FAA

Inventory Management Guide

03/08/2012

Implementing FAA Order 4600.27, Personal Property Management

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PREFACE

This Federal Aviation Administration (FAA) Inventory Management Guide, hereafter referred to only as the Guide, implements the inventory and storage management portions of FAA Order 4600.27, Personal Property Management. It describes the requirements and standards of operation under which FAA's inventory and storage locations must operate.

FAA Order 4600.27B, Personal Property Management cancels the following orders: FAA Orders 4630.1C, 4630.6, 4633.1, and 4700.2. This Guide incorporates the "inventory and storage management guidance" from those orders.

- This Guide excludes the management and control of "in-use" personal property, i.e., property that is currently being used for the purpose of which it was acquired. Inventory and storage guidance for in-use personal property is contained in the Personal Property Process and Procedure Guide, available at https://intranet.faa.gov/FAAEmployees/org/linebusiness/ato/operations/technical_operations/amnsst/process/.

You may supplement this Guide by local procedures as long as they do not conflict with or lessen the minimum requirements contained herein.

Direct any questions relating to the information contained in this Guide to the Asset Management and NAS Supply Support Team, AJW-161.

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Chapter 1. General

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Chapter 1. General

1-1 What is the Purpose of this Guide?

This Guide establishes national guidelines to manage FAA's supply distribution structure.

1-2 What is Supply Distribution Structure?

The supply distribution structure includes the acquisition, storage, and use of FAA inventories to carry out the agency's mission and minimize the potential for waste, fraud, abuse and mismanagement.

1-3 Who does this Guide Apply To?

This Guide applies to all organizations maintaining wholesale, intermediate, and user-level inventories, except for those user-level inventories identified in paragraph 1-14.

1-4 What is the Governing Authority for this Guide?

The Public Law 107-217, Title 40 – Public Buildings, Property, and Works, the Federal Property Management Regulations (FPMR) and FAA Order 4600.27, Personal Property Management, provide the governing authority for this Guide. Within these guidelines, the FAA and its individual organizations have a significant degree of flexibility in developing and implementing control and accountability principles applying to inventory management. In addition, the Federal Aviation Regulations (FAR) 135 and 145 are the Aircraft Maintenance and Engineering Group's (AMEG), AJW-34, aircraft maintenance authorities.

1-5 Why do We Need this Guide?

a. This Guide defines inventory management processes and maintains inventory integrity and accuracy.

b. This Guide complies with the General Accountability Office's Executive Guide GAO-02-447G, Best Practices in Achieving Consistent, Accurate Physical Counts of Inventory and Related Property, Background section, as follows:

> Proper inventory accountability requires that detailed records of produced or acquired inventory be maintained....detailed asset records are necessary to help provide for the physical accountability of inventory and the efficiency and effectiveness of operations....Physical controls and accountability reduce the risk of (1) undetected theft and loss, (2) unexpected shortages of critical items, and (3) unnecessary purchases of items already on hand. These controls improve visibility and accountability over the inventory, which help ensure continuation of operations, increased productivity, and improved storage and control of excess or obsolete stock.

1-6 Who Do "We", "You", and "Their" Variants Refer?

Use of pronouns "We", "You", and "Their" variants refer to the FAA.

1-7 Can Deviations from these Requirements be Requested?

Yes. All requests must be submitted in writing to the manager of Asset Management & NAS Supply Support Team (AM&NSST), AJW-161, 800 Independence Avenue, SW, Washington, DC 20591.

1-8 What is an Inventory?

An inventory is a quantity or store of goods that is held for some purpose or use. The term ”inventory” as used in this Guide, is personal property acquired in advance of actual need or use or is held in storage by an inventory holding activity for sale, issue or use.

1-9 What is Inventory Management?

Inventory management is the program the FAA uses to determine what items should be stocked, how many are needed, and where and how they should be stored, managed, and distributed. Due to different financial reporting requirements, the General Services Administration (GSA) Financial Systems Integration Office (FSIO) differentiates between two types of inventory, “inventory held for sale and inventory held for future use.” These two types of inventory are defined as follows:

a. Inventory - tangible personal property that is: (a) held for sale, (b) in the process of production for sale, or (c) to be used in the production of goods for sale and services for a fee. This includes the materiel acquired through the FAA Logistics Center’s (FAALC) franchise fund.

b. Operating Materials and Supplies (OM&S) - tangible personal property that is (a) held for future use and (b) to be consumed in normal operations. This includes materiel maintained by AMEG, for NAS spare parts maintained by FAA Air Traffic Organization (ATO) Service Area field facilities, and any other materiel not acquired through a franchise fund.

1-10 What are the FAA’s Inventory Management Objectives?

a. FAA’s objectives ensure that we get the maximum return on each dollar spent to accomplish the agency’s mission with the proper balance between the level of service desired and the cost to provide that service.

b. The overall objectives of FAA’s inventory management program depend on:

- Accurate identification of centrally managed items of supply and the assignment of proper stock numbers and/or part numbers for aircraft spare parts.
- Accurate reflection of current on-hand items, past demand, expected receipts, and current obligations of materiel requirements for future delivery.
- Accurate stock records with efficient posting and physical inventory procedures.
- Effective replenishment action to satisfy materiel requirements.
- Properly stocked, stored, and safeguarded inventory.

- Effective and efficient use of storage space.
- Proper physical inventory planning, preparation, accuracy and integrity.
- Use of life cycle cost/benefit considerations when determining one supply support method versus another.
- Use of the GSA/Department of Defense (DOD) cross-servicing storage agreement whenever possible for inventory held for future use.[1]

> **NOTE:**
> Inventory held for sale does not apply to this requirement.

1-11 What Types of Inventories does FAA Maintain?

FAA's supply distribution structure uses three levels of inventory management, categorized according to the scope of the support responsibility of each stocking activity.

- Wholesale (government-wide).
- Intermediate (Agency/Center/Area, internal to FAA).
- User level.

1-12 What are Wholesale Inventories?

Wholesale inventory management means the inventory manager has the responsibility for government-wide control of materiel.

a. The wholesale inventory manager provides supply support (acquires, stocks, stores, and issues materiel) not only for local or agency use (e.g., the FAA) but also for other Federal agencies.

b. Within FAA, wholesale inventory management responsibility resides within the FAALC. As such, they may be required to support other Government agencies supply support requirements placed on FAA's supply structure.

1-13 What are Intermediate Inventories?

Intermediate inventories are those held between the end user (e.g., field) and wholesale inventories. Unlike wholesale inventory management, intermediate inventory management activities are internal to FAA.

a. Intermediate inventory items may include any classification of materiel inventory, (e.g., operating materiel, or project materiel) and may include both recurring and insurance items.

[1] Federal Property Management Regulation (FPMR) 101-28.2, Interagency Cross-Servicing in Storage Activities.

b. The FAALC also maintains FAA-wide intermediate inventories. Serving as an intermediate inventory manager for a majority of FAA ordering offices, FAALC provides materiel for FAALC-supported items needed to operate the NAS.

c. Other FAA intermediate inventory facilities include organizations and facilities that support more than their internal local needs, such as:

(1) ATO Staging facilities.

