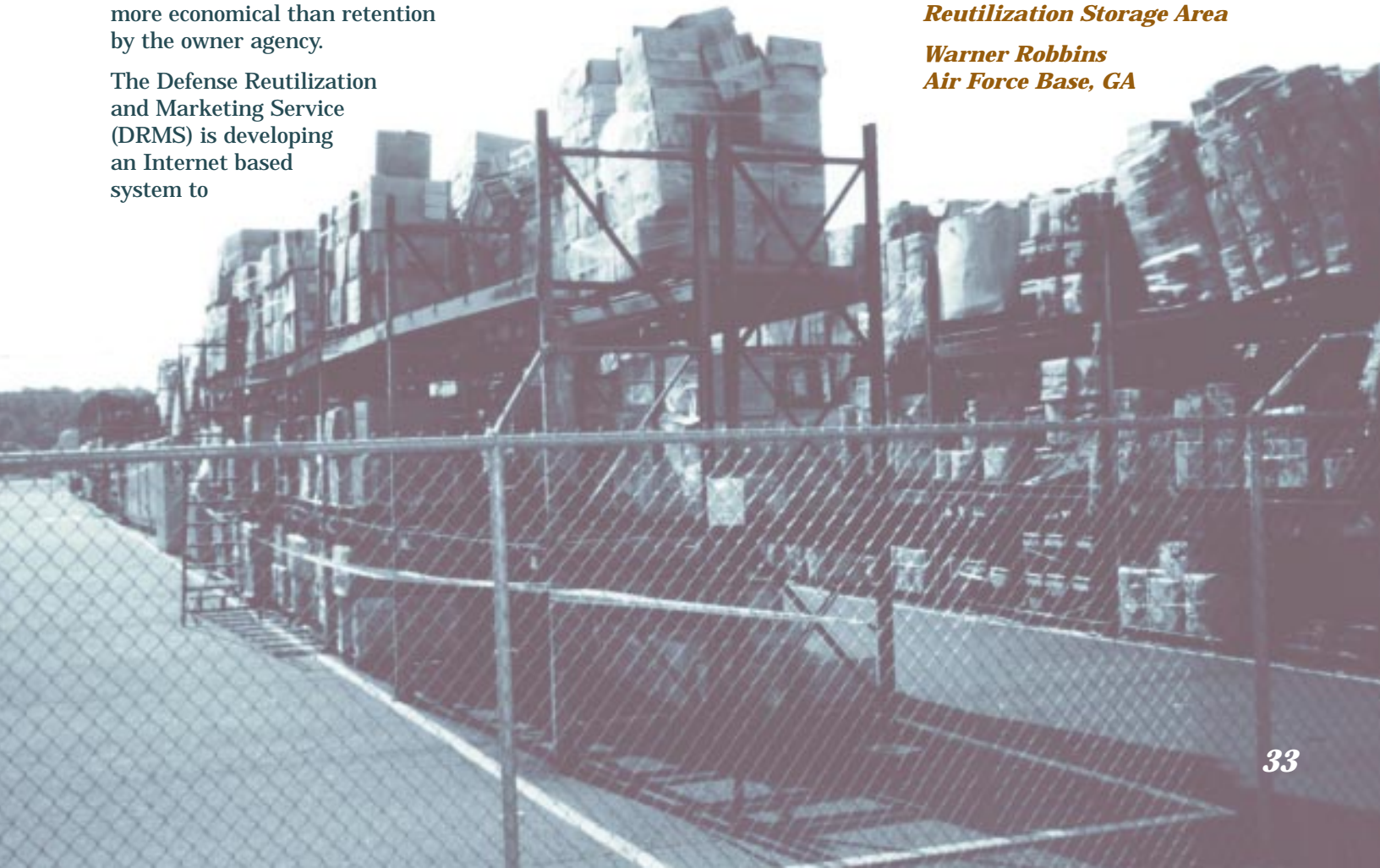
display pictures of excess depot stock items available for disposal. This innovative approach will permit an interested party to actually see the item of interest without having to travel to the storage location and will limit the need to have excess property moved to a central disposal location.

The DOE at Oak Ridge, TN, has had success in its disposal program by unit pricing items in cases where bulk pricing may not be feasible.

- Agencies store unusable property since they are reluctant to use the abandonment or destruction phase of the disposal cycle. They feel the public may perceive this to be "waste

***Defense Logistic Agency's  
Reutilization Storage Area***

***Warner Robbins  
Air Force Base, GA***



and abuse” of Government-owned property. Under certain conditions, Executive agencies are authorized to abandon and destroy property, especially when it is determined that the property has no commercial value and the cost of continued handling and care would exceed the estimated proceeds from its sale. This is a practicable disposal process and should be used to remove “junk” (items that no one wants either through utilization, donation or sale processes) from the system. Many examples of this “junk” were found during the site visits conducted for this project.

Appropriate agency disposal of office and warehouse items that no longer serve a useful purpose can create additional storage capacity within existing facilities and could therefore provide an opportunity for cost savings. While most agencies indicated that they periodically purge inventory of “dead” or non-moving items, the team found many instances where agencies needed to more actively review their inventories. In a couple of instances, the agency indicated that it was in the process of acquiring additional space due solely to the apparent lack of an adequate internal inventory review and disposal process.

### **Distribution Management**

Distribution management operations must ensure that the areas allocated for feeding/replenishment of material are sized to allow for adequate flow of materials through the automated and/or mechanized equipment to

provide labor and space utilization efficiency.

Generally, all items of the same classification (speed of movement and size volume) should be stored and picked for distribution in the same area. When determining if materials handling equipment is necessary, consideration must be given to the type of materials, the demand (fast mover to slow mover) and the volume/size. Each class of materials handling equipment is designed to handle material for a specific purpose. Again, the materials handling equipment experts will be able to help sort through the various types of equipment and determine what is appropriate for a particular situation. Inventory should be stored and selected utilizing the proper materials handling equipment. Otherwise, the investment in equipment and labor will not be effective.

A “golden zone” approach is an excellent method to improve productivity in the storage and selection functions. The highest demand stock should be stored and selected from locations that are the most easily accessible, thereby reducing storage and selection time. Storage and selection of fast moving bin type items is best accomplished by selecting the item in chest-high or waist-high storage units. Fast moving bulk inventory should be stored and selected close to entry and exit points unless a conveyor is readily accessible. These methods follow the basic theory of ergonomics and provide effective use of manpower and materials handling equipment.



## **Safety and Hazardous Materials Storage**

The storage and handling of hazardous materials are two serious areas of consideration. All organizations, whether Federal agencies or private sector companies, must ensure that all OSHA, EPA, and applicable local guidelines are followed. The Air Force relies on the Storage and Handling of Hazardous Materials (AFJMAN 23-209) which is a joint Services/DLA publication. Also Air Force Instruction (AFI) 32-7086, Hazardous Materials Management, dated August 1, 1997, is a useful reference tool in the storage of hazardous materials

Safety of the employees, visitors, and property are major considerations that have a direct impact on the effectiveness of the organization. Depending upon the type of materials being handled (i.e., chemical, explosives, gases, etc.), there are safety requirements for product spill containment, fire rated walls and cabinets, airflow, emergency procedures (including fire department notification), and eyewash stations. The use of Material Safety Data Sheets (MSDS) and well-marked "hazmat" signage also provides necessary safety measures. Additionally, coordination with the local fire department, including fire drills, is important so that if a fire occurs the fire department will know what materials are being stored and where they are located.

## **Integration of Storage Functions and Facility Capabilities**

There is a direct relationship between decisions regarding operations, information, building parameters, and materials handling equipment. All management decisions will have an effect on other facility and warehousing operations. For instance, the decision to have stationary rack storage for a specific stock number will limit the labor, space, inventory, and materials handling equipment that can handle that stock number.

## **Grounds Maintenance**

While the efficient operation of the warehousing function is the prime consideration in establishing a facility, grounds maintenance of the facility also must be considered. There were several methods used in the locations visited. As a result of past A-76 reviews, several

*Area Identified For  
Hazardous Material Storage  
TVA, Chattanooga, TN*





warehouses were being maintained through contractor support, while other agencies were using their personnel for the maintenance function. At the Atlanta Federal Prison, inmates were being used for grounds maintenance. The most innovative technique observed was the use of neighboring Federal prisoners to maintain the outside premises at Eglin Air Force Base, FL; and the Navy's Saufley Field, Pensacola, FL.

### Facilities Operations

The effects of A-76 reviews have also impacted the operational aspects of warehousing for many Federal agencies and military organizations. While the host agencies generally indicated that it is preferable to have agency personnel operating the warehouse, using a contractor enables an agency to implement cost savings incentives that cannot be offered to Federal employees. However, the SWING team was also told at more than one location that the use of contractors was cost prohibitive.

### Emerging Concepts and Practices in Warehousing

Over the past several years there have been changes in how both the public and private sector view the process of warehousing and service delivery. This has had dramatic effects on warehousing programs and facility requirements, especially those of the Federal Government.

- "Just-in-time" ordering has enabled point-of-sales, thus allowing agencies to limit the number and amount of items

stocked. Instead, the manufacturer stores the merchandise and deliveries are made to the customer's site based upon computer generated reports indicating their short-term supply needs.

- Government Purchase Card use in the Federal Government has had a dramatic impact on the items ordered for warehouse inventories. Agencies indicated that the growing use of the card has reduced the stock stored and thus significantly reduced the amount of storage space required. Use of the Government Purchase Card has in effect enabled FSS to still be in the office supply business, but in a new and more efficient way. However, in some cases, it is more convenient to order from local vendors to receive next day delivery, or to go to a local store and pick-up the items the same day.
- The prime vendor process takes advantage of the private sector distribution capabilities and electronic data processing to supply customers. A single vendor (prime vendor) buys inventory from a variety of suppliers and the inventory is stored in commercial warehouses. The customer orders supplies from the prime vendor using an electronic ordering system. The vendor then ships directly to the Federal agency, as needed, within a specific geographic area. This process reduces delivery time to the customer and, by using the private sector's storage and distribution system, reduces Federal agencies' inventories and

associated warehousing and redistribution costs.

In most instances, this has significantly reduced the need for storage space without a corresponding reduction in space occupied. It should be noted that as supply marketplace and ordering patterns have changed in the recent past, GSA's FSS has been able to reduce its occupied storage needs and has gone from over 20 major warehouse facilities to four large warehouse operations and seven smaller warehouses. In the last two years alone, FSS has reduced its warehouse space by approximately 1.5 million sq. ft.

Other successful warehousing initiatives in the Federal Government include shelf life considerations and the use of National Stock Numbers:

- The shelf life (usefulness) of certain items warehoused is time sensitive. These items should be disposed of when they are warehoused longer than the expiration date marked on the item. Sometimes an item's "shelf life" can be extended based on testing procedures and manufacturer's recommendations.

The shelf life of an item usually requires a first-in-first-out inventory method. A first-in-first-out inventory procedure requires that the first item received will be the first item shipped. This limits the inventory disposed of due to its shelf life. Special storage procedures must be considered for shelf life items because of the

time sensitivity associated with this type of stock.

- The National Stock Number (NSN) system is an item identification system in which the majority of items carried by the FSS are cataloged. This system is the same as the thirteen-digit numbering system established for items used in all U.S. Government materials management functions. The first four digits show the item class or Federal Supply Classification (FSC). The FSC relates like items of supply, i.e., different types of copy paper will have the "7530" FSC designation. The next two numbers indicate the nation of origin. The last nine digits (including the two digits after the FSC) are a unique number assigned to only one item of supply and remains with that item as long as it is used in the Government's supply system. All items carried by FSS in the GSA/FSS Supply Catalog are designated by a NSN. The NSN is analogous to the catalog number used by a customer to indicate which item is to be ordered from a mail order company in the private sector.

The NSN helps to simplify warehousing operations and information systems within the Federal sector. Locations within warehouses can be tied to the NSN to indicate where a particular item is stored. Receiving, selecting, shipping, and inventory functions are also tied to the NSN to facilitate handling and record management of stock.

*Strategic Storage Needs of the Federal Government*



*Mobility Bag Storage  
Tyndall Air Force Base, FL*

# Opportunities for Real Property Sharing

**D**uring the development of this project it was hoped that, in addition to finding the best practices and lessons learned in Government warehousing programs, the SWING team would discover opportunities for the sharing of real property capacity among the Federal agencies. Three opportunities did come to light, and one (NARA, East Point, GA) has the potential for realization. There were other locations visited that had space available for sharing, but there were no other Federal agencies within a reasonable distance to share the space. While outleasing the available space to the private sector was an option, security, access and remoteness of the locations severely limited this option. The three sharing opportunities found are:

## **NAS Pensacola, and Eglin Air Force Base, FL**

Changing mission needs at NAS Pensacola resulted in the temporary availability of two warehouses, each approximately 40,000 sq. ft. These two warehouses are fully powered and air-conditioned, and offer an excellent working environment. These buildings could be made available for other agency storage needs for one - two years or until further mission changes require their use. Our discussions with the personnel from Eglin Air Force Base indicated this space might meet their needs for additional storage space. However, after a site visit by Eglin operations personnel, it was determined that a larger, open floor area was needed to accommodate their storage requirements, and the distance between locations made its use impractical.

## **Jacksonville Air National Guard and GSA Leased Space, FL**

The Jacksonville Air National Guard (JANG) has a need for additional storage space that could have been satisfied with approximately 25,000 sq. ft. of vacant space GSA had been leasing in Jacksonville. The SWING team provided JANG personnel with GSA's regional point of contact to coordinate a site visit. When the team followed-up on this potential savings situation, the team was advised that GSA had already taken action to terminate the lease.

## **NARA, Office of Regional Records Services, Southeast Region, and GSA/FSS Southeast Distribution Center, Palmetto, GA**

The last and most promising opportunity is the NARA facility presently located in a crowded World War II vintage warehouse in East Point, GA. During the team's site visit with NARA, the agency's Regional Administrator, Gayle Peters, described an urgent need for additional space. In light of the amount of space that was needed (approximately 400,000 sq. ft.), the SWING team informed Mr. Peters that GSA's FSS was in the process of vacating and releasing a large amount of space at their Southeast Distribution Facility in Palmetto, GA. Mr. Peters indicated that he had heard about that space, and he thought that discussions at a higher level had already commenced in that regard. As a result of this space sharing; NARA will realize a cost saving of approximately \$500,000 annually in reduced rental payments for that portion of the



## *Opportunities for Real Property Sharing*

East Point facility that will be moved. GSA will have a rental payment pass-through of approximately \$1,400,000 per year into the Federal Buildings Fund on the vacant space.

Other sharing opportunities that the study found are being used by the TVA's Hartsville Investment Recovery Center, and DOE's East Tennessee Technology Park, Oak Ridge, TN. In these cases, the agencies are working with the local

community to form economic "Enterprise Zones." Generally, this arrangement enables Federal agencies to provide separate and secure access to unused warehouse space for use, or outlease by a local community at favorable "rent," and may include minor building repair. Due to the security requirements found at some Federal installations, these partnership agreements can be cumbersome to coordinate.

### ***Shrink Wrapped Vehicles***

***U.S. Marine Corps Distribution Depot, Albany, GA***



# Best Practices

The combination of the three areas of expertise represented on the SWING team provided an opportunity to understand how a facility interacts with its users and its uses. The following is a list of the best practices identified and the locations using those practices. Some of these practices and/or locations have previously been identified elsewhere in the report, but the team felt it important that this section specifically identify those best practices for easier identification and reference. Further information regarding these noted areas may be obtained through the points of contact identified in Appendix IV, Site Visits and Local Points of Contact.

- In-checking of receipts and delivery of orders utilizing bar code technology to enhance security, quality control and verification – Veterans Administration Hospital (VA), Atlanta, GA.
- Vertical carousel used for high value, small cube items – Tennessee National Guard, Knoxville, TN.
- Conveyor system utilizing bar code technology to sort orders received from vendors to specific office areas – Oak Ridge National Laboratories (ORNL), Oak Ridge, TN.
- Computer based Warehouse Management System (WMS) integration with a conveyor system and other warehousing operations – Army Air Force Exchange Service (AAFES), Ft Gillem, GA.
- Static racking configured to accommodate full pallet loads and less than pallet loads – AAFES – Ft Gillem, GA.
- Over-the-dock racking to utilize otherwise unused cubic storage space – AAFES, Ft Gillem, GA.
- Static racks configured on narrow aisle forklift footprint – AAFES, Ft Gillem, GA; Pep Boys and Ford Parts Distribution Center, both in McDonough, GA.
- Double stacked, horizontal carousel mezzanine system integrated with bar coding and conveyor system – Marine Corps Logistics Base, Albany, GA.
- Breakaway insulated dock doors – Defense Distribution Depot, Albany, GA.
- Racking system for inside storage of vehicles and dehumidifying system to reduce vehicle maintenance and protect electronic components – Marine Corps Logistics Base, Albany, GA.
- Triple tiered gravity flow racks in the mezzanine – General Services Administration (GSA), Palmetto, GA and AAFES, Ft Gillem, GA.
- Effective use of dock space for receiving and shipping – GSA, Palmetto, GA.
- Use of open floor space to store bulk pallet loads – GSA, Palmetto, GA and Ft Worth, TX.
- Warehouse information system development – GSA, Ft Worth, TX.
- Over aisle storage space – Ford Parts Distribution Center, McDonough, GA.

## *Best Practices*

- Efficient use of height (cubed space) for tire storage – Pep Boys, McDonough, GA.
- Real time manifesting using bar code technology – Ford Parts Distribution Center, McDonough, GA.
- Motorized, moveable storage racks for heavy and slow moving items to maximize cube storage – Arnold Air Force Base (AFB) – Tullahoma, TN.
- Warehouse design for future communication needs – Department of the Army, Ft Benning, GA.
- Supply Asset Tracking System, tracks assets electronically through supply channels, to be implemented Air Force wide - Eglin Air Force Base, FL.
- Electronic screening of excess depot stock - DRMO, Jacksonville, FL.
- Radio Frequency (RF) technology to make real time adjustments to inventory - Mid-Florida Freezer Warehouse, Cape Canaveral, FL.

### *Medical Supplies*

*Veterans Affairs Hospital,  
Atlanta, GA*



# Recommendations

**A**s a result of the team's visits to the various warehouse, storage, and distribution activities of the Federal Government and private sector, many innovative techniques were observed and are identified in previous sections of this report. Many of the professional warehouse personnel also spoke about, and acknowledged a need for changes in existing conditions. However, due to budgetary constraints, uncertain or evolving mission needs or other constraints, many of which they had no direct control over, these warehouse experts were severely limited in their ability to make changes.

Nevertheless, the following recommendations are the result of the team's discussions and observations, as well as common sense practices and best case scenarios, to effect more efficient and effective Federal Government real and personal property management.

- **Make the initial investment; it will save money in the long run.**

Many of the warehouse personnel the team spoke to indicated that many of the warehouse limitations and inefficiencies were the result of a lack of investment in the warehouse project planning process. Many of the flexibilities desired (i.e., additional height, power and automated equipment, computer technology, employee comfort, etc.) are more economical to include in the planning process than to add as a change order during construction, and even more expensive as a renovation once the facility is in

operation. In addition, once programmed into a facility, budgetary allowances must be included for the maintenance of all facility systems.

- **Maximize the full space of the storage facility.**

Many of the facilities visited, especially those of the civilian Federal agencies, were not maximizing their warehouse space. Space was poorly allocated; racks were not sized to storage load; facility heights were inefficiently used; items were obviously in "long term" or "dead" storage modes; and/or publications were being stored which appeared out-of-date. With the emerging trends of "just-in-time" ordering, desk top delivery services, the widening use of the Government Purchase Card, and desk top publishing, agencies are finding that their warehouses are no longer in the office supply business. In light of streamlining Federal budgets and reduction in staffing, Federal agencies could reduce real and personal property outlays by more proactively planning and managing their existing facilities. Specifically, agencies should explore alternatives prior to requesting additional storage space and look for opportunities to reduce space.

Prior to canceling a lease at a favorable rental rate, Federal agencies should contact other Federal activities in the area to see if there is a justifiable need for that space.

Using all available height in a warehouse can increase storage capacity. The addition of one storage level, six feet high, in a



## Recommendations

50,000 sq. ft. warehouse, would potentially increase the space by 300,000 cubic feet. This could result in savings of approximately \$50,000 annually, not including utilities, by not having to lease additional space. This cost is based on an average rental rate of \$5.00 per square foot for warehouse space. This low-end estimate excludes the cost of utilities, according to Carol M. Bravo, Director of Finance and Marketing, Phillips & Company, Jacksonville, FL. While the team saw several instances where this principle could potentially save the Government many thousands of dollars in procurement activities and rental payments, a detailed cost-benefit analysis must be done on a case-by-case basis to determine the most beneficial course of action for the Federal Government.

- **GSA should review the Federal Property Management Regulations (FPMR) and the Property Act to recommend changes that streamline and add value to the personal property disposal process.**

GSA is currently working collaboratively with Federal agencies to rewrite the FPMRs relating to personal property into plain language and to eliminate those regulations that do not add value to the disposal process. In addition, GSA has developed a legislative proposal to change the Property Act to provide Federal agencies more flexibility in disposing of personal property.

Throughout the course of the study, the SWING team saw where Federal warehouses were used for

dual purposes: (1) receipt, storage, and issuance of newly procured items; and (2) for turn-in and storage of excess personal property. The primary objective of most warehouses is the care and custody of newly procured items that meet the mission needs of the agency. Less care and concern were devoted to the proper storage of excess personal property. This approach to handling excess property indicates a lack of training in personal property disposal processes. This can be addressed through the following:

Federal agencies should use current regulations, especially relating to abandonment or destruction of personal property (FPMR 101-48, Utilization, Donation, or Disposal of Abandoned and Forfeited Personal Property), in an effort to process excess property in a timely manner.

Federal agencies should use, to the fullest extent practical, the Memorandum of Understanding between GSA and DLA that allows them to turn-in excess personal property to the nearest DRMO.

Federal agencies should take a more proactive approach to inventory reviews and controls to screen items that are candidates for excess. In addition, agencies can use existing technologies (i.e., high-speed printers, worldwide web sites, and increased computer memory) to produce hard copy documentation as needed rather than maintaining space and cost-consuming hard copy inventories.

GSA should continue to pursue

changes to the Property Act to enable Federal agencies to retain the proceeds from the sale of surplus personal property. This would provide Federal agencies with an incentive to be more proactive in their inventory review processes.

- **Federal agencies should first consider GSA negotiated supply contracts before using local vendor sources.**

The GSA/FSS provides Federal agencies worldwide with everything from office supplies to medical, safety, and fire fighting equipment. FSS purchases these items in volume (in accordance with the Federal Acquisition Regulations) and at a discount that is passed on to the Federal community, and provides guaranteed desk-top delivery in one to three days. Direct delivery from vendors is also available for large orders using the FSS schedule program. Since FSS is a self-funding organization,

purchases made through this program ensure the continued availability of these discounts. The programs offered to provide office and related supplies include:

GSA Advantage - This on-line shopping service provides Federal agencies with an Internet accessible “store” for purchases. GSA Advantage can be accessed through the Internet at <http://www.gsa.gov>.

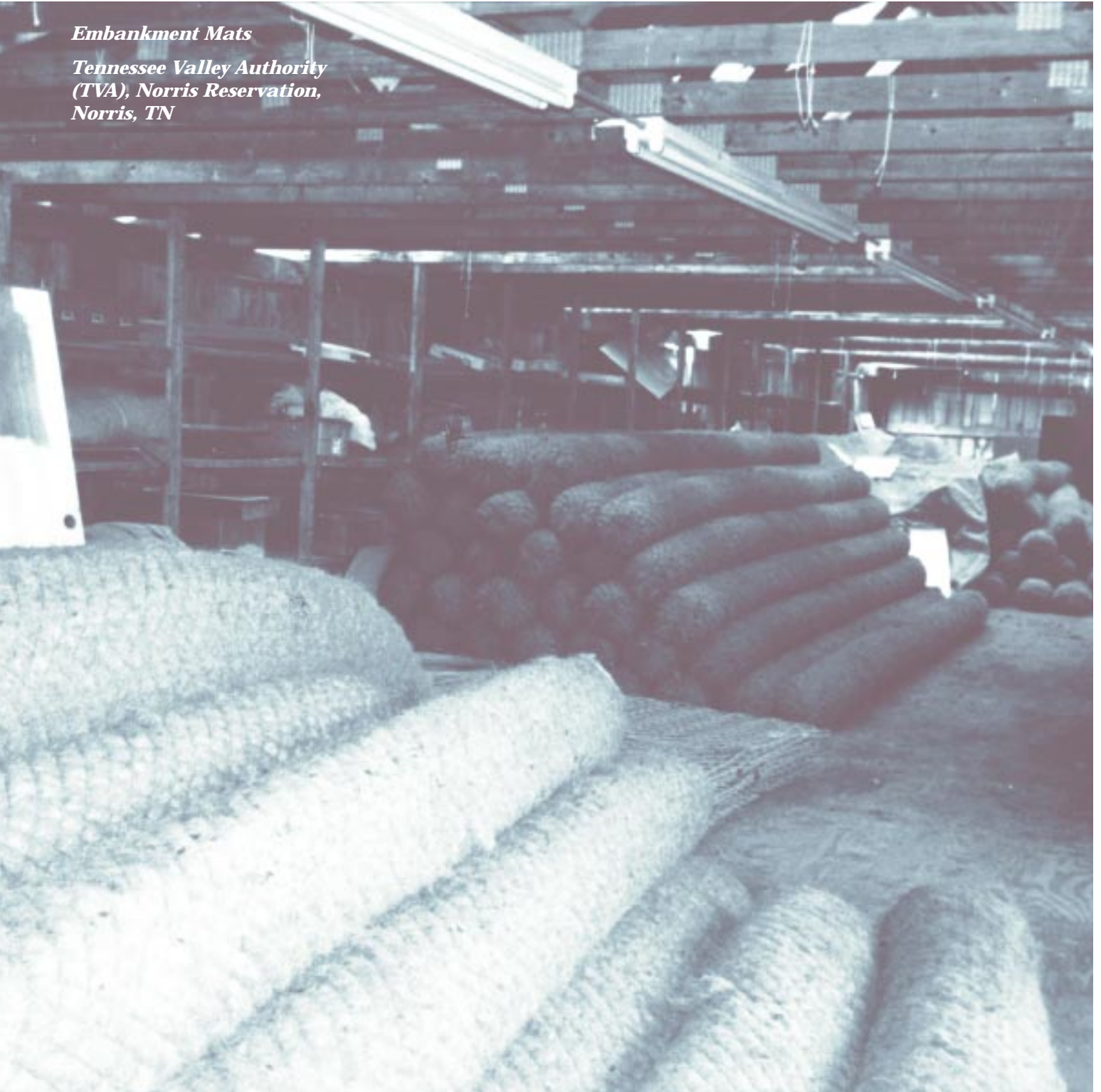
Customer Supply Centers (CSCs) - Located around the country, these centers stock over 11,000 items and provide mail order service. Stocked items are available via catalog. (see Appendix VI - Additional Sources of Information for a CSC location).

In view of the Administration’s efforts to reduce staff, limit budgets, and the resulting increase in workloads, Federal agencies should consider the advantages of utilizing GSA’s FSS programs and pricing schedules for their general supply needs before going to the private sector.

*Strategic Storage Needs of the Federal Government*

*Embankment Mats*

*Tennessee Valley Authority  
(TVA), Norris Reservation,  
Norris, TN*



# Glossary

- Bar code technology** - A computer generated identification code that allows optical character recognition and identification of an item.
- Battery charging area** - An area in the warehouse that is equipped to charge heavy duty machinery batteries, and should be designed with first aid capabilities such as an eye wash station.
- Bin totes/boxes** - Containers that are used to store bulky items. These boxes can be made out of wood, metal, plastic, fiberglass or cardboard.
- Bridge cranes** - A bridge crane runs parallel to the roof usually on structural steel beams. Bridge cranes are used for low volume, heavy, large or awkwardly shaped objects.
- Bulk storage** - Storage of large quantities of solid or liquid supplies. Bulk storage can include such items as coal, lumber, petroleum products, large pallet quantities, etc.
- “C” Rack** - A type of shelving rack, whose sides resemble a “C”, used to store metal pipe, and lumber stock.
- Carousel storage system** - A continuous loop of moveable storage racks.
- Ceiling joist** - A type of beam that holds up the roof structure. Often conveyor systems, HVAC systems and fire suppression systems are mounted to these “roof” beams.
- Clear stacking height** - The maximum height that items can be stored. Objects hanging from the roof such as I-beams, gas pipes, HVAC units dictate and influence the clear stacking height.
- Cold storage** - The storage of items in a very cold warehouse atmosphere. Generally these warehouses are set up as a virtual freezer.
- Computer based tracking system** - A system using bar code technology to perform inventory reordering, and accounting functions automatically through the computer.
- Dead stock** - Items that rarely get moved out of the warehouse.
- Drive in/drive through racks** - This rack system holds pallets that are supported on the sides and allows a forklift to maneuver within the structure to store or retrieve loads.
- Emergency order** - Requests that takes first priority and at some military bases are filled in less than one hour.
- Excess property** - Property that is no longer required by the owner agency and is available to other Federal agencies.
- Floor load** - The amount of weight that a floor has been engineered to support.



- Floor plan** - The design of the warehouse pertaining to the placement and location of storage racks, offices, receiving areas, and shipping areas, etc.
- Floor template** - The dimensional size of the floor.
- Flow through operation** - This operation is characterized by having deliveries of items on one side of the warehouse and performing the distribution functions on the opposite side of the building. This configuration produces a “flow through” system of receiving and shipping.
- Forklift truck** - A material-handling vehicle designed to move loads by means of steel forks inserted under the load.
- Gantry cranes** - A portable crane that is on wheels that has two “A” sides and a center cross beam.
- Hazardous materials** - Property that is deemed a hazardous material, chemical substance or mixture, or hazardous waste, under the Hazardous Materials Transportation Act (HMTA), the Resource Conservation and Recovery Act (TCRA), or the Toxic Substance Control Act (TSCA).
- High-density storage system** - An automated storage system that is a vertical high-cube storage/retrieval machine.
- IMPAC Card** - The International Merchant Purchase Authorization Card (IMPAC) or “Government Purchase Card” is a credit card that the Government uses to purchase items.
- Internal height** - The maximum clear and free height to store items in the warehouse.
- Just in time ordering** - A procurement method that reduces warehouse storage space by having supplies delivered to the user at the time they are needed.
- K Rack** - A rack system whose sides resemble a “K” and is generally used for pallet storage.
- Less than truck Load (LTL)** - This is when a delivery truck is packed with less than a full load. An LTL delivery is usually more expensive than a fully loaded truck.
- Life cycle costs** - Costs measured throughout the entire useful life of an item. For an example, the life cycle costs of a forklift would gauge its acquisition and maintenance costs over 10 to 15 years or its estimated useful life.
- Loading dock** - The opening of the warehouse structure that is designed for truck loading and unloading.
- Loading dock shelter** - A structure that protects the loading dock from the weather elements.

- Materials handling** - The science and application of warehousing, moving, and the handling materials.
- Mezzanine storage** - A storage area of an intermediate or fractional size between a floor and ceiling in a warehouse.
- Moveable Storage Rack** - A moveable storage system that allows storage racks to be moved together. This storage system moves the shelves to provide an aisle for retrieval of items.
- Office creep** - Office creep occurs when warehouse space is encroached upon by office space.
- Order picking** - The selection of items from storage locations to fill an order request.
- Overhead conveyor system** - An overhead mechanical system that moves items through the warehouse, often attached to the roof joists of the building structure.
- Packing area** - An area that is used for constructing exterior shipping containers and preparing items for shipment. These containers include wood boxes, cardboard boxes, and shrink wrapping.
- Pallet** - A portable platform on which materials may be placed in unit loads to facilitate vertical stacking or loading, in palletized units, by mechanical lifting equipment.
- Pallet jack** - A handcart with two forks that allows a person to move a loaded pallet from one place to another.
- Pallet rack** - Metal racks (generally "K" racks) used for vertical storage of pallets.
- Palletization** - The placing of material on a pallet to facilitate handling and storage.
- Personal Property** - Any property except real property, records of the Federal Government, and naval vessels of the following categories: battleships, cruisers, aircraft carriers, destroyers and submarines.
- Physical inventory** - An inventory in which each item is physically located and accounted for.
- Pick cart** - A propelled device designed to hold small packages and tote boxes.
- Porta-cool fans** - Large fans that blow air over water, taking advantage of evaporation and moving air to cool an area.
- Rack space** - The amount of space that can be used to store items in a racking structure.
- Rail dock** - A loading dock designed for loading and unloading railroad cars.

**Rail service** - The ability to receive and ship by rail.

**Real Property** - Describes property that is real estate in nature. Buildings and land are considered real property.

**Real time** - The immediate update of information through computer technology.

**Receiving area** - An area used for checking, inspecting and preparing incoming materials prior to storage in the warehouse.

**RF technology (Radio frequency technology)** - The ability to update accounting and inventory data by radio signals to a central computer system.

**SATS (Supply Asset Tracking System)** - A supply database that tracks items from receipt to disposition.

**Skylights** - Openings in the roof which allow light to enter into the warehouse structure.

**Space saver system** - A storage system that has moveable racks to enable high-density storage.

**Space utilization** - The concept of how space is used.

**Sprinkler code (NFPA Code)** - A national sprinkler code used by many jurisdictions. In light of their different missions and configurations, each warehouse should check with the local fire codes and local fire authorities.