(2) Fabrication shops.

(3) Loan Pools.

(4) Office supply storerooms for a building, i.e., regional office or Service Area use.

1-14 What are User-level Inventories?

User-level inventories are maintained by FAA organizations who order operating, maintenance and administrative materiel and identified for purposes of this Guide as:

a. Repairable field spares, e.g., Exchange and Repair (E&R).

b. Aircraft spare parts.

1-15 What Items are not Considered Inventory for the Purpose of this Guide?

The following are examples of items that are not considered "FAA inventory" i.e., they do not need to be managed in accordance with this Guide. The managers/supervisors should establish controls to ensure that these items are used in a frugal manner, are physically protected, and that on-hand quantities are maintained at reasonable levels. They include:

a. Expendable field spares.

b. Bench stock, e.g., nuts and bolts.

c. Office supplies for use only by a specific organization at a specific location.

1-16 This Guide covers what Organizations Maintain Inventories?

The following FAA organizations maintain inventories covered by this Guide.

Organization / Materiel Type	Inventory Type
FAALC	
Operating Materiel	Government-wide[2]
Facilities and Equipment (F&E) materiel (owned by program offices)	FAA-wide
Bench stock (nuts and bolts)	User
Fabrication materiel for distribution FAA-wide	Agency-wide
Shop items (decentralized purchase)	Agency-wide
William J. Hughes Technical Center (WJHTC)	
NAS inventory	Center-wide
F&E inventory	Center-wide
Fabrication for distribution FAA-wide	Agency-wide
Bench stock (nuts and bolts)	User
Centralized supply storerooms for FAA Technical Center (FAATC)-wide use	Center-wide
Shop items (decentralized purchase)	Agency-wide
Aircraft spare parts	Center-wide
ATO-W field facilities	
NAS spare parts	User
ATO-W Service Area Staging Areas/Warehouses	
F&E materiel for distribution within the service area	Area-wide
Fabrication materiel for distribution FAA-wide	FAA-wide
Loan pool for regional office/service area	Area-wide
ATO-W Aircraft Maintenance Facilities	
Flight inspection aircraft spare parts	FAA-wide
ARC-060 Hangar 6	
Aircraft spare parts	ARC-wide
Other Organizations	
Centralized supply storeroom operations	Area-wide
Decentralized supply rooms for local use	User

[2] For those items for which the FAALC has been identified as a Primary Inventory Control Point (PICA).

1-17 How does FAA Classify its Inventories?

Each item in FAA's inventories is further classified in one or more of the categories shown below:

- Recurring-demand Item.
- Insurance Item.
- Operating Materiel.
  - Expendable.
  - Reparable.
    - Exchange and Repair (E&R).
    - Repair and Return (R&R).
- Project Materiel.

1-18 What are Recurring-demand Items?

Recurring-demand items are those items for which repetitive demands, based on past usage or sufficient knowledge is used, to reasonably predict that such items will continue to be requested. Recurring-demand items may be either expendable or reparable.

1-19 What are Insurance (Safety) Items?

Insurance (safety) items are those for which requirements are unpredictable, the items are essential, and the lead-time required to obtain them when needed would create an unacceptable situation. Insurance (safety) items may be either expendable or reparable.

1-20 What is Expendable Operating Materiel?

Expendable operating materiel is required for day-to-day operations that: (1) is considered to be consumed while in use or (2) is reparable but is not managed as a reparable item; i.e., when it is more economical to replace than repair an item.

1-21 What is Reparable Operating Materiel?

Reparable operating materiel is essential to maintaining system operational readiness that can be repaired at a considerably less cost and time than purchasing replacements. Reparable materiel is further designated either as E&R or as R&R.

a. E&R materiel is a reparable item.

(1) For FAALC supported items, when unserviceable, are reported to the FAALC. E&R unserviceable items can be repaired either organically (in-house) or via Contract Repair Service (CRS), Interim Contractor Depot Logistics Support (ICDLS), Contractor Depot Logistics Support (CDLS), or by the vendor for Failure Under Warranty (FUW) issues.

(2) For AMEG supported items, when an asset is turned in as unserviceable, the local stockroom uses the most advantageous method to restock their inventory with a like serviceable asset. AMEG uses multiple avenues to replenish inventory such as unit exchange purchases, stock replenishment, and component repair.

b. R&R materiel is a reparable item.

(1) For FAALC supported items, when unserviceable, are reported to the FAALC. The unserviceable items are sent out for repair and then returned to the site.

(2) For AMEG supported items, when an asset is returned as unserviceable, the local stockroom will send the asset for repair or find another method to restock their inventory with a like serviceable asset.

1-22 What is Project Materiel?

Project materiel is materiel acquired by the FAA for a specific project and held in inventory until needed for installation. Generally, FAA project materiel is used when installing or modifying existing facilities/equipment or when constructing new NAS or infrastructure facilities.

1-23 What is Warehouse (Storage) Management?

a. The storage element of inventory management includes receiving and placing items in storage, storing items in a warehouse facility, providing the proper care of material in storage, and issuing material. Also, it includes preserving, packaging and packing and determining the fitness of material for issue.

b. Within FAA, storage facilities range from the large FAALC's warehouses with thousands of cubic feet of warehouse space to small NAS facilities storing a limited number of NAS project materiel and spare parts. Therefore, storage management requirements are not equally applicable to each operation.

c. Storage practices, methods, and procedures also vary according to the amount and type of available space, manpower, equipment, climatic conditions, regulations pertaining to fire, sanitation, safety, etc., and the quantity and type of inventory stored. Basic principles and planning must be applied to develop satisfactory solutions to storage and warehouse management problems that may arise.

1-24 What Information Technology (IT) Systems Support FAA Inventory?

FAA does not have a single system that manages all of its inventories and warehouse facilities.

a. For materiel stored in the FAALC warehouses, the following systems are used:

(1) Logistics Inventory System (LIS) "Core" Modules. These LIS modules provide support for FAALC's internal inventory management processes, including cost and performance reports. LIS provides basic materiel management, control, and inventory capabilities. Within LIS, the Materiel Requirements Planning (MRP) module provides FAALC management with accurate forecasting of materiel requirements to reduce overall inventory cost. MRP captures demand history, forecasts future demand, and accesses current stock availability. MRP then

generates replenishment and repair action to maintain appropriate inventory levels to meet future anticipated demand.

(2) Warehouse Management System (WMS). The WMS system tracks inventory by warehouse location and scans the system to track the National Stock Numbers (NSN).

(3) LIS "National" Modules. These LIS modules provide inventory management support to organizations throughout FAA.

(a) LIS Online Requisitioning System. This LIS module is the primary method used to order FAALC-supported materiel. An Online Requisitioning Systems Information User Guide can be ordered from the LIS Online Requisitioning System.

(b) LIS Project Materiel Management System (PMMS). This LIS module is used to manage F&E inventory procured by a headquarters program office, held within the FAALC's F&E warehouse, and waiting to be requisitioned for use on an F&E project. The LIS PMMS User Guide, PMM Desk Guide and Washington Item Manager Handbook provide information on the PMMS and can be obtained from the AM&NSST's Project Materiel webpage, available at https://intranet.faa.gov/FAAEmployees/org/linebusiness/ato/operations/technical_operations/amnsst/manage_team/materie/.

(c) LIS Field Spares Inventory (FSI) System. This LIS module maintains site level inventories of E&R spare parts to support operation of existing NAS facilities. In addition, the AM&NSST has developed a Field Spares Inventory Management Guide, to provide an "easy to use" tool to assist those personnel at the user/ordering level to manage their field spares inventory. This guide is available at https://intranet.faa.gov/FAAEmployees/org/linebusiness/ato/operations/technical_operations/amnsst/manage_team/field_spares/pol_guidance/docs/fsideskguide052203.doc,

b. The Inventory Logistics and Maintenance (ILM) Suite manages the aircraft maintenance spare parts inventory. ILM consist of an Intel based web server, a UNIX database server and web-enabled workstations distributed throughout the AJW-34 organization. The system is responsible for the supporting the NAS flight inspection aircraft maintained by the AMEG. The system is comprised of three primary modules: Security, Materials, and Maintenance.[3]

(1) The Security module manages access rights to the various system components.

(2) The Materials module manages the purchase, repair, shipping and receiving and issue of all assets.

(3) The Maintenance module manages the tracking and scheduling of all maintenance associated with flight inspection aircraft.

[3] Technical Center Flight Program Group also uses the ILM Suite for inventory purposes; however, their purchases go through LIS.

c. In addition to the above systems that are "national" in scope, many organizations have set up local "in-house" systems ranging from formal databases to excel spreadsheets. The organization using these "in-house" systems must adhere to the guidance set forth in this Guide.

> **NOTE:** Any organization managing inventory that meets the definition of paragraphs 1-23.a and 1-23.b above must use the applicable national system.

1-25 Appendices

a. Appendix 1, Terms and Definitions, defines the specialized terms used within this Guide.

b. Appendix 2, Acronyms, identifies each acronym used within this Guide.

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Chapter 2. Responsibilities

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Chapter 2. Responsibilities

2-1 Who is Responsible for FAA's Inventory Management Program?

a. The FAA Property Management Officer's (PMO) responsibilities are delegated to the Director of Safety and Operations Support (SOS) as described in FAA Order 4600.27, Personal Property Management.

b. The SOS Director has, in turn, delegated these responsibilities to the Asset Management and NAS Supply Support Team (AM&NSST), AJW-161.

2-2 What are the AM&NSST's Responsibilities?

The AM&NSST are responsible for inventory and warehouse management policy, procedures, and requirements for related automated systems, oversight and training. The AM&NSST Manager is the point of contact for issues relating to other agency inventory management issues. The AM&NSST will:

a. Develop, issue, and ensure agency-wide implementation of policies, standards, procedures, training, and automated logistics systems for the following functional areas:

- Requisitioning, management, packing and preservation, receiving, repair, and distribution of materiel (including shipping).
- Management and control of NAS F&E project materiel.
- Inventory management.
- Warehouse/storage management.
- Supply support for the NAS.

b. Determine item classifications to be designated for control in an inventory system.

c. Monitor and evaluate the functional areas listed above to determine the effectiveness and efficiency of program performance.

d. Serve as the FAA's inventory management focal point with the Office of the Secretary of Transportation (OST) and other federal agencies, specifically GSA, DOD, and the DOD Defense Logistics Agency.

e. Assure identified environmental and hazardous material requirements are appropriately addressed in agency inventory management programs, policies, standards, and procedures.

f. Serve as the focal point for oversight, planning, developing, and integrating automation and ensure systems comply with agency policies and standards.

g. Develop requirements and policy on the FAA's bar code specifications and usage.

h. Manage and implement the automatic data collection program for the FAA. You can find details on this program in the FAA Asset Identification Process & Procedure Guide, available at https://intranet.faa.gov/FAAEmployees/org/linebusiness/ato/operations/technical_operations/amnsst/process/.

i. Manage and control the FAA CDLS contracts for identified NAS systems.

2-3 Who are Inventory Managers?

a. Inventory Managers for large inventory management operations are individuals, identified in writing, by name or organizational position. The inventory managers are responsible for implementing FAA's inventory management policies and procedures, and for managing inventory under their control.

b. For smaller inventory management operations, where there is no assigned Inventory Manager, the inventory manager responsibilities identified in this Guide are normally held at a manager/supervisor level(e.g., property custodian), with one or more individuals within the organization assigned the inventory management functions (e.g., property delegate).

2-4 What Responsibilities Apply to all Inventory Managers?[4]

Inventory Managers' responsibilities include at a high level, requirements determination, acquisition, accountability, financial asset analysis, storage, distribution, and disposal of inventory. Within their area of responsibility inventory managers:

a. Ensure national guidance, as identified within this Guide, is implemented.

b. Provide customers with adequate stocks to maintain the appropriate supply and demand balance based on repair and accurate inventory status, repair and support requirements, and customer demands.

c. Meet actual increases or decreases in expected demand by initiating replenishments actions when necessary.

d. Ensure efficient receiving operations.

e. Ensure that local requisitioning and issuing procedures are developed as required.

f. Establish and maintain an operating materiel quality and reliability assurance program.

[4] For large inventory management organizations, some of these responsibilities are shared between inventory managers and other personnel within their organization.

g. Ensure that physical inventory materiel is in accordance with requirements contained in Chapter 5, Physical Inventories, of this Guide.

> **NOTE:** Each ordering office is responsible for determining its materiel requirements in accordance with this Guide, as well as other applicable agency directives.

2-5 What Additional Responsibilities Apply to the Wholesale Inventory Manager?

The wholesale inventory manager is responsible for government-wide control of materiel. Normally, wholesale items are replenished through commercial procurements for consumable items and repair or procurement actions for non-consumable items. In addition to the responsibilities listed in 2-3, specific wholesale inventory manager responsibilities include:

a. Understanding and monitoring demand and economic considerations.

b. Keeping other Government inventory managers apprised of customer plans and developments, which affect the maintenance of optimum stock availability.

c. Obtaining accurate and current data related to customer needs to recognize unusual stock situations.

d. Providing supply support to other organizations on items for which FAA is the Primary Inventory Control Activity (PICA) and Secondary Inventory Control Activity (SICA) requirements have been accepted by the assigned Inventory Manager, via Joint Logistics Commanders (JLC) Form 17 concurrence.

> **NOTE:**
> Within FAA, the FAALC has sole responsibility for wholesale inventory management.

e. Updating administrative data for each NSN for which FAA is identified as a PICA.

f. Synchronizing newly acquired inventory and/or changes in Cage Codes and Reference Numbers with the Federal Logistics Information System (FLIS) maintained by the DOD Logistics Information Service.

2-6 What Responsibilities Apply to Warehouse Operations?