**Stackable pallets** - Pallets equipped with either temporary or permanent metal frames that permit stacking one on top of the other.

**Storage bin** - A container that is used to store items. Storage bins are usually an efficient way to store similar items that need to be retrieved easily.

**Storage rack** - A rack that is used to store items. Often this rack holds pallets.

**Surplus Property** - Excess property determined by GSA to be no longer required by the Federal Government. Surplus property can entail both real and personal property.

**Tilt-roller table** - A material moving table which lifts, tilts and assists in the handling of materials.

**Towveyor** - A cart with a hook that attaches to a moving chain in the floor of the warehouse and tows carts in a fixed path.

**Trailer latches** - A latch that holds the truck trailer in place while it is being loaded or unloaded.

**Trailer maneuverability** - The ability for trucks and trailers to maneuver to the loading dock, without impeding ingress and egress.

**Truck wheel load/parking lot** - The weight load and structural design of the macadam needed to support loaded trucks.

**Turn key warehouse facility** - When a contractor takes over all of the warehouse functions for a fee.

**Vacuum lift system** - A vacuum assisted material lifting system that allows large, heavy items to be moved easily.

**Velocity management** - Velocity Management is an Army wide program designed to get logistics support into the hands of soldiers as fast and predictably as possible, by finding and eliminating sources of delay and undependability in the Army Logistics processes.

**Warehouse layout** - The design of the warehouse showing the location of storage racks, packing areas, receiving areas, offices, etc.

**Warehouse security** - The protection of real and personal property through measures that may include armed guards, dogs, motion detectors, locking gates on all doors, etc.

**Worker productivity** - The amount of work produced by a person in a given amount of time.

**Worldwide inventory** - A large database that stores information on all Government owned and leased buildings.



*Strategic Storage Needs of the Federal Government*

*Computer Controlled Carousel*

*U.S. Marine Base,  
Blount Island, FL*



# *Appendices*

<b>I.</b>	<b>Project Charter</b> .....	<b>55</b>
<b>II.</b>	<b>Kick-Off Meeting Letter of Invitation &amp; List of Attendees</b> .....	<b>57</b>
<b>III.</b>	<b>Matrix of Locations and Storage Functions</b> .....	<b>61</b>
<b>IV.</b>	<b>Site Visit Summaries and Local Points of Contact</b> .....	<b>65</b>
	<b>Florida</b> .....	<b>67</b>
	<b>Georgia</b> .....	<b>75</b>
	<b>Tennessee</b> .....	<b>87</b>
	<b>Other Locations Visited</b> .....	<b>95</b>
<b>V.</b>	<b>Questionnaire Survey and Synopsis</b> .....	<b>97</b>
<b>VI.</b>	<b>Additional Sources of Information</b> .....	<b>103</b>
<b>VII.</b>	<b>Publication Survey</b> .....	<b>105</b>

*Strategic Storage Needs of the Federal Government*



*AAFES, Fort Gillem, GA*

# I. Project Charter

## Office of Real Property

### Strategic Storage Needs of the Federal Government

Team Charter

April 6, 1998

#### Initiative

The Office of Governmentwide Policy (OGP), Office of Real Property, will conduct a collaborative study of the strategic storage needs of the Federal Government. This will be accomplished by the establishment of a Strategic Warehouse Inventory Needs Group (SWING) which will include representatives of participating Federal agencies, as well as a representative of OGP's Office of Transportation and Personal Property, and the General Services Administration's (GSA's) Federal Supply Service (FSS). This study will research the efficiency and the effectiveness of warehouse and storage areas used by the Federal Government. The study will result in a report on the findings that will include recommendations for achieving efficient real property asset management, and provide information on best practices for inventory management.

#### Purpose

The main objectives of this study are to work with Federal agencies in a collaborative manner to review current real property warehouse and storage practices and establish a method of sharing real property information and best practices governmentwide. This study will provide opportunities for Federal agencies to share resources to meet the Federal Government's storage

needs and thereby provide potential savings by improving the utilization of real property required to accomplish the Federal Government's warehouse needs. This study will also explore potential savings to the Federal Government based on the application of warehousing inventory methodology.

The goals of this initiative include:

- Encouraging interagency participation in sharing warehouse space and storage methodology information.
- Saving resources by exchanging solutions, sharing best practices, and taking advantage of underutilized resources to meet the Federal Government's storage needs.
- Collaborating to solve common real property warehouse problems.
- Sharing information and expertise that lead to better warehouse asset management decisions.
- Making the best use of Federal resources.
- Providing a final document of value to all Federal agencies.

The team will achieve these goals through:

- Meeting with agencies and collaboratively identifying problems, issues, and best practices.



## *I. Project Charter*

- Conducting a field study in which the physical real property warehouse space and the inventory methodology are observed.
- Identifying the best practices and specific efforts of Federal agencies that are successful in meeting their agency's storage requirements.
- Identifying higher and better uses of warehouse space by sharing information between agencies.

### **Team Members**

#### **Team Leader:**

Sheldon Greenberg  
(202) 501-0629

#### **Team Members:**

Hank Aldag  
(202) 208-3993

Gary Thompson  
(202) 208-7433

Michael Wayne  
(703) 305-5223

### **Sponsors**

David L. Bibb  
Stanley C. Langfeld

### **Team Consultants**

Federal Agency Representatives,  
Private Industry, and Real and  
Personal Property Related  
Organizations

## II. Kick-off Meeting Letter of Invitation and List of Attendees



U.S. GENERAL SERVICES ADMINISTRATION  
Office of Governmentwide Policy

April 17, 1998

Mr. Robert Peck  
Commissioner, Public Buildings Service  
U.S. General Services Administration  
1800 F Street, NW Room 6344  
Washington, DC 20405

Dear Mr. Peck

In the furtherance of its leadership role in real property asset management, the Office of Governmentwide Policy, Office of Real Property is coordinating a pilot study of strategic warehousing and related storage space requirements of Federal agencies. This study will be based on a collaborative effort with Federal agencies that have, or may require the use of warehouse or storage space in the study area. We would like to include a review of any recent real property utilization studies, if available. In addition, on-site visits to existing agency facilities will be conducted to assist in the evaluation of the personal property which is being stored, or may be available for shared use by Federal agencies.

To accomplish this study, we have reviewed information available in the Worldwide Inventory database and selected the States of Tennessee, Georgia, and Florida as the geographic area to conduct this pilot study. We feel this area offers the most potential for achieving our goal of Governmentwide economies through identification of best practices and various other means of efficient real property asset management and warehouse utilization. This study will result in a report that will assess current warehousing practices of Federal agencies and make recommendations regarding the potential for improved future facilities uses. Accordingly, we are seeking the participation of those agencies which currently have storage facilities in the selected area and those selected agencies who may require such facilities in the near-term future (5 years).

I am requesting that you or your representative be a member of the Strategic Warehousing Inventory Needs Group (SWING). We will have our kickoff meeting on Thursday, May 7, 1998, at 10:00 a.m. to 12:00 p.m. in Room 6206, GSA Central Office at 1800 F Street, NW, Washington, DC. We plan to use this initial meeting to discuss any unique or special agency interests or concerns regarding this study. Please send the name, address, Internet address, and telephone number of your agency's designated contact for participation in this study by Friday, April 24, 1998, via Internet to Sheldon Greenberg at [sheldon.greenberg@gsa.gov](mailto:sheldon.greenberg@gsa.gov) or call (202) 501-0629.

If you have any questions or require any additional information, please contact Sheldon Greenberg. Your agency's participation and input into this study will ensure a more realistic, collaborative Governmentwide perspective.

Thank you for your assistance in this collaborative Governmentwide pilot study effort.

Yours truly,

A handwritten signature in brown ink that reads 'David L. Bibb'.

David L. Bibb  
Deputy Associate Administrator  
Office of Real Property

1800 F Street, NW, Washington, DC 20405-0002

Federal Recycling Program Printed on Recycled Paper

## *II. Letter of Invitation and List of Attendees*

### **List of Attendees**

#### **Strategic Warehousing Inventory Needs Group Meeting May 7, 1998**

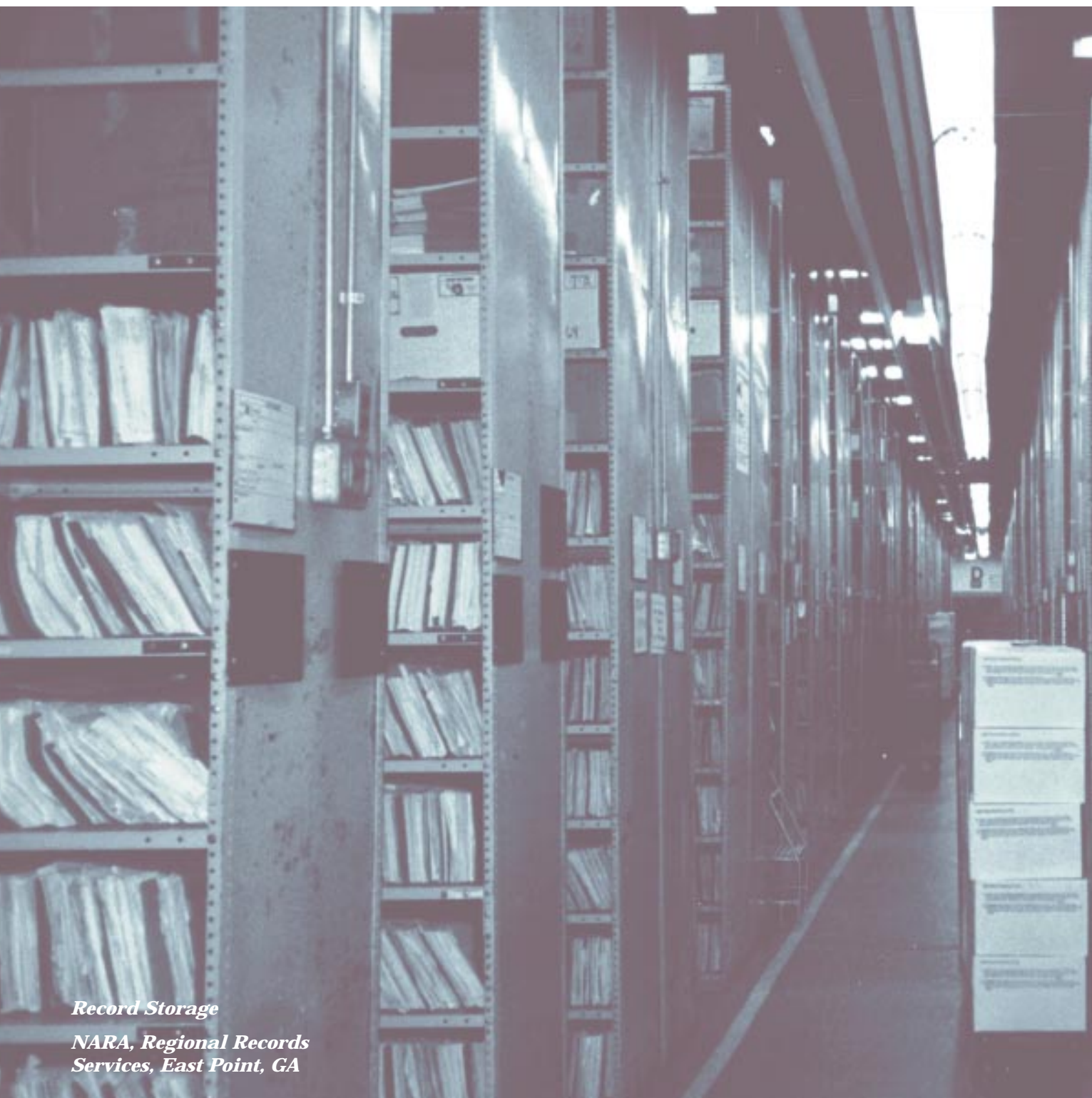
<b>Agency</b>	<b>Representative</b>	<b>Telephone</b>	<b>E-Mail Address</b>
Department of Veterans Affairs	Dick Bundy	(202) 565-5398	richard.bundy@hq.med.va.gov
Department of Energy	Andy Duran	(202) 586-4547	andrew.duran@hq.doe.gov
Department of Defense	Richard L. Townsend	(703) 614-6399	rtownsend@ref.osd.mil
	Robert Hobson	(703) 604-5808	hobsonrr@axq.osd.mil.smtp
Department of Agriculture	Ann Hair	(202) 720-2994	ahair@usda.gov
Department of the Air Force	Charles Skidmore	(202) 767-4033	skidmore@mail.bolling.af.mil
	Cathy Dee	(202) 767-4383	cdee@mail.bolling.af.mil
	Jim Enloe	(703) 601-0187	jim.enloe@af.pentagon.mil
Department of the Army	Randy Klug	(703) 693-4583	klugrm@hqda.army.mil
	Jim Askew	(703) 683-7100	rkalex@ix.netcom.com
Department of Education	Denise Estep	(202) 401-8366	Denise_Estep@ed.gov
	Connie Blackwell	(202) 401-1269	Connie_Blackwell@ed.gov
Department of Health and Human Services	Peggy Dodd	(202) 619-1755	pdod@os.dhhs.gov
Department of the Interior	John Moresko	(202) 208-5704	johnmoresko@ois.doi.gov
Department of the Navy	Carl Lowery, Jr.	(703) 588-6686	lowery.carl@hq.navy.mil
	William Rutter	(202) 433-4105	william.rutter@ndw.navy.mil
	Dave Powell	(202) 433-4100	dave.powell@nsw.navy.mil

## *II. Letter of Invitation and List of Attendees*

<b>Agency</b>	<b>Representative</b>	<b>Telephone</b>	<b>E-Mail Address</b>
Department of Housing and Urban Development	Edda Aixa Nieves	(202) 331-5001	edda.a.nieves@hud.gov
Department of Justice	Lisa Harris	(202) 307-1873	harrisl@justice.usdoj.gov
UNICOR - Federal Prison Industry	Paul Spots	(202) 305-3848	psotts@central.unicor.gov
Department of the Treasury	Bob Harper	(202) 622-0500	robert.harper@treas.sprint.com
	Brenda Hemphill	(202) 622-0057	brenda.hemphill@treas.sprint.com
General Services Administration	Pat Bailey	(404) 331-2196	pat.bailey@gsa.gov
	Scott Ayers	(404) 331-0508	scott.ayers@gsa.gov
Department of Transportation	Rita Martin	(202) 366-9724	rmartin@ost.dot.gov
	George Kuchas	(202) 366-1614	george.kuchas@ost.dot.gov
Army Corps of Engineers	Monte Ferry	(202) 761-1748	not available
Environmental Protection Agency	Portia Johnson	(202) 260-2030	johnson.portia@epamail.epa.gov
Tennessee Valley Authority	Steven R. Ayers	(423) 751-7903	srayers@tva.gov
Social Security Administration	Mel Lorden	(410) 965-7225	mel.lorden@ssa.gov
NASA	Tony Cuticchia	(202) 358-1094	acuticch@hq.nasa.gov
	Dave Melton	(202) 358-2302	dave.melton@hq.nasa.gov
Department of State	Dave Wilson	(202) 647-3458	not available
DOD – DLA	Thomas Karst	(703) 767-3554	Thomas_karst@hq.dla.mil
	Darrell Sears	(703) 767-3506	Darrell_sears@hq.dla.mil