Inventory Managers may also supervise and control warehouse operations at their facilities except in larger warehouse operations such as the FAALC. At larger warehouses, warehouse operations are controlled separately. Regardless of their organizational placement, individuals responsible for warehouse operations:

a. Ensure that receiving, storing, issuing, and shipping operations are completed efficiently.

b. Establish the necessary controls to ensure that personnel who receive and issue items are not the same personnel who certify invoices for payment or who certify inventory counts.

c. Ensure that any discrepancies discovered through inventorying are investigated and properly reported.

d. Ensure local requisitioning and issuing procedures are developed and implemented.

e. Provide adequate safeguards to ensure against loss, damage, or theft of materiel stored at their facilities.

f. Control the acquisition and use of storage space.

2-7 Who are Field Spare Coordinators?

Field Spares Coordinators oversee the operational activities needed to manage and control NAS spare parts located at various field locations, and ensure the accuracy of the inventory records.

Chapter 3. Inventory Management

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Chapter 3. Inventory Management

3-1 What Inventory Management Decisions does FAA Make?

a. FAA's inventory management decisions begin with the purpose for stocking materiel. Is the materiel held for Government, FAA-wide distribution, local distribution, or local use? Based on this, inventory managers need to answer the following questions:

- What items should be stocked?
- How much stock is needed?
- Where will the stocked items be stored?
- How often should the stock be replenished?
- When should stock be removed?

b. In the paragraphs listed below, these questions are addressed. The FAALC's and other FAA inventory management programs are shown separately to delineate between the FAALC's wholesale and intermediate inventory management function and that of the other FAA inventory stocking points.

3-2 What Items Should FAALC Stock?

a. Recurring-demand items (expendable operating and reparable stock).

(1) A recurring-demand item must:

- Be physically adaptable to storage and issue.
- Have repeated demands.
- Have a rate of deterioration or obsolescence sufficiently low as to avoid unnecessary loss.

(2) Stock items meeting the above qualifications when it meets one of the following conditions:

- Advance purchase and storage is necessary because of long procurement lead-time.
- The item is of specific manufacture or design not readily available from commercial sources.
- An adequate industry distribution system does not exist to insure availability when needed.
- Volume purchases are necessary to secure timely delivery and advantageous prices.

(3) Compare the cost to procure or repair, store, and issue items versus the cost to obtain them only on demand for direct use. When this comparison shows it is more reasonable to stock the items ahead of receiving a requirement, add the items to the inventory.

(4) Where recurring-demand items are potentially reparable, do not automatically repair them unless the repair is essential or it is more economical to repair than to replace the item.

b. Insurance (Safety) Items include both expendable operating and reparable materiel. Items are stocked as "insurance" only if they meet the definition as an insurance item.

(1) Do not remove items from recurring inventory and add to insurance inventory when the recurring demand has stopped unless the items definitively qualify as insurance.

(2) When items identified as insurance have recurring demand, reclassify them as recurring-demand items.

c. Project Materiel is stocked at the FAALC at the direction of the responsible headquarters program office.

> **NOTE:** Whenever feasible, project materiel should be shipped directly from the acquisition source to the project site instead of placing the materiel in inventory.

3-3 What Items Should Other Holding Activities Stock?

a. ATO Technical Operations Services NAS inventory holding activities should stock only NAS spare parts, where necessary, to support the operations for which the holding activities have maintenance responsibility.

b. Aviation System Standards will stock and manage inventory for support, maintenance and modification activities for the FAA's flight inspection aircraft fleet and other franchise customers. This inventory consists of aircraft spares, raw stock, bench stock, and mission equipment.

c. F&E project materiel inventory holding activities (point of use) should stock only project materiel inventories needed to support current program requirements.

d. F&E and R&D project materiel inventory holding activities (fabrication shops/staging areas) should stock only project materiel inventories needed to support current and planned fabrication activities.

e. Other inventory holding activities (point of use locations) should stock only inventories necessary to support specifically identified recurring needs, or justified when based on economic considerations.

3-4 How Much Should the FAALC Stock?

FAALC stocking levels depend on how an item is classified as listed below.

a. For recurring demand expendable operating materiel establish and maintain stock levels based, as a minimum, on the following criteria listed in table 3.1 below.

b. For recurring demand reparable materiel establish and maintain stock levels based, as a minimum, on the criteria listed in table 3.2 on the next page.

c. For Insurance Items, determine stock levels based on the minimum required to alleviate the condition on which the requirement is based. Replenishment is limited to that quantity required to maintain the established insurance level. This would not include a quantity of safety stock.

Table 3.1. Recurring Demand Expendable Operating Materiel

Factors Considered	Criteria
Demand	Use demand to calculate stock levels, either on the basis of average-demand (average of actual past demand history) or forecasted-demand (past demand modified by a trend factor). Account for degrees of demand variation to mitigate risks in demand estimates.
Acquisition Review Point	Establish an acquisition review point for each recurring-demand item, consisting of average demand occurring during a procurement lead-time period plus additional demand potential as a result of demand variation.
Safety Stock	Establish an inventory level when only priority requisitions will be released until stock replenishment materiel arrives. An inventory manager will control the requisition release for specific expendable operating materiel.
Lead-time to Acquire	Establish records of acquisition lead-time experience for consideration in future requirements to acquire at the item level.
Requirement to Replenish	Evaluate on a recurring basis, stock availability against the acquisition review point to ensure stock is replenished when it falls below the review point level. Stock availability assessment is based on serviceable stock on hand plus due-in stock anticipated for near term receipt plus any stock due-out. Additionally, when replenishing any stock the economic order quantity benefits should be considered.

Table 3.2. Recurring Demand Reparable Materiel

Factors Considered	Criteria
Demand	Use demand to calculate stock levels, based on average demand (average of actual past demand history) or forecasted demand (past demand modified by a trend factor). Account for degrees of demand variation to mitigate risks in demand estimates. Separate demand types by rotable demand and outright demand that reduces assets from the rotable pipeline.
Acquisition Review Point	Establish an acquisition review point for each recurring demand item, consisting of average demand occurring during a procurement lead-time period plus additional demand potential as a result of demand variation.
Requirement to Replenish	Perform a recurring evaluation of stock availability against the acquisition review point to ensure replenishment actions are initiated when stock levels and reparable stock availability fall below the review point level. Stock availability assessment is based on serviceable stock on hand plus due in stock anticipated for near term receipt from acquisition or repair plus any stock due out. Do not acquire additional units when adequate reparable assets are available.
Lead-time to Acquire	Establish records of acquisition lead-time experience for consideration in future requirements to acquire at the item level.
Repair Review Point	Establish a repair review point for each recurring demand item, consisting of average demand occurring during a repair lead-time period plus additional demand potential as a result of demand variation.
Requirement to Repair	Evaluate on a recurring basis, stock availability against the repair review point to ensure repair actions are initiated when stock levels fall below the repair review point level. Stock availability assessment is based on serviceable stock on hand plus due in stock anticipated for near term repair completion plus any stock due out. Requirements to Repair are constrained by reparable stock available to repair to a serviceable condition.
Lead-time to Repair	Establish records of repair lead-time experience for consideration in future requirements to repair at the item level.
Safety Stock	Establish an inventory level where only priority requisitions will be released until stock replenishment materiel arrives. The Inventory Manager will control the requisition release for the specific reparable materiel.

3-5 How Much Should Other Stock Locations Stock?

a. Hold quantities of NAS and Aircraft spare parts at ATO maintenance, engineering, testing, and training facilities to the minimum level needed commensurate with supporting the NAS systems and aircraft for which the facilities are responsible.

b. Maintain other FAA inventories (administrative supplies and infrastructure support items) to the level necessary to support specifically identified recurring needs or when justified, based on economic considerations.

c. The National Program Manager in coordination with the Project Manager determines quantitative requirements for project materiel inventory. Project materiel levels are limited to quantities required to support current or planned projects.

3-6 What Should FAALC Buy (Replenish)?

a. Recurring-demand items. Follow Federal guidelines on using the Economic Order Quantity (EOQ) principle or an approved alternative.

b. Insurance Items. Limit replenishing items to the quantity required to maintain the established level.

3-7 What Should Other Stock Locations Buy (Replenish)?

a. For NAS spare parts at ATO maintenance, engineering, testing, and training facilities, limit acquisition to replacement of parts placed in use.

b. AMEG will acquire aircraft spares, raw stock, bench stock, and mission equipment, as necessary to accomplish maintenance and modification activities to support FAA Flight Inspection aircraft and other Franchise customers.

c. For ATO Service Center fabrication stops/staging areas, limit acquisition to project material required for current or planned fabrications. Project materiel is normally not replaced when used except when materiel is found to be inoperable or defective.

d. For administrative storeroom operations, use either average-demand or forecasted-demand to determine when to restock items. Include rotable issues and recurring non-rotable (outright issues) in demand computation of reparable items.

3-8 When Should We Delete Items from Inventory?

a. Eliminate stocks of items that are not eligible for continued stockage through normal attrition. Do not replenish these stocks.

b. Whenever a maintenance, engineering, testing, and training facility holds inventory maintained to support specific NAS equipment or an aircraft and that equipment or aircraft is permanently removed from the operation, there is no need to retain its supporting inventory.

Unneeded NAS systems and spares should be disposed of in accordance with an approved disposition plan. When there is no disposition plan, contact the FAALC Inventory Manager (IM) prior to disposing the equipment to determine if reclamation is desired in order to provide ongoing support to the remaining field activities.

c. Remove items in excess of authorized retention levels from active inventory by following FAA property reutilization and disposal guidelines. The information is provided in the FAA Reutilization and Disposition Process and Procedure Guide, found on https://intranet.faa.gov/FAAEmployees/org/linebusiness/ato/operations/technical_operations/amnsst/process/.

3-9 How are Stock Items Identified?

a. All stock items in FAA inventories are identified with a national or local stock number in accordance with the Department of Transportation (DOT) Order 4420.3, Department of Transportation Participation in the Federal Catalog System, as implemented by FAA Order 4500.3D, Federal Catalog and Standardization Program.

b. Inventory acquired to support the Aviation Standards National Field Office, AJW-3 and the William J. Hughes Technical Center (WJHTC) Flight Program aircraft maintenance operations are identified by manufacturer part number.

3-10 What Type of Stock Item Information is Needed?

FAA's stock items records serve as the basis for item accountability. They include information on receipts, issues, quantities due in, obligations or back orders, on-hand balances, and disposal actions. Formal inventory records are essential to effective inventory management and control. They are the means by which we comply with Government standards governing inventory management (held for sale as well as held for future use).

a. LIS maintains the inventory management systems for:

- FAALC franchise fund stock (this inventory is owned by the FAALC).
- FAALC-held F&E stock (PMMS).
- ATO Field Repairable NAS spares (FSI System).

b. AJW-34 uses the ILM Suite to maintain aircraft spare parts. This inventory is owned by AJW-3 and managed by AJW-34.

NOTE: Because FAALC's franchise fund inventory and AJW-34's aircraft inventory are included in FAA's financial statement as "Inventory" and "OM&S" respectively, additional system requirements are mandated. Joint Financial Management Improvement Program (JFMIP) Report SR-03-02, dated August 2003, Inventory, Supplies and Materials System Requirements are one of a series of functional systems requirements documents that deals with federal financial management systems. Details on the type of inventory records that need to be maintained are contained in this document.

c. For inventory locations other than FAALC and those organizations maintaining aircraft spare parts, inventory records must include, at a minimum, the following item information.

- Stock Number.
- Part Number.
- Nomenclature.
- Unit Price.
- Unit of Issue.
- Unit Package.
- Quantity on Hand.
- Quantity Due-in.
- Shelf-Life Code.
- Condition Code.
- Storage Location.
- Reorder Point or Stockage Objective.

3-11 What Type of Records are Needed?

In addition to the item information identified above, physical or electronic records must be kept for items such as receipts, issues, returns, excess documents, reports of survey, and inventory adjustments, in accordance with the latest version of FAA Order 1350.15, Records Organization, Transfer, and Destruction Standards.

3-12 What is Inventory Effectiveness?

a. Inventory effectiveness determines (measures) how well an inventory is managed, meets national and local guidelines, customer's requirements (for inventory locations supporting multiple users) and the cost for attaining a given performance level.

b. Each inventory holding activity has established an inventory effectiveness level established based on the criticality of the support requirements. These levels can be set up nationally by the FAA (AM&NSST) or by the individual inventory holding activity. They could apply to an entire inventory or specific items or groups of items within an inventory.

3-13 How is Inventory Effectiveness Measured?

Inventory effectiveness is measured by comparing the effectiveness levels achieved at least annually to the established desired levels. If the achieved levels fall below the desired levels, determine why the desired levels were not achieved and what corrective actions should be taken.

3-14 What Should FAALC Measure?

For FAALC's wholesale and retail operations:

a. Fill Rate., This is the number of issue requests (line-item stock requisitions) filled from inventory on-hand when requests are received, expressed as a percentage of the total number of requests received. The fill rate for an activity is determined as follows:

> Fill Rate = (Total Number of Line Items Filled from On Hand Inventories / Total Number of Line Items Ordered) X 100.

b. Inventory Turnover Rate. The inventory turnover rate indicates the number of times that the average item in stock has been replenished during the period of observation (usually a year).[5]

(1) A low turnover rate is indicative of a long procurement lead-time, volume purchases or low usage of stocked items. Unless an item has a long lead-time, low turnover is not desirable, even if quantity discounts are offered for large (volume) purchases. The cost of carrying large quantities of stock could exceed the savings realized from quantity discounts.

(2) A higher turnover rate could indicate more efficient use of available resources, provided customer orders are being filled and the prices of stocks purchases are acceptable.

c. Order Accuracy Rate. The order accuracy rate is the percentage of total shortages or overages reported by the customer for a given period. The order accuracy rate for an activity is determined as follows:

[5] For example, if the value of the average inventory on hand is $1 million and total demand for a year is $4 million, then the inventory turnover rate in this case is 4 times.

Order Accurate Rate = (Total Line-Item Overages and Shortages Reported / Total Number of Line Items Issued to Customers) X 100 (Total Number of Line Items Filled from On Hand Inventories / Total Number of Line Items Ordered) X 100.