## *Strategic Storage Needs of the Federal Government*



*Record Storage*

*NARA, Regional Records  
Services, East Point, GA*

### III. Matrix of Locations and Storage Function

<b>Florida</b>				<b>G/O = Govt Owned    L = Leased    PS = Private Sector</b>			
<b>Location</b>	<b>G/O L or PS*</b>	<b>Sq Ft (000)</b>	<b>Gen Storage</b>	<b>Excess Storage</b>	<b>Supply Distrib</b>	<b>Primary Purpose of Warehouse and Storage Facility</b>	
1 NAVAL AIR STATION PENSACOLA	G/O	1,022	X		X	Active base supplies and a distribution area that includes FL, TX, TN, and Cuba.	
2 US AIR FORCE, SAUFLEY FIELD, PENSACOLA	G/O	38			X	Provides all base supply including local purchasing functions.	
3 EGLIN AIR FORCE BASE	G/O	1,233	X		X	Maintains aircraft parts, and performs local distribution functions.	
4 TYNDALL AIR FORCE BASE	G/O	382	X		X	Provides aircraft parts & performs local distribution functions.	
5 NASA, KENNEDY SPACE CENTER	G/O	2,187	X	X	X	Maintains administrative supplies, spacecraft payload supplies, and facility spare parts.	
6 PATRICK AFB & CAPE CANAVERAL AFS	G/O	438			X	Provides launch support, aircraft parts, hazardous materials and other base supplies.	
7 MID-FLORIDA FREEZER LTD., CAPE CANAVERAL	P/S	500	X			Storage and shipment of newsprint paper and citrus concentrate liquids.	
8 IDS, INC., CAPE CANAVERAL	PS	50	X		X	Provides foreign trade zone storage facilities including bar coding and freight forwarding.	
9 MACDILL AIR FORCE BASE	G/O	658	X		X	Storage of aircraft & related parts for base functions.	
10 JACKSONVILLE AIR NATIONAL GUARD	G/O	14	X	X	X	Supports aircraft, personnel, & provide base supplies.	
11 US MARINE BASE, BLOUNT ISLAND	G/O	262			X	Turnaround activities to unload, check, and reload supply ship.	
12 NAVAL AIR STATION, JACKSONVILLE	G/O	1,341	X	X	X	Provides supply and support for base aircraft, personnel.	
13 DLA DEFENSE REUTILIZATN OFC, JACKSONVILLE	G/O	70		X		Local point for disposal of excess and surplus personal property items.	
14 GSA WAREHOUSE, JACKSONVILLE	L	34	X			Vacant (terminated) leased space.	
15 MAYPORT NAVAL STATION, MAYPORT	G/O	185	X		X	Provides storage for reconditioned parts, and local base supplies.	
16 DEPARTMENT OF VETERANS AFFAIRS, MIAMI	L	40	X	X	X	Staging for distribution of new computers, and storage of hurricane, medical & facility supplies.	
<b>TOTAL</b>		<b>3,444</b>					

### III. Matrix of Locations and Storage Function

<b>Georgia</b>				<b>G/O = Govt Owned    L = Leased    PS = Private Sector</b>			
<b>Location</b>	<b>G/O L or PS*</b>	<b>Sq Ft (000)</b>	<b>Gen Storage</b>	<b>Excess Storage</b>	<b>Supply Distrib</b>	<b>Primary Purpose of Warehouse and Storage Facility</b>	
1 US NAVY TRIDENT REFIT FACILITY, KINGS BAY	G/O	285	X		X	Provides bulk and binnable storage for US, UK and other tenant submarine activities.	
2 NARA, REGIONAL RECORDS SERVICES, EAST POINT	G/O	221	X		X	Maintains storage facilities for Federal records, archives, and records management.	
3 GSA WAREHOUSE, 2115 MONROE DRIVE, ATLANTA	L	10	X	X		Storage of excess personal property, and slow moving office supplies.	
4 DOBBINS AIR FORCE BASE, MARIETTA	G/O	107	X		X	Provides all base supplies for the entire base. Inventory is turned over 3 to 4 times a year.	
5 NAS ATLANTA & GEORGIA AIR RESERVE, MARIETTA	G/O	160	X		X	Ready storage of quick deployment items such as trucks, tanks, and other field equipment.	
6 HHS/CDC, ATLANTA	L	65	X	X	X	Supports CDC contagion research operations.	
7 HHS/CDC PUBLICATIONS WAREHOUSE, CHAMBLEE	L	26	X		X	Publication, mailing, and storage of CDC literature.	
8 INTERNAL REVENUE SERVICE, TUCKER	L	64	X	X	X	Storage of IRS office supplies, forms, furniture, and items to be declared excess.	
9 UNICOR FEDERAL PRISON INDUSTRIES, ATLANTA	G/O	300	X		X	Repair of USPS mailbags, assembly of military uniforms and mattress construction operations.	
10 USDA/FS, CHATTAHOOCHEE NF, GAINESVILLE	G/O	50	X		X	Support facilities for operations and maintenance of the Chattahoochee & Oconee National Forests.	
11 VETERANS AFFAIRS HOSPITAL, ATLANTA	G/O	22	X	X	X	Storage and distribution of medical supplies to support the VA hospital.	
12 GSA/FSS SOUTHEAST DISTRIB FACILITY, PALMETTO	L	1,334	X		X	Distribution center for materials provided by FSS. Location is highly automated and mechanized.	
13 US ARMY INFANTRY CENTER, FORT BENNING	G/O	1,101	X		X	Deployment center and storage facility for army infantry clothing and gear.	
14 USDA, CARTER PLANT MATLS FACILITY, AMERICUS	G/O	26	X		X	Storage facilities for agricultural plant and related outdoor research equipment.	
15 FEMA/GSA FACILITY, THOMASVILLE	G/O	33	X	X	X	Maintains emergency FEMA field equipment, and GSA facility maintenance supplies.	
16 COE/USAF, 204 WELCH ST, SYLVESTER	L	42	X		X	Storage of large tents and support equipment ready for immediate deployment.	
17 DEFENSE DISTRIBUTION DEPOT, ALBANY	G/O	1,877	X		X	Provides complete warehousing facilities for co-located USMC and other DOD customers worldwide.	
18 USMC LOGISITICS BASE, FLT SUPPORT CTR, ALBANY	G/O	1,791	X		X	Warehousing and storage yards for military personal property and equipment.	
19 USAF DISTRIBUTION DEPOT, ALBANY	G/O	80	X		X	Provides storage for aircraft revetments (protective ground cover).	
20 USDA, SE NUT RESEARCH FACILITY, BYRON	G/O	23			X	Storage of pesticides, greenhouse supplies, and hazardous wastes to support facility research .	
21 WARNER ROBINS AIR FORCE BASE	G/O	3,748	X		X	Warehousing for facilities support of maintenance and operations.	
22 WARNER ROBINS DRMO	G/O	38	X	X		Local point for disposal of excess and surplus personal property items.	
23 PEP BOYS WAREHOUSE, MCDONOUGH	PS	400	X		X	Warehousing of automotive parts and supplies for the PEP Boys Company.	
24 FORD PARTS DISTRIBUTION CENTER, MCDONOUGH	PS	500	X		X	Distribution center for Ford auto parts and supplies to TN, KY, VA, NC, SC, AL, and MI.	
25 FORT GILLEM	G/O	3,100	X		X	Warehousing and distribution for AAFES. New facility is highly automted and mechanized.	
<b>TOTAL</b>		<b>15,403</b>					

### III. Matrix of Locations and Storage Function

#### Tennessee

		G/O = Govt Owned		L = Leased		PS = Private Sector			
Location	G/O L or PS*	Sq Ft (000)	Gen Storage	Excess Storage	Supply Distrib	Primary Purpose of Warehouse and Storage Facility			
1 DEPT OF VETERANS AFFAIRS, JOHNSON CITY	L	19	X		X	Storage and distribution of medical supplies to support the VA hospital.			
2 HOLSTON AMMUNITION PLANT, KINGSPORT	G/O	256	X		X	Facilities support for maintenance and operation of facility.			
3 TVA, SEVIER FOSSIL FUEL PLANT, ROGERSVILLE	G/O	10	X		X	Storage of spare parts and other materials to support power generation plant.			
4 DOI/NPS, SMOKY MOUNTAIN NP, GATLINBURG	G/O	44	X			Warehouse and storage yard support information center and park maintenance needs.			
5 TYSON AB, TN NATIONAL GUARD, MCGHEE	G/O	53	X		X	Provides base supply and field unit deployment equipment.			
6 TVA, NORRIS RESERVATION, NORRIS	G/O	132	X		X	Storage related to supplies for the hydroelectric plant, and water management research equipment.			
7 DOE, OAK RIDGE NATIONAL LAB, OAK RIDGE	G/O	13,132	X		X	Warehouses, stores, and distributes a wide variety of materials and supplies for the large facility.			
8 TVA, HARTSVILLE INVESTMENT RECOVERY CTR	G/O	1,200	X	X	X	Storage, distribution and sales of TVA facility related equipment.			
9 ARNOLD AIR FORCE BASE, TULLAHOMA	G/O	145	X		X	Storage of aviation research materials.			
10 TVA, CHATTANOOGA POWER SRVC, CHATTANOOGA	G/O	145	X		X	Supports the TVA research laboratory, as well as repair items for electrical contractors.			
11 DEPT. OF VETERANS AFFAIRS, MEMPHIS	L	34	X		X	Storage and distribution of medical supplies to support the VA hospital.			
12 NAVAL SUPPORT ACTIVITY, MID-SOUTH, MILLINGTON	G/O	122	X		X	Provides facility support for Naval Recruiting, Personnel R&D & Corps of Engineers Financial Center.			
13 DOI/FWS HATCHIE WILDLIFE REFUGE, HATCHIE	G/O	11	X		X	Storage area includes open outdoor equipment structures & shop buildings to support the refuge.			
<b>TOTAL</b>		<b>15,404</b>							

#### Total Square Footage of Facilities Visited

Florida	3,444,000
Georgia	15,403,000
Tennessee	15,404,000
<b>Grand Total</b>	<b>39,251,000</b>



*Strategic Storage Needs of the Federal Government*

*Narrow Isle Storage  
Eglin Air Force Base, FL*



## ***IV. Site Visits and Local Points of Contact***

### **Site Visits**

Site visits were the core of this warehouse study. At each site, the visit commenced with a briefing or meeting with the facility manager, base commander, or other personnel responsible for the maintenance or operation of the facility followed by a “walk and talk” tour of the facility. During these tours, our discussions with the agency personnel provided many perspectives on warehousing that were often mission specific and impacted the warehouse operations.

The ensuing pages contain a map of the three states in the study, a description of the occupant Federal agency’s mission (or private sector company’s mission) and our local point of contact with voice and e-mail information. All the square footages are rounded to the nearest 1,000 sq. ft. and are based either on the Worldwide Inventory database of 1996 or more precise information provided by the agency.

*Strategic Storage Needs of the Federal Government*

*Newsprint Paper Rolls*

*Mid-Florida Freezer Warehouse Ltd.,  
Cape Canaveral, FL*



*Small Parts Storage*

*Mayport Naval Station,  
Mayport, FL*



# Florida



- 1 NAVAL AIR STATION, PENSACOLA
- 2 US AIR FORCE, SAUFLEY FIELD, PENSACOLA
- 3 EGLIN AIR FORCE BASE
- 4 TYNDALL AIR FORCE BASE
- 5 NASA, KENNEDY SPACE CENTER
- 6 PATRICK AFB & CAPE CANAVERAL AFS
- 7 MID-FLORIDA FREEZER LTD., CAPE CANAVERAL
- 8 IDS, INC., CAPE CANAVERAL
- 9 MACDILL AIR FORCE BASE
- 10 JACKSONVILLE AIR NATIONAL GUARD
- 11 US MARINE BASE, BLOUNT ISLAND
- 12 NAVAL AIR STATION, JACKSONVILLE
- 13 DLA DEFENSE REUTILIZATN OFFICE, JACKSONVILLE
- 14 GSA WAREHOUSE, JACKSONVILLE
- 15 MAYPORT NAVAL STATION, MAYPORT
- 16 DEPARTMENT OF VETERANS AFFAIRS, MIAMI



## Florida

**1.**

### **Naval Air Station, Pensacola, FL**

**Point of Contact:**

Randy Hendricks

**Phone Number:**

(850) 452-4515 ext. 335

**E-mail:**

hendricksrr@pwcpens.navy.mil

**Square Footage:**

1,022,000 SQ. FT.

This Air Station is the Navy's initial training station for all pilots. The warehouse operation at NAS Pensacola supplies the base as well as the post-exchange (PX). This facility stocks active supply that is received by tractor-trailer. The distribution area of this warehouse operation includes the entire Gulf Coast from Memphis, TN, to Dallas TX, to Jacksonville, FL, and to Cuba.

**2.**

### **U.S. Air Force, Saufley Field, Pensacola, FL**

**Point of Contact:**

Commander James Cruz

**Phone Number:**

(850) 452-2732

**E-mail:**

cruzjg@pwcpens.navy.mil

**Square Footage:**

38,000 SQ. FT.

Air Force operations at Saufley Field are co-mingled with a Federal prison. Prison inmates maintain the grounds and the military operates the warehouses, which are located behind 10-foot high fences. The warehouse visited is used to supply the base "local purchasing" function.



**3.**

### **Eglin Air Force Base, FL**

**Point of Contact:**

Joseph R. Reed,  
Deputy Chief of Supply

**Phone Number:**

(850) 882-4300

**E-mail:**

reedjr@eglin.af.mil

**Square Footage:**

1,223,000 SQ. FT.

Eglin Air Force Base's mission is to provide for the developmental testing of all aviation equipment. Currently, this base is preparing for the new F-22 with new hangars and warehouses to accommodate this new aircraft. Since 1957, this base has stocked general supplies, jet engines, and overseas ready supplies. Most of the storage is short-term, with short-notice distribution readiness capabilities. Due to the high profile of the base and the nature of the items stored, Eglin Air Force Base has automated most of its operation.

***High, Narrow Isles***

***Naval Air Station,  
Jacksonville, FL***

**4.**  
**Tyndall Air Force Base,  
FL**

**Point of Contact:**

Bill Libbey, Base Supply Officer  
& Functional Area Chief

**Phone Number:**

(850) 283-4314

**E-mail:**

wlibby@sup.tyndall.af.mil

**Square Footage:**

382,000 SQ. FT.

The Tyndall Air Force Base warehouse operation provides aircraft parts and distributes local supplies. The warehouse operation has active turnover with no long-term storage. The supply and transportation functions have been relocated to the same warehouse in order to facilitate the urgency associated with both operations.

**5.**  
**NASA, Kennedy  
Space Center, FL**

**Point of Contact:**

Terry Krzywick

**Phone Number:**

(407) 867-7475

**E-mail:**

terry.krzywicki-1@ksc.nasa.gov

**Square Footage:**

2,187,000 SQ. FT.

NASA and the Kennedy Space Center share the same facility and services, but are run by different agencies: NASA and DOD, respectively. The warehouse facilities at these sites provide administrative, payload, and facility spare part supplies. The uniqueness of their missions impacts their storage facilities. The warehouses have overhead cranes, 50-foot high-density storage systems, and other special material handling equipment.

**6.**  
**Patrick Air Force Base  
and Cape Canaveral  
Air Force Station, FL**

**Point of Contact:**

Donna Wenzel

**Phone Number:**

(407) 494-8639

**E-mail:**

donna.wenzel@pafb.af.mil

**Square Footage:**

438,000 SQ. FT.

Warehouse space is located at both facilities that are part of the 45th Space Wing. These warehouses function as the base supply for Cape Canaveral and Patrick Air Force Base and two downrange launch support locations. Storage for Mobility Spares Kits, aircraft parts for the C-130 and HH-60's, critical launch support spares and hazardous material are also stored at these locations.



*Jet Engine Storage*

*Tyndall  
Air Force Base, FL*

7.

**Mid-Florida Freezer Warehouses, Ltd., Cape Canaveral, FL**

**Point of Contact:**

Mark Demary,  
Information Systems Manager

**Phone Number:**

(407) 783-9623

**E-mail:**

mademary@mffreezer.com

**Website:**

<http://www.mffreezer.com>

**Square Footage:**

500,000 SQ. FT.

This private sector company, and its subtenant, Integrated Distribution Services, Inc. (IDS), provides foreign trade zone storage for foreign companies. These companies strongly believe in the use of computers and real-time radio frequency technology which enables them to check a shipping manifest before inbound cargo arrives in port. Damaged goods can be identified and remedies negotiated using computer file photos (.jpg, .gif, .tif software pictorial files are used). International information exchanges are also accomplished using Electric Data Interchange via the internet.

8.

**Integrated Distribution Services, Inc., Cape Canaveral, FL**

**Point of Contact:**

David T. Adams, President

**Phone Number:**

(407) 799-9100

**E-mail:**

Not Available

**Square Footage:**

50,000 SQ. FT.

Integrated Distribution Services, Inc. (IDS), a subtenant of Mid-Florida Freezer Warehouses, Ltd., offers freight forwarding, bar coded storage, transportation, and foreign trade zone warehousing. The Disney Cruise Line is IDS's primary client.

9.