(1) Shortages occur when items are indicated as packed with an order and do not arrive at the customer's location. Shortages can be caused by errors in the picking and packing process. They are measured as the ratio of items short of the ordered quantity to total items delivered to customers.

(2) Overages occur when items are delivered to customers who did not order the items. Overages include both deliveries of items in quantities that exceed those that were ordered and items that were not ordered by the customer but were included with the customer's order. Overages can usually be attributed to a counting error during the picking process.

d. Location Inventory Accuracy Rate. Location inventory accuracy rates measures the connection between the inventory on record and the inventory physically on hand, as measured through physical counts. It shows how well receipts are recorded in the accountability records, if items are stored properly, etc. For example, if the inventory record indicates 27 widgets are in an inventory at a specific location and an inspection is completed showing 27 widgets are physically located at that location, the inventory is accurate. The location inventory accuracy rate is determined as follows:

Location Inventory Accuracy = (Number of Accurate Quantities in Locations Inventoried / Total Locations Inventoried) X 100.

(1) A high location inventory accuracy rate indicates that inventory records accurately reflect proper quantities of items at properly recorded locations.

(2) A low location inventory accuracy rate could indicate either that inventory records are not being updated properly or that warehousing activities were not recorded.

e. Inventory Adjustment Rate. An inventory adjustment rate is a manual change to the inventory balance in the inventory records. Adjustments can be made at any time, but are most commonly made after physical counts of stocked items are compared to recorded data. Inventory adjustments can be gains (increases) or losses (decreases), both of which can indicate an inventory problem or an inventory warehouse discrepancy. An excessive quantity of inventory adjustments can indicate that either physical security or quality control needs improvement. The inventory adjustment rate is determined as follows:

Gross Inventory Adjustment: (Sum of inventory gains + absolute inventory losses / Average Value of Inventory) X 100.

Net Inventory Adjustment: (Sum of inventory gains / Average Value of Inventory) X 100.

f. Stockout Rate. A stockout is defined as a zero inventory balance for a stocked item. A demand for the item does not have to exist for the item to be in a stockout condition, but stockout rates should be focused on active NSN's versus inactive NSN's. Measurement of stockout rates may be done at the NSN level or at the system level. The stockout rate is determined as follows

(Number of Stocked (Active) Items with Zero Balance / Total Number of Stocked (Active) Items) X 100.

(1) If the stockout standard is too low (i.e., less than 1 percent), too much attention may be given to the stockout rate at the expense of other standards. Also, a very low stockout standard requires quantities of safety stock. As the standard for stockouts approaches zero percent, the operating cost associated with being "at standard" increases exponentially.

(2) A stockout standard allowing a higher percentage of stockouts is more cost effective but adversely impacts customer service. For critical items that should not reach a stockout condition, inventory managers can maintain safety stocks.

(3) A stockout standard can direct attention to the quality of inventory management. For example, if a line item repeatedly reaches a stockout condition before it is replenished, then the information used by the inventory manager to determine the item stockage level could be inaccurate or incomplete. In that case, the data for that line item should be reviewed.

g. Number of customer service complaints received.

h. Timeliness and accuracy of physical inventories.

3-15 What Should Other Inventory Locations Measure?

For other intermediate/end user inventories:

a. AMEG uses two principal performance measures:

(1) Fill rate – Goal of filling 80% of all incoming requests for stocked items within 2 hours.

(2) Inventory Accuracy Rate – Inventory accuracy goal of 97%. The key in achieving inventory accuracy is managing your inventory effectively.

b. For other intermediate/end user inventories, measure the:

(1) Effective Use of Inventory Reviews – use annual reviews of stocked items to make sure:

- NAS spares are maintained only for those systems for which the facility has maintenance responsibility.

- Identify potentially inactive inventory (that has not been used for over 12 months) to ensure it is still necessary to maintain it in stock.

(2) Timeliness and Accuracy of Physical Inventories.

- Are annual inventories being conducted?
- Are inventory discrepancies researched and potential problems resolved in a timely manner?
- Is the data maintained on the item correct?

3-16 How are FAALC Inventory Reviews Used?

FAALC uses inventory reviews to identify recurring expendable and reparable items that have an on-hand quantity greater than their Economic Retention Limits (ERL). However, items that are not readily procurable may be exempted from review. When an ERL has not been established, then the ERL for wholesale inventories shall not exceed a 5 year supply, and the ERL for retail inventories shall not exceed a 3 year supply.

> **NOTE:** In accordance with Order 4560-1, Policies and Procedures Covering the Provisioning Process During the Acquisition of FAA Materiel, during initial provisioning, before ERL has been established, spare parts peculiar are procured to meet expected demand of the end article's life cycle or forecasted 8-year requirement, whichever is shorter.

a. Review expendable operating and reparable materiel annually to determine whether such items should be retained.

b. Review insurance items biennially to ensure the conditions under which they were stocked remain valid. Delete insurance items when program changes have eliminated their need. Insurance items not stocked by the FAALC may be retained in the inventory regardless of demand level.

3-17 How are Other Organizations' Inventory Reviews Used

Managers assess the results of inventory reviews to determine the effectiveness of the inventory management process. Results may identify an issue that may be national in scope that needs to be brought to the attention of AJW-161, or indicate the need to modify their internal processes. It may also identify changes to the makeup of their inventory that require improved storage and control of excess or obsolete stock.

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Chapter 4. Storage Management

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Chapter 4. Storage Management

Section 1. General

4-1 What does this Chapter Cover?

This chapter covers basic principles and practices for storing equipment, material, and supplies. It applies to all organizations as appropriate to their storage management activities. Storage space is a major concern for all managers who have storage requirements. Upkeep and overhead related to storage space represent a substantial portion of the operating cost of storage activities.

4-2 What are the Principles of Storage Management?

The principles of storage management are the starting point in determining storage requirements and policies used to manage storage. The storage requirements are the maximum use of space consistent with adequate care, protection and proper identification. The following are essential principles for an effective and efficient warehouse management program:

a. Considering an item's characteristics when selecting a specific type of storage space, e.g., Indoors. An item's characteristics can include whether or not it is a shelf-life item, contains hazardous material, and requires special maintenance and/or inspection requirements. Ensure that adequate security, and safe storage environments, technical expertise, and test equipment are available when necessary.

> **NOTE:** Field spares should be marked or physically separated as expendable or reparable to the extent practical to help with physical inventories.

b. Package and mark hazardous materials in accordance with applicable Federal and State laws.

> **NOTE:** Usually hazardous material is identified by the manufacturer or supplier at the time of procurement, and are packaged, packed, and marked to provide the required degree of protection during shipping, handling, and storing to ensure compliance with government regulations.

c. Maintain material in ready-for-issue condition to prevent the material from deteriorating.

d. Maintain appropriate security to prevent theft, fraud, and abuse.

e. Manage shelf-life items to ensure they are used before they expire.

f. Maintain single item records for both inventory and warehouse personnel, including storage locations and quantities on hand.

g. Preserve, package, and mark items for storage and movement using appropriate methods to provide adequate and cost-effective protection.

h. Maintain document and transaction history to ensure a complete audit trail, including receipts and issue documents.

i. Whenever possible, open, inspect, and test materiel received for acceptability or obvious damage.

j. Consider using other government storage facilities when possible instead of using commercial facilities.

> **NOTE:** Items stored in locations other then FAALC are usually held for a short time. However, occasionally longer storage and using non-FAA storage facilities may be required. Consider acquiring additional storage space through storage cross-servicing agreements with other Government agencies before leasing commercial storage. The organization acquiring the space should choose the alternative most advantageous to the Government.
>
> Additional guidance on leasing space can be found in the Acquisition Management System's FAST website under Real Estate Guidance http://fasteditapp.faa.gov/ams/do_action?do_action=ListTOC&contentUID=2.

4-3 What are FAA's Storage Management Requirements?

FAA's storage requirements depend on the size, level, and type of items being stored at a facility. The processes contained in this chapter may be more extensive than required. The above principles are minimum storage practices required for storing FAA materiel, regardless of location. This chapter describes these practices.

Section 2. Identifying Storage and Space Requirements

4-4 What is Space Planning?

Space planning identifies space requirements and establishes adequate storage allocation. Some considerations in determining space requirements and enough storage allocation include:

- The size, weight, physical characteristics, and configurations of material being stored and issued.
- The quantity, ease of receipt and issue, and the type of stored materiel.
- A means of identifying various storage areas, aisles, and materiel-movement patterns.
- Accessibility, potential interference with operations, operating variables, emergencies, and significant organizational changes, which might effect the storage operation.
- Expansion of storage capability when needed or a reduction in space when storage requirements are reduced.

4-5 What Types of Storage Space are There?

An item's physical characteristics and packaging determine the need for a specific type of storage space which can influence operating costs. Assigning materiel to any of the four types of storage space identified below is dependent largely on its characteristics and packaging.

- Covered Storage.
- Outside Storage.
- Controlled Environment Storage.
- Hazardous Materials Storage.

4-6 What is Covered Storage?

Covered storage space is within an enclosed building, with or without environmental control, e.g., cooling or heating facilities. Covered storage is used to protect materiel from deterioration due to weather. Covered or fully enclosed storage space, compared to outside storage, is more costly to construct and maintain and often is supplemented with sheds or lean-tos, which provide partial cover. This method is desirable and effective for storage of materiel requiring maximum ventilation or those not requiring total protection from the weather. Exercise care in selecting materiel for storage in covered areas. Consider the physical characteristics of the item (size, weight, etc.) and cost effectiveness before deciding on covered storage.

4-7 What is Outside Storage?

a. Outside storage space is an area designated for this purpose and is set aside usually by fencing or other suitable enclosure. Improvised outside storage is usually an area that has been graded and/or hard-surfaced or prepared with a topping of suitable materiel to provide adequate storage handling operations. While unimproved space is sometimes designated, use it only as an emergency or temporary measure. Outside storage is comparatively economical to operate and maintain. Generally, any item intended for outdoor use can be stored outside provided it is protected properly against adverse conditions.

b. Numerous methods of protecting bare products or packaged units are available. These include tarps, plastic coverings, and portable shelters. Never place materiel directly on the storage surface, paved or otherwise; use pallets, racks, or other suitable items.

4-8 What is Controlled Environmental Storage?

Controlled environmental storage includes:

a. Classified Storage. This type of space stores materiel classified as confidential, secret, or top secret in accordance with the latest version of FAA Order 1600.2, Safeguarding Classified National Security Information, available at http://www.faa.gov/documentLibrary/media/directives/ND/ND1600-2E.pdf.

b. Dehumidified Storage. This type of space stores materiel requiring controlled humidity.

(1) Generally, the volume of materiel requiring humidity control does not justify constructing special facilities. Instead, protect items from moisture by applying preservatives and protective packaging and packing using contact preservatives, drying agents, waterproof barriers, and other protective devices.

(2) Preserve and package items susceptible to water corrosion in waterproof barriers and use drying agents to absorb excess moisture. Inspect these items periodically, replace the drying agent and reseal the barrier. Then items can be stored indefinitely without deterioration.

c. Protected Storage. This type of storage space protects high-risk items from theft or misuse. It may be a vault, locked storeroom, or caged enclosure approved by the supporting security office for storage of intended items prior to use. Keep protected storage areas locked when unattended and restricted to designated personnel only. You may find additional guidance in the restricted FAA Order 1600.69, FAA Facility Security Management Program. If you need additional information contact the Office of Internal Security (AIN-1). Items that require protected storage include, but are not limited to, the following:

(1) High-risk equipment such as hand tools, binoculars and optical equipment, and portable electronic equipment.

(2) Accountable/Sensitive Documents and Forms. All forms and documents used by the FAA, whether filled in or not, which by reason of the information they contain, the authority they convey, their value as negotiable instruments, other significant value (actual or implied), require physical protection from unauthorized access.

d. Constant-Temperature Storage.

(1) Some locations have a continuing need and others have an occasional need for refrigerated storage space. If the requirement is minimal, a commercial refrigerator may suffice. In situations where the volume exceeds the capacity of the refrigerator, consider commercial facilities unless the need is permanent. Then constructing a refrigerated room or building may be justified.

(2) Other storage spaces may require heating (or alternate heating and cooling) to maintain a proper temperature. The required temperature constancy dictates the extent of insulation for the space and the capability of its temperature-controlling system.

4-9 What is Hazardous Material Storage?

Hazardous material storage is any storage space used to hold inventory which by, virtue of its potential danger, requires control to ensure adequate safety to life and property. Figure 4-1, Federal Supply Classes (FSC) Composed Predominantly of Hazardous Items, lists applicable FSC's. Hazardous materials storage requirements include:

Table 4-1. FSC's Composed Predominantly of Hazardous Items

FSC	Description
6810	Chemicals
6820	Dyes
6830	Gasses: compressed and liquefied
6840	Pest control agents and disinfectants
6850	Miscellaneous chemical specialties
7930	Cleaning and polishing compounds and preparations
8010	Paints, dopes, varnishes, and related products
8030	Preservatives and sealing compounds
8040	Adhesives
9110	Fuels, solid
9130	Liquid propellants and fuels, petroleum case
9135	Liquid propellant fuels and oxidizers, chemical base
9140	Fuel oils
9150	Oils and greases; cutting, lubricating, and hydraulic
9160	Miscellaneous waxes, oils, and fats

NOTE: Hazardous items are not limited to items cataloged with the FSC's provided in Table 4-1.

a. Store hazardous material in a designated area apart from regular storage and other non-compatible hazardous material. Take appropriate measures to ensure immediate and effective response at the storage or handling location in case of emergency. Train all personnel involved

in packing and shipping of hazardous materials to properly package, pack, and mark it. Do not stock more than the minimum quantity necessary to satisfy operational requirements.

b. Storage requirements for specific types of hazardous materials include:

(1) Flammable Liquid. Provide either a separate building for this storage or a fire-resistant enclosure within the main storage facility. In either case, provide sufficient fire protection; e.g., an automatic sprinkler system, portable fire extinguishers, adequate means of entry for firefighting equipment, and exits for personnel to safely leave the building. Detailed requirements for a specific storage location are provided in OSHA Standards, 29 CFR 1910, Subparts E (Means of Egress), H (Hazardous Materials), and L (Fire Protection). For further guidance, see the latest versions of Order 3900.19, Occupational Safety and Health Program and FAA Order 6930.1, Fire Prevention and Maintenance of Fire Protection Equipment, FAA STD-004a, and Criteria for Selection and Installation of Fire Extinguishers. A few of the most widely accepted safe practices related to storing flammable materiel, are listed below.