**MacDill Air Force Base, FL**

**Point of Contact:**

Bob Schiaffo

**Phone Number:**

(813) 828-2038

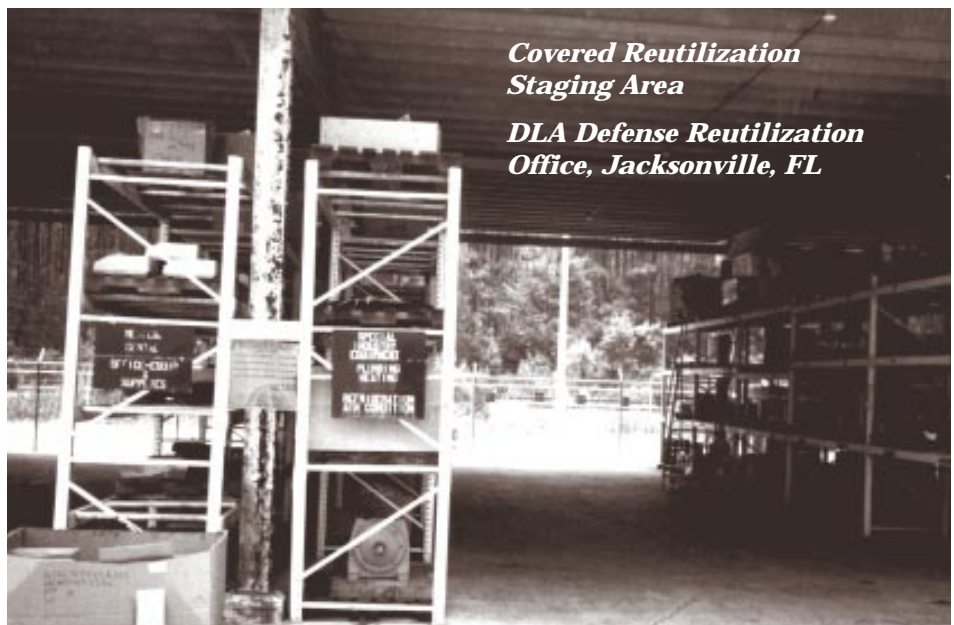
**E-mail:**

schiaffb@macdill.af.mil

**Square Footage:**

658,000 SQ. FT.

The MacDill Air Force Base warehouses, stores and disseminates aircraft parts and local base supplies. Presently, a new warehouse facility is being built in an aircraft hangar to store aircraft parts on the flight deck area. This new warehouse space will use high-density vertical storage technology.



*Covered Reutilization Staging Area*

*DLA Defense Reutilization Office, Jacksonville, FL*

**10.**  
**Jacksonville Air National Guard, Jacksonville, FL**

**Point of Contact:**

Major Richard Entwistle

**Phone Number:**

(904) 741-7401

**E-mail:**

rentwistle@fljax.ang.af.mil

**Square Footage:**

14,000 SQ. FT.

The Jacksonville Air National Guard provides air support for the State of Florida. The warehouse operation on this base provides base supplies to support the aircraft and personnel. The warehouse was built in 1969 with ceilings that are only 13-feet high. Presently, there are plans to add a high-density storage system that would increase operational efficiency by 20-30%. The Jacksonville Air National Guard has approved plans to build a new 4,000 sq. ft. warehouse facility in the near future.

**11.**  
**U.S. Marine Base, Blount Island, FL**

**Point of Contact:**

Chip Newton

**Phone Number:**

(904) 696-5063

**E-mail:**

newtonw@bic.usmc.mil

**Square Footage:**

262,000 SQ. FT.

Blount Island's mission is to provide warehousing services to supply 13 ships around the world. These ships carry supplies and equipment to sustain 60,000 soldiers for up to 30 of days of war. Almost all of the storage is short-term. The warehouse uses a rotation system that requires all of the stocked items to be unloaded from the ships, rechecked, and then restocked back onto the ships.

**12.**  
**Naval Air Station, Jacksonville, FL**

**Point of Contact:**

James A. Morgan,  
Deputy Facilities Officer  
Chief Engineer,  
Facilities Department

**Phone Number:**

(904) 502-2118

**E-mail:**

fmorgan@nasjax.org

**Square Footage:**

1,341,000 SQ. FT.

Naval Air Station Jacksonville provides training for pilots and has a Navy campus on base. The warehouse function supports the base aircraft, personnel, and disposition of unused items. These warehouses often ship items such as aircraft, ships, and barges that never enter the warehouse facility. This operation ships items worldwide.



**Hydraulic Lift Tables**

**U.S. Marine Base,  
Blount Island, FL**



**Naval Aircraft Historic  
Preservation Facility**

**Naval Air Station Pensacola,  
Pensacola, FL**

**13.  
DLA Defense  
Reutilization  
Marketing Office,  
Jacksonville, FL**

**Point of Contact:**

Linda Poole

**Phone Number:**

(904) 772-9248 ext. 28

**E-mail:**

lpool@jacksonville.drms.dla.mil

**Square footage:**

70,000 SQ. FT.

The center sells and distributes surplus and refurbished items, using the Internet and first-in-first-out method of inventory control. These items can be sent to any agency at any location.

**14.  
GSA Warehouse,  
Jacksonville, FL**

**Point of Contact:**

Carol Bravo,  
Director of Finance and Marketing,  
Phillips and Company

**Phone Number:**

(904) 396-9960

**Square Footage:**

34,000 SQ. FT.

This GSA leased facility was formerly occupied by the IRS and was built to accommodate the storage of documents. At present, the lease has been terminated.



**15.**

**Mayport Naval Station,  
Mayport, FL**

**Point of Contact:**

Bob Patrinni,  
Deputy Supply Officer,  
Supply Department

**Phone Number:**

(904) 270-6160

**E-mail:**

r.petrini@nsmayport.spear.navy.mil

**Square Footage:**

185,000 SQ. FT.

The Mayport Naval Station supports the H60 and H2 helicopters. This warehouse stores "A" (ready to use) reconditioned parts and local base supplies.

**16.**

**Department of  
Veterans Affairs,  
Miami, FL**

**Point of Contact:**

Gwen Moore

**Phone Number:**

(305) 324-3281

**E-mail:**

gwenmoore@med.va.gov

**Square Footage:**

40,000 SQ. FT.

This warehouse serves the Miami VA Medical Center in Miami, Florida. The inventory at this location has a high rate of turnover, which consists of computers, hurricane supplies, medical supplies, building management stock, and excess items.

***Warehouse Staging Area***

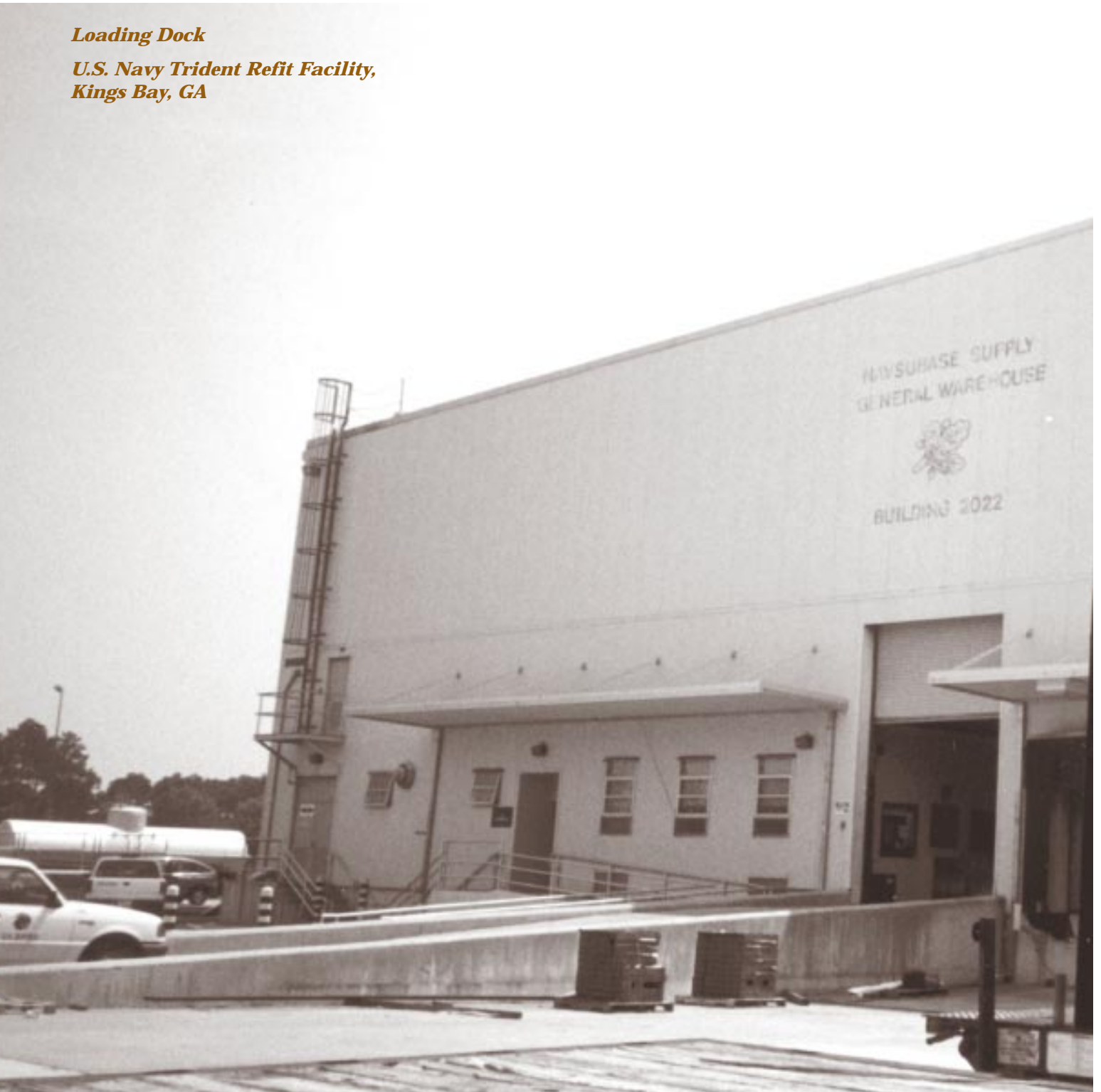
***Mayport Naval Station,  
Mayport, FL***



*Strategic Storage Needs of the Federal Government*

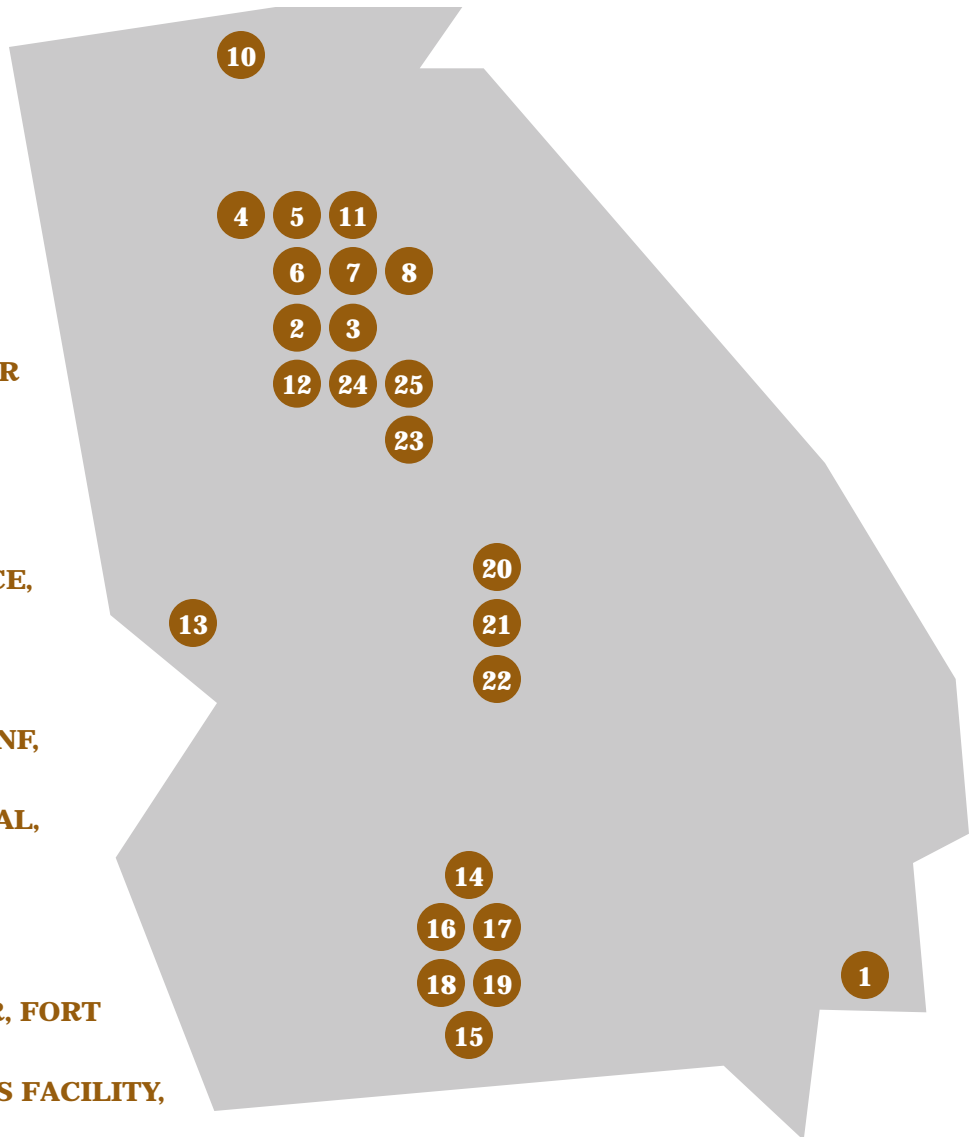
***Loading Dock***

***U.S. Navy Trident Refit Facility,  
Kings Bay, GA***



# Georgia

- 1 US NAVY TRIDENT REFIT FACILITY, KINGS BAY
- 2 NARA, REGIONAL RECORDS SERVICES, EAST POINT
- 3 GSA WAREHOUSE, 2115 MONROE DRIVE, ATLANTA
- 4 DOBBINS AIR FORCE BASE, MARIETTA
- 5 NAS ATLANTA & GEORGIA AIR RESERVE, MARIETTA
- 6 HHS/CDC, ATLANTA
- 7 HHS/CDC PUBLICATIONS WAREHOUSE, CHAMBLEE
- 8 INTERNAL REVENUE SERVICE, TUCKER
- 9 UNICOR FEDERAL PRISON INDUSTRIES, ATLANTA
- 10 USDA/FS, CHATTAHOOCHEE NF, GAINESVILLE
- 11 VETERANS AFFAIRS HOSPITAL, ATLANTA
- 12 GSA/FSS SOUTHEAST DISTRIBUTION FACILITY, PALMETTO
- 13 US ARMY INFANTRY CENTER, FORT BENNING
- 14 USDA, CARTER PLANT MATLS FACILITY, AMERICUS
- 15 FEMA/GSA FACILITY, THOMASVILLE
- 16 COE/USAF, 204 WELCH ST, SYLVESTER
- 17 DEFENSE DISTRIBUTION DEPOT, ALBANY
- 18 USMC LOGISITICS BASE, FLT SUPPORT CTR, ALBANY



- 19 USAF DISTRIBUTION DEPOT, ALBANY
- 20 USDA, SE NUT RESEARCH FACILITY, BYRON
- 21 WARNER ROBINS AIR FORCE BASE
- 22 WARNER ROBINS DRMO
- 23 PEP BOYS WAREHOUSE, MCDONOUGH
- 24 FORD PARTS DISTRIBUTION CENTER, MCDONOUGH
- 25 FORT GILLEM



**Excess Personal Property**  
**GSA Warehouse, Atlanta, GA**



**1.**

**U.S. Navy, Trident  
Refit Facility, Naval  
Submarine Base,  
Kings Bay, GA**

**Point of Contact:**

Fred S. Culvyhouse,  
Captain, SC, USN

**Phone Number:**

(912) 673-2925 ext. 9740

**E-mail:**

[captain\\_culvyhouse@trfkbnavy.mil](mailto:captain_culvyhouse@trfkbnavy.mil)

**Square Footage:**

285,000 SQ. FT.

The warehouse and distribution operation of the Supply Department at TRIREFAC serves and supports all the tenant activities for the entire submarine base (10 Trident submarines, United Kingdom submarines and various other customers). The majority of the materials stocked are mission specific. Of the eight warehouses, the two largest utilize automated storage systems for binnable items which make up approximately 55% of the items stocked. The remaining 45% are bulk materials.

2.

**National Archives and Records Administration (NARA), Office of Regional Records Services, Southeast Region, East Point, GA**

**Point of Contact:**

James McSweeney

**Phone Number:**

(404) 763-7438

**E-mail:**

James.McSweeney@NARA.gov

**Square Footage:**

221,000 SQ. FT.

The NARA, Southeast Region facility has holdings in excess of 1.3 million cubic feet of records, including 72,000 cubic feet of historically valuable permanent records. NARA provides records storage and reference services for Federal agencies in the Southeast Region and provides workshops and reference services to members of academic, genealogical, archival and research communities. This warehouse was built as a World War II Army supply depot.

3.

**GSA Warehouse, 2115 Monroe Drive, Atlanta, GA**

**Point of Contact:**

Joel Pederson, GSA

**Phone Number:**

(404) 562-0053

**E-mail:**

joel.penderson@gsa.gov

**Square Footage:**

10,000 SQ. FT.

This warehouse is leased and used by GSA. The space is currently being used to store large display and slow moving office supply items.



**Record Storage**

**NARA, Regional Record Services, East Point, GA**

4.

**Dobbins Air Force Base, Marietta, GA**

**Point of Contact:**

Linda McEver

**Phone Number:**

(770) 919-4809

**E-mail:**

Linda.McEver@mge.afres.af.mil

**Square Footage:**

107,000 SQ. FT.

The primary mission of this base is to service and support the C-130 aircraft. The warehouse operation supplies the entire base, including items formerly provided at the base supply store which closed last year. The warehouse uses moveable shelving to consolidate space and has an automated high-density storage area for small parts. The warehoused inventory has a turnover rate of three to four times per year.

5.

**Naval Air Station, Atlanta & Georgia Air Reserve, Marietta, GA**

**Point of Contact:**

Linda McEver

**Phone Number:**

(770) 919-4809

**E-mail:**

Linda.McEver@mge.afres.af.mil

**Square Footage:**

160,000 SQ. FT.

The Naval Reserves use "Hangar 838" as a storage building which is co-utilized by the Marines. The Marines use one part of the hangar to store supplies required to build an airfield facility close to a battlefield. Other areas of the hangar store trucks, tanks, etc., that require quick deployment.

6.

**HHS/CDC, 4998C South Royal Atlanta Pkwy, Atlanta, GA**

**Point of Contact:**

Pat Fisher

**Phone Number:**

(770) 723-7081

**E-mail:**

paf2@cdc.gov

**Square Footage:**

65,000 SQ. FT.

This GSA leased facility is the Health and Human Services, Centers for Disease Control's (CDC's) largest warehouse in Atlanta, GA. The warehouse supports CDC field operations relating to contagion research. Because of security concerns at the CDC, the warehouse is responsible for the receipt and shipping of all CDC addressed items.



7.

**HHS/CDC  
Publication Warehouse,  
1275 Oak Brook Dr.,  
Chamblee, GA**

**Point of Contact:**

Pat Fisher

**Phone Number:**

(770) 723-7081

**E-mail:**

paf2@cdc.gov

**Square Footage:**

26,000 SQ. FT.

This is a GSA leased warehouse used by CDC to receive and stock its publications. This facility has the capability to produce copies of publications using high speed, high quality reproduction technology. This warehouse operation is responsible for shipment of the publications using a computer maintained mailing list.

8.

**Internal Revenue  
Service, 2650 Button  
Gwinnett Rd.,  
Tucker, GA**

**Point of Contact:**

Don Maloney

**Phone Number:**

(770) 446-3767

**E-mail:**

None Available

**Square Footage:**

64,000 SQ. FT.

This GSA leased warehouse stores paper supplies, IRS forms, and items that are going through the excess process, including a large amount of furniture.

9.

**UNICOR Federal  
Prison Industries/  
Federal Prison,  
Atlanta, GA**

**Point of Contact:**

Robert Turner

**Phone Number:**

(404) 635-5410

**E-mail:**

rturner@central.unicor.gov

**Square Footage:**

300,000 SQ. FT.

UNICOR's main warehouse was built approximately seven years ago. This modern facility has HVAC, 20-foot high ceilings, three-phase electricity, and a 25,000 lbs. capacity elevator. This warehouse supports the assembly of mattresses, DOD uniforms, and USPS mailbag repair.

*Outdoor Equipment Storage*

*USDA/FS Chattahoochee,  
Gainesville, GA*





**10.**  
**USDA/FS,  
Chattahoochee  
National Forest,  
Gainesville, GA**

**Point of Contact:**

Mike Ferguson

**Phone number:**

(770) 287-9771

**E-mail:**

Not Available

**Square Footage:**

50,000 SQ. FT.

This facility supports and facilitates the operations in the Chattahoochee and Oconee National Forests. Covered storage and warehouse areas store vehicles, equipment, and supplies in a “work yard” setting.

**11.**  
**Department of  
Veterans Affairs  
Hospital, Atlanta, GA**

**Point of Contact:**

Ron Coleman

**Phone Number:**

(404) 235-3066

**E-mail:**

coleman.ronaldj@atlanta.va.gov

**Square Footage:**

22,000 SQ. FT.

This warehouse is located in the basement of the VA hospital. Due to the hospital’s mission, the warehouse includes “clean room” space to store sterile surgical stock. The operating room storage area has a sterilization center for surgical instruments, with an elevator to the operating room.

**12.**  
**GSA/FSS, Southeast  
Distribution Facility,  
Palmetto, GA**

**Point of Contact:**

Elmer Campbell

**Phone Number:**

(770) 463-6020

**E-mail:**

campbell.elmer@gsa.gov

**Square Footage:**

1,334,000 SQ. FT.

This warehouse and distribution operation is highly mechanized and uses conveyor systems, gravity flow racks, and an extensive range of automation. The facility was built with a towveyor system, which is no longer in operation due to downsizing of the overall distribution program. Space is to be made available at this location for possible occupancy by NARA, currently located in East Point, Georgia.



**Conveyor Delivery System  
GSA/FSS, Palmetto, GA**

**13.**

**U.S. Army  
Infantry Center,  
Fort Benning, GA**

**Point of Contact:**

Irma Davis

**Phone Number:**

(757) 727-2576/2560

**E-mail:**

davisi@monroe.army.mil

**Square Footage:**

1,101,000 SQ. FT.

Fort Benning is a major U.S. Army troop deployment center. The warehousing mission of this base is to provide clothing and gear to the men and women in the U.S. Army. Every week, Fort Benning supplies 50-150 people with full outfit gear. Fort Benning has recently built a 50,000 sq. ft. warehouse to accommodate heavy troop supply deployment. This warehouse has the capability to install computer workstations anywhere in the warehouse. The overhead doors allow several deployment activities to take place simultaneously.

**14.**

**USDA, Jimmy Carter  
Plant Materials  
Facility, Americus, GA**

**Point of Contact:**

Malcolm Kirkland

**Phone number:**

(912) 924-4499

**E-mail:**

None Available

**Square footage:**

26,000 SQ. FT.

This facility was established in 1936 and is located on about 300 acres of land. Research on plants for water quality and/or soil erosion is performed here. The storage needs at this location relate to outdoor work and equipment.

**Warehousing**

**U.S. Army Infantry Center,  
Fort Benning, GA**

**15.**

**FEMA/GSA Facility,  
Thomasville, GA**

**Point of Contact:**

Rhonda Collins, GSA

**Phone Number:**

(912) 225-4608

**E-mail:**

rhonda.collins@gsa.gov

**Square Footage:**

33,000 SQ. FT.

FEMA has two buildings at this location. The first building is a 3,600 sq. ft. steel butler building that stores rolls of wire and emergency deployment items. This warehouse is set up in a drive-through configuration. The second building is a World War II vintage warehouse that is used for long-term storage of maintenance and hard to find items. GSA also occupies a similar World War II vintage building for the storage of plumbing items and office furniture.



**16.**

**COE/USAF,  
204 East Front Street,  
Sylvester, GA**

**Point of Contact:**

Gerald Mann, Corps of Engineers

**Phone Number:**

(912) 652-5032

**E-mail:**

gerald.t.mann@sas02.usace.army.mil

**Square Footage:**

42,000 SQ. FT.

This COE facility is leased for the Air Force and located near the Albany, Georgia, Marine Corps Base. This is a steel butler building that is presently storing tent and related equipment for deployment and field use. Upon issuance of these items, they will not be restocked. COE has indicated that this warehouse is currently under a month-to-month lease agreement and that the Air Force plans to reuse the facility for a yet to be determined purpose.

**17.**

**Defense Distribution  
Depot, Albany, GA**

**Point of Contact:**

Nora S. Huete,  
Lieutenant Colonel, USMC,  
Commander

**Phone Number:**

(912) 439-5801

**E-mail:**

ltcol\_nora\_huete@smtp.ddc.dla.mil

**Square Footage:**

1,877,000 SQ. FT.

This DLA depot provides complete warehousing and distribution services to the co-located Marine Corps Logistic Base, Albany, GA (MCLB) and other DOD customers worldwide. The depot has two state-of-the-art storage facilities for Meals Ready to Eat (MREs) and hazardous materials storage. Other inventory includes clothing, textiles, protective wear, combat and military vehicle components, electronics, radiological equipment, and weapons components. The covered storage facilities include 12 warehouses constructed entirely of concrete.

**18.**

**Marine Corps  
Logistics Base, Fleet  
Support Center (FSC),  
Albany, GA**

**Point of Contact:**

Rodney J. Jarvis,  
Lt. Colonel, USMC, Director,  
Fleet Support Center

**Phone Number:**

(912) 439-5880

**E-mail:**

jarvisr@ala.usmc.mil

**Square Footage:**

1,791,000 SQ. FT.

This operation is one of the largest supply operations on the East Coast. Some of the buildings that house the warehouse operation are constructed of concrete. This facility has a large amount of open land acreage used for long-term parking of tanks, jeeps, portable bridges, etc., that are maintained and ready for deployment. To extend the shelf life and period until re-inspection of the stored items, many of the buildings are dehumidified. Also, where feasible, the Marines are using shrink-wrap plastic to protect and extend the useful life of vehicles and other machinery stored in the open parking areas.

**19.**

**U.S. Air Force  
Distribution Depot,  
Albany, GA**

**Point of Contact:**

Staff Sargent Callahan

**Phone Number:**

(912) 439-5957

**E-mail:**

Not Available

**Square Footage:**

80,000 SQ. FT.

This warehouse is on the U.S. Marine Corps military base at Albany, Georgia. The warehouse is used to store aircraft revetments (steel protection and covering for aircraft). This warehouse and outside storage area also functions as a depot for large items that require specialized repair or maintenance.

**20.**

**USDA, SE Nut  
Research Facility,  
Byron, GA**

**Point of Contact:**

Jack Ellis

**Phone Number:**

(706) 546-3575

**E-mail:**

jellis@tifton.cpes.peachnet.edu

**Square Footage:**

23,000 SQ. FT.

This research facility studies pecan and peach trees. Many of the items are stored under equipment overhangs and in a steel butler building. Items stored include pesticides, greenhouse supplies, and hazardous wastes.

**21.**

**Warner Robins Air  
Force Base, GA**

**Point of Contact:**

Carlos Fagundo

**Phone Number:**

(912) 926-5820 ext.104

**E-mail:**

carlos.fagundo@robins.af.mil

**Square Footage:**

3,748,000 SQ. FT.

Warner Robins has a very large warehouse facility. This Air Force Base storage facility supplies and supports the C-130, C-141, B-1, C-5, F-15 aircraft, and local base. However, because of issues associated with the A-76 study, DLA would not permit the SWING team to visit the majority of its warehouse space. The Civil Engineering maintenance warehouse that provides maintenance support for the base was visited. Building materials made up the biggest component of stored materials in this warehouse.



**High Density Storage Unit  
NAS Atlanta, Marietta, GA**



**22.**

**Warner Robins DRMO,  
Warner Robins Air  
Force Base, GA**

**Point of Contact:**

Ann Williams

**Phone Number:**

(912) 926-1110

**E-mail:**

annwilliams  
@warnernt-ex.drms.dla.mil

**Square Footage:**

38,000 SQ. FT.

This is a large DRMO operation that is responsible for receiving and disposing of government equipment and supplies that are no longer needed. Also, there is a scrap metal operation on-site.

**23.**

**PEP Boys Regional  
Distribution  
Warehouse,  
McDonough, GA**

**Point of Contact:**

John Monroe, Plant Manager

**Phone Number:**

(770) 957-7337

**E-mail:**

Not Available

**Square Footage:**

400,000 SQ. FT.

PEP BOYS is a 75-year-old company that sells automobile related parts and supplies. This warehouse was built in 1990 and uses its 35-foot high ceiling space effectively. The warehouse operates on "just-in-time" and "real-time" computer information to ship to 60 stores a day using 20-30 trucks.

**Tire Storage**

**Pep Boys Regional  
Distribution Warehouse,  
McDonough, GA**



**24.**

**FORD Atlanta Parts Distribution Center, McDonough, GA**

**Point of Contact:**

Gary Rabourn

**Phone Number:**

(770) 914-3198

**E-mail:**

grabourn@ford.com

**Square Footage:**

500,000 SQ. FT.

This warehouse operation ships all Ford dealership parts to TN, KY, VA, NC, SC, AL, and MI. Ford leases the warehouse, but had the facility built to its specifications, this includes a rail spur that leads directly into the warehouse for bulky parts. This facility also has a conveyor and towveyor system in operation. The warehouse stocks and ships 60,000 separate parts that are worth over \$570 million a year.

**25.**

**U. S. Army Base, Fort Gillem, GA**

**Point of Contact:**

Dao Huynh, Installation Space Manager/Industrial Engineer

**Phone Number:**

(404) 464-2789

**E-mail:**

huynhd@forscom.army.mil

**Square Footage:**

3,100,000 SQ. FT.

This warehouse is part of an AAFES facility. This is a new and very large warehouse that consolidated its warehouses for the storage and distribution of products to AAFES stores in the northeast. This facility was built with connecting entries into four (corner) adjoining warehouses.

**Multi Level Racking  
Fort Gillem, GA**



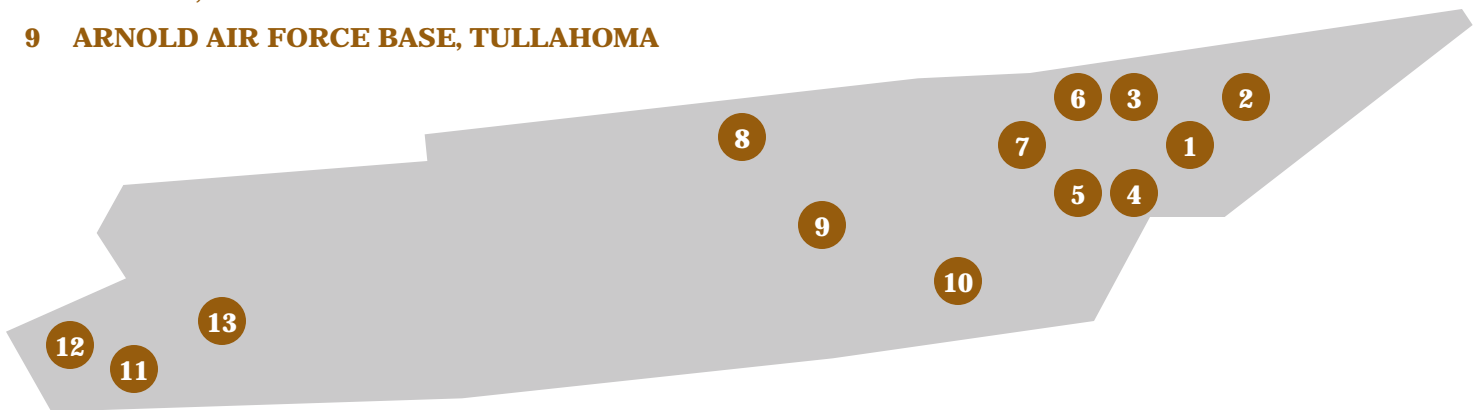
*Strategic Storage Needs of the Federal Government*



***Outside Equipment Storage  
Tennessee Valley Authority  
(TVA), Norris Reservation,  
Norris, TN***

# Tennessee

- 1 DEPARTMENT OF VETERANS AFFAIRS, JOHNSON CITY
- 2 HOLSTON AMMUNITION PLANT, KINGSPORT
- 3 TVA, SEVIER FOSSIL FUEL PLANT, ROGERSVILLE
- 4 DOI/NPS, SMOKY MOUNTAINS NP, GATLINBURG
- 5 TYSON AB, TN NATIONAL GUARD, MCGHEE
- 6 TVA, NORRIS RESERVATION, NORRIS
- 7 DOE, OAK RIDGE NATIONAL LAB, OAK RIDGE
- 8 TVA, HARTSVILLE INVESTMENT RECOVERY CENTER, HARTSVILLE
- 9 ARNOLD AIR FORCE BASE, TULLAHOMA



- 10 TVA, CHATTANOOGA POWER SERVICE CENTER, CHATTANOOGA
- 11 DEPARTMENT OF VETERANS AFFAIRS, MEMPHIS
- 12 NAVAL SUPPORT ACTIVITY, MID-SOUTH, MILLINGTON
- 13 DOI/FWS HATCHIE WILDLIFE REFUGE, HATCHIE





**Steel Frame "C" Racks**  
**TVA, John Sevier Fossil Fuel**  
**Plant, Rogersville, TN**

**1.**  
**Department of**  
**Veterans Affairs,**  
**East King Street,**  
**Johnson City, TN**

**Point of Contact:**

Lee Roy Bennett

**Phone Number:**

(423) 926-1171 ext.7595

**E-mail:**

bennett.lee\_roy@mtn-home.va.gov

**Square Footage:**

19,000 SQ. FT.

This is a GSA leased facility. This warehouse operation has now moved into a new facility adjoining the VA hospital in Johnson City. The location of the new warehouse eliminates the several mile travel distance that was encountered when transporting items from the warehouse to the hospital.

**2.**  
**Holston Army**  
**Ammunition Plant,**  
**Kingsport, TN**

**Point of Contact:**

Paul Hively

**Phone Number:**

(423) 578-6295

**E-mail:**

hively\_pw@holston-aap.com

**Square Footage:**

256,000 SQ. FT.

The Holston Ammunition Plant is an Army facility that produces explosives. The minerals and chemicals that are used to produce the explosives are brought to the site by railroad. Coal, gravel, and pipes are stored on outside storage lots. The warehouse structures are typical World War II wood construction with heavy floor load capacity. This operation and base maintenance has been contracted out since 1942. There are plans for a major renovation to the plant in the near future.

**(photo at right)**  
**Temporary Storage Sheds**

**Tennessee National Guard,**  
**Tyson Air Base, McGhee, TN**

**3.**

**TVA, John Sevier Fossil Fuel Plant, Rogersville, TN**

**Point of Contact:**

James Lawhon

**Phone Number:**

(423) 717-2071

**E-mail:**

jelawhon@tva.gov

**Square Footage:**

10,000 SQ. FT.

The John Sevier Fossil Fuel Plant is a TVA coal burning electric generation plant. The warehouse is connected to the plant and consists of an upper (street level) and lower floor with supplies for the maintenance shop located on the upper floor. The majority of the storage is bulky and is located on the lower floor. Movement of these items to and from storage is by elevator.

**4.**

**DOI/NPS, Great Smoky Mountains National Park, Gatlinburg, TN**

**Point of Contact:**

Wayne Newcomb

**Phone Number:**

(423) 436-1278

**E-mail:**

None Available

**Square Footage:**

44,000 SQ. FT.

The warehouse operations consist of a warehouse, open storage structures and storage yards for vehicles, boats, and supplies to run the National Park. The storage is spread over several different areas across the Park. This facility has a small office that abuts a steel roofed warehouse building addition.

**5.**

**Tyson Air Base, Tennessee National Guard, McGhee, TN**

**Point of Contact:**

Sargent Harris Huffstetler

**Phone Number:**

(423) 985-3340

**E-mail:**

harris.huffstetler@tnknox.ang.af.mil

**Square Footage:**

53,000 SQ. FT.

The Tennessee National Guard's mission here is to support the 13th Air Refueling Wing. These aircraft refuel other aircraft while in flight. The base supply, which was established in 1957, warehouses everything from "airplane parts to paper towels." The warehouse space is very efficient and has a high degree of flexibility which is accomplished by utilizing high density storage, special bins for bulk storage, automatic moving shelves, and accordion roller tables.



**6.**

**TVA, Norris Reservation, Norris, TN**

**Point of Contact:**

Charles Overstreet

**Phone Number:**

(423) 632-3690

**E-mail:**

cloverstreet@tva.gov

**Square Footage:**

132,000 SQ. FT.

The Norris Reservation is the site of a TVA hydroelectric plant. The warehouse and storage yard supplies the hydroelectric plant and water management research.

**7.**

**DOE, Oak Ridge National Lab, Oak Ridge, TN**

**Point of Contact:**

Katy Kates

**Phone Number:**

(423) 576-0977

**E-mail:**

sekates@oro.doe.gov

**Square Footage:**

13,132,000 SQ. FT.

The DOE facility consists of three "campuses" (Oak Ridge National Laboratory, Y-12 Plant, and East Tennessee Technology Park). The facilities store, protect, handle, recycle, and recover highly enriched uranium, heavy water, plutonium, lithium materials, etc. The methods of storage and warehousing at this location are material specific. Many of the containers were designed for radiation confinement. The original development of this facility included many buildings that are not currently used due to contamination, special use construction, or major renovation needs.



**Floor Level And Mezzanine Storage**

**Arnold Air Force Base, Tullahoma, TN**

**8.**

**TVA, Hartsville  
Investment Recovery  
Center, Hartsville, TN**

**Point of Contact:**

Bill Weeks

**Phone Number:**

(256) 314-7452

**E-mail:**

bhweeks@tva.gov

**Square Footage:**

1,200,000 SQ. FT.

This site is the location of the partially complete Hartsville Nuclear Electric Plant. This plant's construction began in 1979 and when the project was canceled in the early 80's, construction was stopped. With this major investment of infrastructure not being used for the purpose that it was designed for, TVA turned this site into a major distribution center for TVA supplies in 1985.

**9.**

**Arnold Air Force Base,  
Tullahoma, TN**

**Point of Contact:**

Lt. Chris Boone

**Phone Number:**

(931) 454-7077

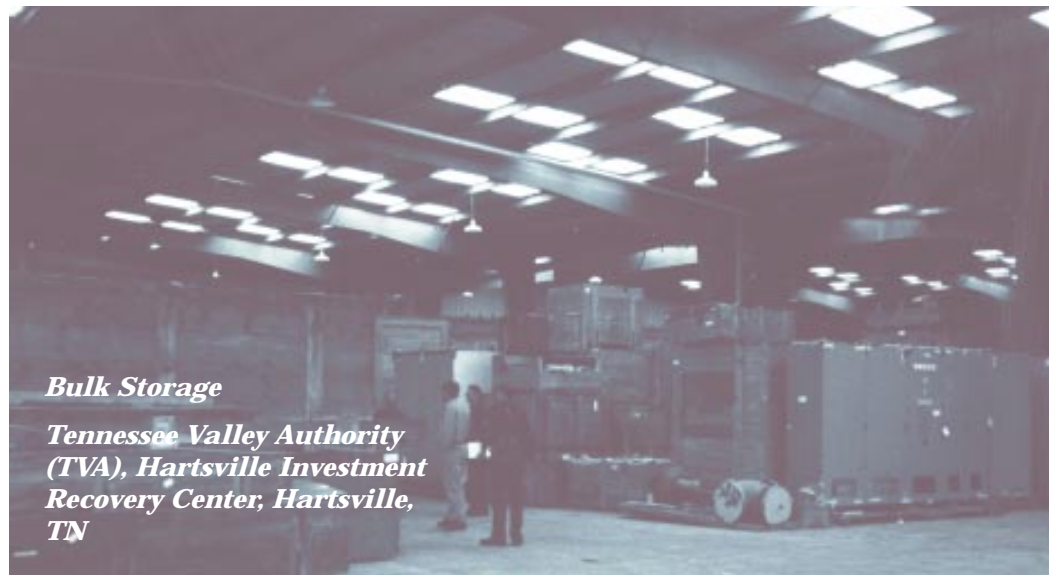
**E-mail:**

boonec@hap.arnold.af.mil

**Square Footage:**

246,000 SQ. FT.

The mission of this base is aviation research and support, and storage of the associated research materials. Jet engines are studied as well as aerodynamics. Part of the research facility includes one of the world's largest wind tunnels. The warehouse is constructed with an overhead crane system to move extremely heavy wind tunnel parts and a unique motorized racking system.



*Bulk Storage*

*Tennessee Valley Authority  
(TVA), Hartsville Investment  
Recovery Center, Hartsville,  
TN*



## Tennessee

**10.**

### **TVA, Chattanooga Power Service Center, Chattanooga, TN**

**Point of Contact:**

Bill Weeks

**Phone Number:**

(256) 314-7452

**E-mail:**

bhweeks@tva.gov

**Square Footage:**

145,000 SQ. FT.

The TVA has an electrical laboratory at this location. The items warehoused at this facility consist of two parts: research laboratory equipment and stock items for the electrical contractors. The laboratory and contractor supply operations are located in separate buildings.

**11.**

### **Department of Veterans Affairs, 2924/2926 Datsun Drive, Memphis, TN**

**Point of Contact:**

Florence Winfield

**Phone Number:**

(901) 577-7227

**E-mail:**

winfield.florence\_a+@memphis.va.gov

**Square Footage:**

34,000 SQ. FT.

This is a GSA leased facility. The VA stores medical equipment and supplies in this warehouse. The VA is currently building a new hospital on Jefferson Street in Memphis, TN. The VA indicated that during the "move in period" additional storage space would be required and GSA has leased contiguous warehouse space to facilitate stocking the new hospital.

**12.**

### **Naval Support Activity, Mid-South, Millington, TN**

**Point of Contact:**

Rodger Aitken

**Phone Number:**

(901) 874-5625

**E-mail:**

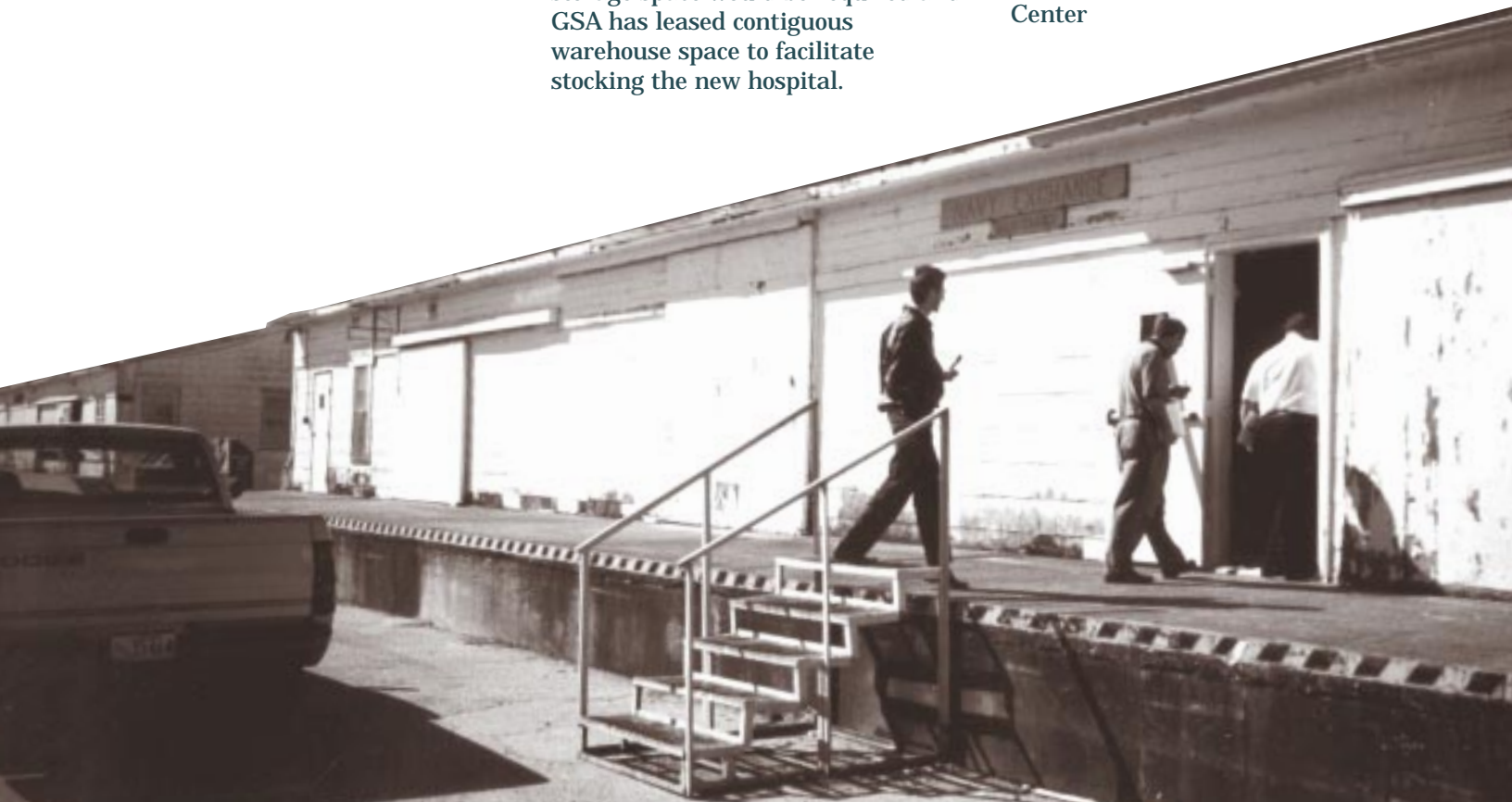
raitken

@navsupport-midsouth.navy.mil

**Square Footage:**

122,000 SQ. FT.

The storage function of this base operation is to provide support for 29 tenant commands, including: Naval Personnel Command, Navy Recruiting Command, Naval Personnel Research and Developmental Center, and the Corps of Engineers Financial Center



**13.**

**DOI/FWS, Hatchie Wildlife Refuge, Hatchie, TN**

**Point of Contact:**

Janice Hinsley

**Phone Number:**

(901) 772-0501

**E-mail:**

janice\_hinsley@fws.gov

**Square Footage:**

11,000 SQ. FT.

The mission of the Hatchie Wildlife Refuge is to support waterfowl wildlife and to increase its presence. The storage area in this national refuge consists of several equipment overhang structures, an office and workshop building, and a carpentry building.

**Veterans Affairs New Warehouse Under Construction**

**Department Of Veterans Affairs, Johnson City, TN**



*(photo at left)*

**Typical Wooden WWII Storage Building**

**Naval Support Activity, Mid-South, Millington, TN**

*Strategic Storage Needs of the Federal Government*

***Wright-Patterson Air Force Base,  
Dayton, OH***



***GSA/FSS, Southwest Regional  
Distribution Center,  
Fort Worth, TX***



# *Other Locations Visited*

## **Wright-Patterson Air Force Base, Dayton, OH**

**Point of Contact:**

Marty Greer, Chief Engineer

**Phone Number:**

(937) 257-3078

**E-mail:**

mgreer@wpgate1.wpafb.af.mil

**Square Footage:**

Not Applicable

The mission at Wright-Patterson is to provide engineering and design services for the Air Force's material handling/warehousing function worldwide. These Industrial Engineers provide design services that include warehouse reconfiguration, automation, and construction.

## **GSA/FSS, Southwest Regional Distribution Center, Fort Worth, TX**

**Point of Contact:**

Bob Hominick

**Phone Number:**

(817) 885-6901

**E-mail:**

robert.hominick@gsa.gov

**Square Footage:**

1,400,000 SQ. FT.

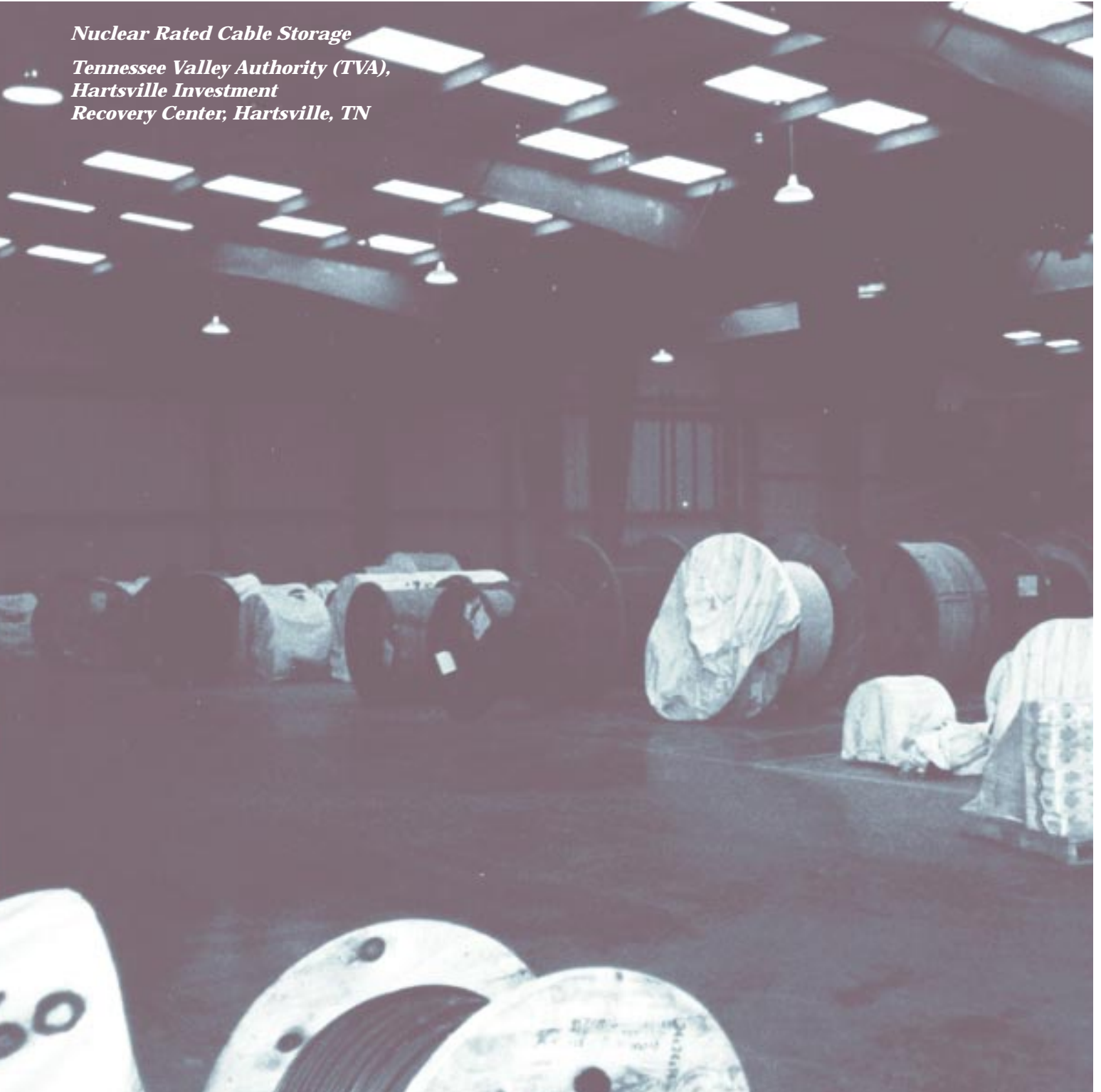
This distribution center is housed in a multi-building configuration. Currently, FSS is consolidating four warehouse buildings in an effort to streamline and improve the efficiency of its warehouse and distribution operations.



*Strategic Storage Needs of the Federal Government*

*Nuclear Rated Cable Storage*

*Tennessee Valley Authority (TVA),  
Hartsville Investment  
Recovery Center, Hartsville, TN*



# *V. Questionnaire Survey and Synopsis*

## **Questionnaire for Personal Property of SWING**

1. How many people are employed at the facility?
2. What is the size of the facility?  
Open Storage            \_\_\_\_\_  
Covered Storage        \_\_\_\_\_
3. How many total pieces and tonnage are received during the day/month?
4. How many total line items and tonnage are shipped during the day/month?
5. What are the total dollars sales shipped during day/month?
6. What was your total operating cost for FY 96 and 97?
7. What is your projected operating cost for FY 98 and 99?
8. Are items received checked for descriptions, quantity, and condition at the time of arrival?
9. Is your stock record system automated?
10. Do you perform periodic inventories?
11. Are periodic spot checks conducted to reasonably verify the quantity and condition of the material?
12. How is obsolete inventory handled?

## V. Questionnaire Survey and Synopsis

13. Do you perform reutilization, transfer, donation and sales functions (RTD&S) at this facility? If no, skip Question 14.

14. How much of your operating cost is attributed to RTD&S programs?

15. Given the list below, please estimate the percentage of personal property disposal outcomes for FY 1997.

<b>Disposal Outcomes</b>	<b>Approx. Percentage</b>
Withdrawn for retention, after initial reporting as excess . . . . .	_____
Reused within agency . . . . .	_____
Reused within department . . . . .	_____
Reused within Federal Government . . . . .	_____
Reused/donated through Special Programs . . . . .	_____
Donated through State Agencies for Surplus Property . . . . .	_____
Sold . . . . .	_____
Abandoned/Destroyed . . . . .	_____
<b>Total . . . . .</b>	<b>100%</b>

16. Is your RTD&S program conducted using an automated or manual system?

17. How is your RTD&S program linked to the acquisition programs in your departments and agencies?

18. How do your acquisition systems check for available excess material before proceeding with new acquisitions?

19. What RTD&S policy changes would you recommend to GSA?

## **Strategic Warehousing Inventory Needs Group Real Property Related Questions**

1. Facility name and address (including city and county)
2. Facility size:
3. Utilization percentage of the facility being used for storage:
  - 3a. Is this storage need projected to continue over the next 5 years?
  - 3b. Is this active or long-term storage?
  - 3c. Is the inventory storage consistent or fluctuating?
  - 3d. What material is being stored?
4. What material was used in the construction of the facility?
5. Year of construction:
6. Floor load capability:
7. Ceiling height:
  - 7a. Clear ceiling height (stacking height):
8. Technology/automation available within facility:
  - Conveyor
  - Rail system
  - Temperature/humidity control
  - Fire suppression/sprinkler system
  - Security system
  - Loading dock facilities (leveling system)
  - Truck drive in rail line running through facility



## *V. Questionnaire Survey and Synopsis*

9. Method of storage used:

Racks

Pallet stacking

Bulk

Other

10. Could this facility be used/shared with other users:

Federal agencies

Local government

Private sector

As the purpose of this project is to gather information regarding the best practices and lessons learned of warehousing functions, please give a little thought to the following questions and provide as much detail and insight as you can in your responses.

11. What have you observed as the best practices used in warehouse/storage functions at this facility?

12. What are the lessons you have learned during the operations of the warehouse/storage function of this facility?

13. What changes would you suggest in the maintenance, operations, or physical layout of this facility that could improve or enhance its efficiency and effectiveness?

14. Would this facility be more functional if it was located elsewhere on the property?

### Questionnaire Synopsis

At each site visit a survey package was given to our local point of contact. In total, 56 site visits were made, 54 survey packages given out, and 19 surveys were returned. The SWING team did not provide surveys during the site visits at Wright-Patterson Air Force Base in Dayton, Ohio, or GSA/FSS, Southwest Regional Distribution Center in Fort Worth, Texas. These two site visits were for informational purposes only.

This study encompassed a tremendous diversity in warehousing with various sizes of warehouse operations, locations, and missions to support. Many of the questions on the survey were generic to warehousing. Some of the questions were not pertinent to every warehousing operation, and not every agency answered every question. The returned surveys provided specific information on the warehouse structures, number of items handled, type of storage performed, and candid insights of current warehousing issues and practices. Many of these insights were used to compose the recommendations and were an important component of this report.

Some of the main issues that were presented in the returned surveys are:

***The Disposal of Personal Property*** - Almost all of the surveys addressed the issue of personal property disposal. Many agency representatives are unaware of an established mechanism for the disposal of excess property. Many of

the warehouses hold the excess property until another organization within the agency takes the necessary action to dispose of the property. The surveys reflected that excess property is often perceived to be difficult to dispose of, and it is easier to store the excess items than dispose of them. From the surveys and conversations with the agency representatives it appears that most of the agencies need an easier way to dispose of property as well as additional information on the property disposal process.

***Computer Controlled Supply Systems*** - A majority of survey respondents expressed that computer-controlled supply systems provided better inventory control than methods used in the past. Bar coding and computer technology is more accurate than “keeping the books by hand.” Computerized supply systems save time, money, and FTE.

***Radio Frequency (RF) Technology*** - The private sector companies, and some Federal agencies, noted how important RF technology is during our discussions and on their surveys. RF technology facilitates real time connectivity that is essential for the speed needed in warehousing today. When an item is bar coded in the warehouse, the RF technology transmits the bar code information to a main computer which updates the inventory and makes the information available to the entire warehouse organization.

***Configuration for Efficient Warehousing*** - Some of the surveys stressed the importance of proper configuration in which high

## V. Questionnaire Survey and Synopsis

reaching pallet storage racks and narrow aisle configurations make the most efficient storage operation. This is best accomplished with an automated storage system. Some of the respondents commented that by grouping similar items together, the entire warehousing operation becomes more efficient. Also, storing active materials nearest to the receiving area and the delivery function expedites warehouse processes.

**Equipment Maintenance** - Many agencies noted problems with proper maintenance on the warehouse equipment and facility. Time is money. Having in-house personnel (FTE or contract support) is a must to ensure an efficient warehouse operation.

**Just-In-Time System** - The most progressive survey answer was regarding the concept of “just-in-time” warehousing.

The concept associated with yesterday’s warehousing was to buy a large amount of an item, and store it until the inventory was used. The money saved by a lower price was so great that it outweighed the cost of storing the item.

The concept of today’s warehousing is “just-in-time” warehousing in which items are ordered just before they are needed. Instead of carrying 1,000 items of which three items are used in a year, only three items would be ordered, just before the customer needs them. Use of the “just-in-time” system reduces labor costs, inventory in the warehouse by millions of dollars, and amount of space needed to fulfill warehouse obligations. The

provider then maintains the larger inventory rather than the Federal agency. The money saved by not carrying extra inventory is very substantial and justifies using the system.

**Consolidate/Get Rid of Zero or Low Demand Items** - Several agencies stated that one of their best practices has been to consolidate personal property and get rid of zero demand items. By reviewing the demand criterion quarterly or biannually, warehouse cubic space can be optimized. The use of computers and associated tracking systems enables an organization to track hits on stored items to determine need and necessity to hold in storage.

## *VI. Additional Sources of Information*

**M**any organizations are available to provide information on warehousing, material handling equipment, and information systems. Information is provided through industry shows, magazines, professional societies, and classroom instruction. Following are some of the organizations that provide information related to the warehousing field:

National Supply Chain Exposition Conference (industry shows):  
[www.nawdec.com](http://www.nawdec.com)

ProMat (industry shows):  
[www.mhia.org](http://www.mhia.org)

Modern Material Handling (magazine): [www.mmh.com](http://www.mmh.com)

Warehousing Management (magazine):  
[www.warehousemag.com](http://www.warehousemag.com)

Material Handling Engineering (magazine): [www.mhesource.com](http://www.mhesource.com)

Council of Logistics Management (professional society & seminars):  
[www.clm1.org](http://www.clm1.org)

Warehousing Education & Research Council (professional society & seminars): [www.werc.org](http://www.werc.org)

Georgia Tech Logistics Institute (professional education courses):  
[tli.isye.gatech.edu](http://tli.isye.gatech.edu)

Tompkins Associates (seminars):  
[www.tompkinsinc.com/events](http://www.tompkinsinc.com/events)

Contacting private sector firms that warehouse and/or distribute similar inventory can provide additional information. Ideas for organizing warehouses, space requirements, material handling equipment, and storage techniques can be gained

from the study of comparable private sector businesses.

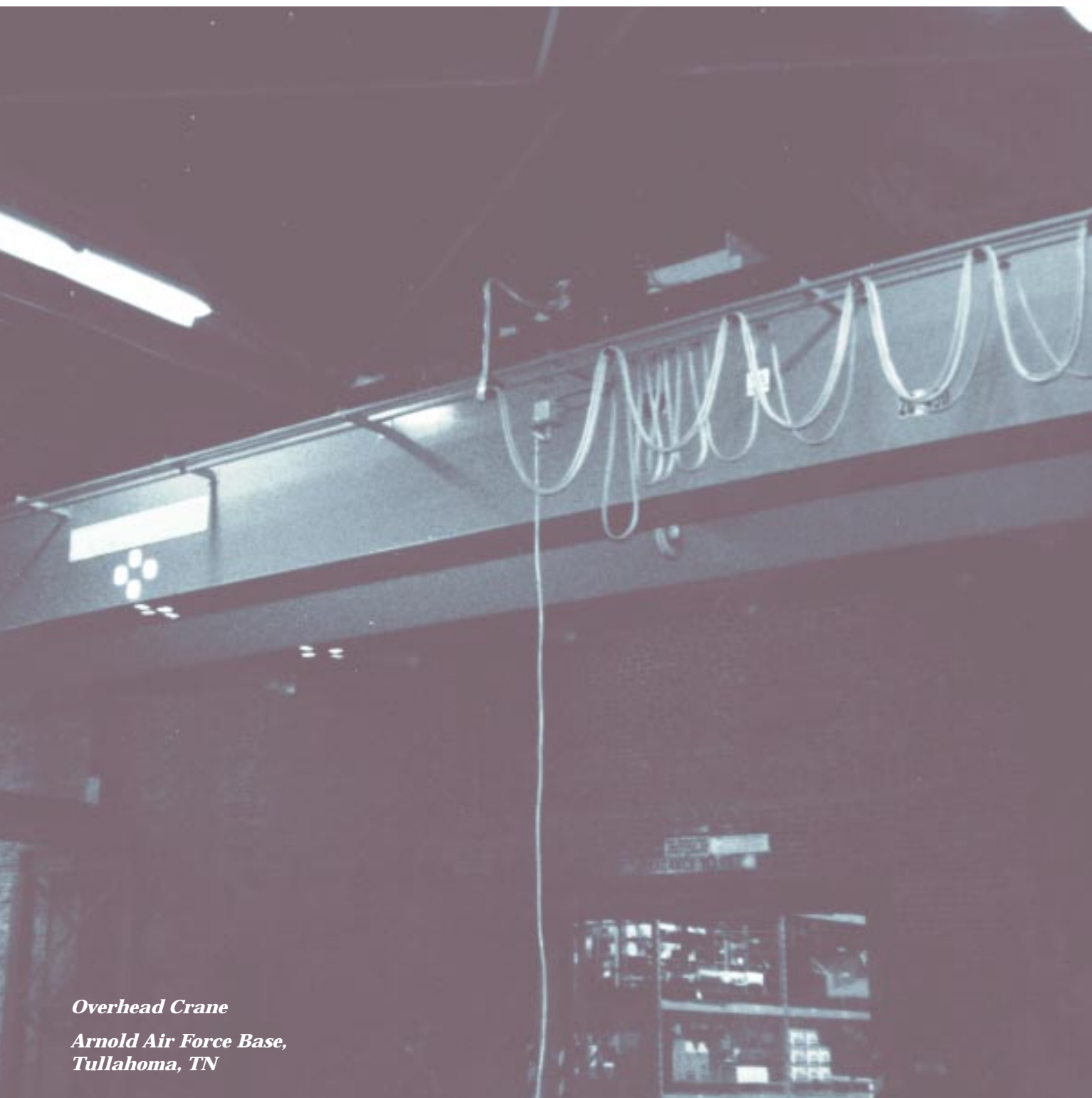
In addition to the above contact points, the following information is provided to assist in obtaining GSA/FSS material for the purchase of office and office related supplies:

GSA Advantage - electronic shopping method for Government supplies provided by FSS. GSA Advantage can be accessed through the Internet at <http://www.gsa.gov>, accepts IMPAC Card payment, and offers direct shipment of large orders directly from the vendor.

GSA - Customer Supply Centers offer mail order service, accept Government Purchase Card payment, and offer direct shipment of large orders directly from the vendor. Catalogs can be obtained by contacting the Centralized Mailing List Service (CMLS) at (817) 334-5215 and using code 5-7-00010. A Customer Supply Center catalog (a smaller version of the supply catalog) can also be obtained using the same phone number and code 5-9-00005. Additionally, requests for catalogs can be faxed using (817) 334-5227. The Internet address for the CMLS, through which catalogs can be ordered, is [CMLS.gsa@gsa.gov](mailto:CMLS.gsa@gsa.gov).



*Strategic Storage Needs of the Federal Government*



*Overhead Crane  
Arnold Air Force Base,  
Tullahoma, TN*

# Publication Survey

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1. The publication is of interest to you.

Strongly agree \_\_\_\_\_ Agree \_\_\_\_\_ Disagree \_\_\_\_\_ Strongly disagree \_\_\_\_\_

2. The publication format provides easy access to matters of interest to you.

Strongly agree \_\_\_\_\_ Agree \_\_\_\_\_ Disagree \_\_\_\_\_ Strongly disagree \_\_\_\_\_

3. The publication addresses issues which are of value to you in your position.

Strongly agree \_\_\_\_\_ Agree \_\_\_\_\_ Disagree \_\_\_\_\_ Strongly disagree \_\_\_\_\_

4. The publication's Executive Summary provided adequate information on the content of the publication.

Strongly agree \_\_\_\_\_ Agree \_\_\_\_\_ Disagree \_\_\_\_\_ Strongly disagree \_\_\_\_\_

5. The information provided in the publication is fair and impartial.

Strongly agree \_\_\_\_\_ Agree \_\_\_\_\_ Disagree \_\_\_\_\_ Strongly disagree \_\_\_\_\_

6. The publication is an appropriate length.

Strongly agree \_\_\_\_\_ Agree \_\_\_\_\_ Disagree \_\_\_\_\_ Strongly disagree \_\_\_\_\_

7. The publication is easy to understand.

Strongly agree \_\_\_\_\_ Agree \_\_\_\_\_ Disagree \_\_\_\_\_ Strongly disagree \_\_\_\_\_

8. Please provide any additional comments on the publication:

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Organization \_\_\_\_\_

Name (optional)

\_\_\_\_\_ Title \_\_\_\_\_

E-mail address (optional)

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**General Services Administration**  
**Office of Real Property (MPE)**  
**Office of Governmentwide Policy**  
**1800 F Street, NW**  
**Washington, DC 20405**

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*(top to bottom)*

*Typical WWII Storage Facility,  
GSA/FEMA Thomasville, GA*

*Moving Shelf Storage System,  
Dobbins Air Force Base,  
Marietta, GA*

*Gravity Flow Pallet Lanes,  
GSA/FSS Distribution Facility,  
Palmetto, GA*