> **NOTE:** Various organizations within the FAA will store flammable items. This is particularly applicable to engine-generator space, the FAALC, and locations where there are Aircraft Maintenance Bases.

A few of the most widely accepted safe practices related to storing flammable materiel include the following:

- Store materiel in end bays of the building, provided suitable access is available by doors and windows.
- Identify containers with name and flashpoint of contents.
- Use extreme care when handling containers to prevent breakage.
- Inspect containers for leaks before placing in storage and recurrently while in storage.
- Immediately remove any leaking containers.
- Provide curbs or similar barriers to prevent the flow of spilled liquids to other sections of the building.
- Keep flammable liquids away from any area where flammable vapors from leaks or other sources may be ignited by sparks, flames, or extreme heat.
- Provide adequate ventilation for any area where flammable vapors or gases may be present.
- Restrict area to authorized personnel.
- Do not store combustion-supporting materiel near flammable materiel.

(2) Compressed Gases. Handle these gases, which are under pressure, with extreme care, particularly flammable, combustion-supporting, and explosive gases. To prevent accumulation

of gas in case of leakage, separate storage facilities by at least 50 feet from other buildings, constructed of non-combustible materiel, and well ventilated. Further guidance is contained in the latest version of FAA Order 3900.19, Occupational Safety and Health Program, 29 CFR 1910 and two Compressed Gas Association pamphlets, P-1-1965 and P-1-1966. Generally accepted precautions for storage and handling of compressed gases are shown below:

- Use gas-tight solid non-combustible partitions to separate oxygen, chlorine and other gases that support combustion from flammable bases. Individual storage sheds separated from each other by at least 2225 feet may be use in lieu of a compartmentalized single building.
- Store acetylene and oxygen cylinders in an upright position and secured to prevent falling or shifting. Other cylinders may be stored in an upright or horizontal position and secured to prevent accidental movement.
- Use suitable material-handling equipment such as hand trucks for lifting and transporting cylinders. Hold cylinders securely in position during hauling. When suitable material-handling equipment is not available, cylinders may be moved by tilting and rolling on the bottom edge.
- Do not drop cylinders or allow them to strike against each other.
- Do not handle, ship, or store cylinders without valve protection caps.
- Keep oxygen cylinders free from grease and oil.
- Use cylinders only for containing compressed gases.

(3) Radioactive Storage. Store radioactive elements in a controlled storage area when the quantity stored exceeds a specific level of radioactivity. Generally, most locations store only low-level radioactive materiel in small quantities, which do not require special storage. Use OSHA Standards, 29 CFR 1910, Subpart G, and the latest version of Order 3910.3, Radiation Health Hazards and Protection, for guidance on storing radioactive materiel and determining requirements for a particular storage situation. These requirements identify a secure area for storing radioactive materiel.

c. Fire Alarm and Security Systems. Wiring and hardware used for alarm systems in hazardous-storage areas must comply with OSHA Standards, 29 CFR 1910 and National Electrical Code requirements, which include using both hardware and electric wiring that, are explosion-proof. Coordinate and plan using the alarm systems with your servicing security element (SSE).

Section 3. Warehouse Space Guidelines

4-10 What are Physical Layout Factors?

The types and amount of materiel as well as size, weight, shape, and special requirements influences the physical layout. Available storage space also affects the choice of the layout. For indoor storage, consider ceiling height, floor-load capacity, electricity, water, loading and unloading facilities, ventilation, and safety hazards in devising a layout to facilitate efficient operations.

4-11 What are Size, Weight, and Shape Factors?

Many organizations expect to provide storage for small, lightweight items, as well as large, heavy items, such as machinery, cable, and building materiel. Consider extremes in both characteristics when determining the physical layout of your storage area. You should store bulky boxes, crates, and heavy items in such a way that avoids unnecessary movement. Consider items without firm packing and avoid stacking items too high to avoid crushing or otherwise damaging containers or contents.

4-12 How are Slow-Moving and Fast-Moving Items Affected?

The warehouse layout is important to minimize travel time between slow and fast moving items. Items should be placed in accordance with demand. When feasible, create a zoning plan to arrange active stock in the most accessible location and as close to the shipping or issuing location as possible. Place slower-moving items in locations that are the least accessible and the furthest from the point of issue. For large-scale facilities, use materiel-handling equipment to load and unload materials when feasible.

4-13 What Factors Affect the Layout of Aisles?

An important aspect of storage planning is designating and marking aisle space. Aisles take away from available storage space and should have a minimum width compatible with efficient stock selection and replenishment actions, using either manual methods, material-handling equipment, or both.

a. Major aisles are those major paths throughout the storage area and lead to the cross aisles. From the point of receiving or issuing, plan aisles to afford the most direct access to major storage areas.

b. Access aisles are usually at right angles to the major aisles. Sometimes, special situations can be accommodated by greater angling of the access aisles. If possible, access aisles should lead to exits.

c. Activity aisles are sometimes referred to as bin or service aisles and give access to stocked materiel or bin areas. Activity aisles also provide access to fire-fighting equipment; however it is better to relocate this equipment and necessary electrical outlets to avoid creating activity aisles for this purpose alone.

d. The following list provides specific criteria for aisle planning:

- Do not exceed floor load capacity.
- Have all main aisles lead to exit doors or loading areas.
- Have turning points or loops provide maneuverability of material-handling equipment.
- Make aisles wide enough to allow two equipment-handling vehicles to pass one another easily.
- Keep straight aisles free of obstacles, such as posts and floor obstructions.
- Coordinate activities to eliminate two-way traffic to release more space for storage.
- Provide adequate passageways when leading to areas such as water connections, light switches, electrical outlets, fire extinguishers, and emergency personnel exits.
- Provide exits at the receiving area to reduce congestion during peak receipt hours.

4-14 What Factors Affect Receiving and Shipping Areas?

a. For larger storage operations, set an area aside for receiving, shipping, or both, no larger than necessary, since they take up space that would otherwise be available for storage. These areas are normally located in a part of a building near an access road to avoid unnecessary movement of vehicles in the vicinity of the building.

b. Small storage operations normally use the same area for both shipping and receiving.

4-15 What is the Purpose of a Stock Locator System?

Stock locator systems pinpoint the exact storage location of an item in an easily understood manner and are essential to all storage facilities except for smaller operations. Locator systems may be either manual or automated. For smaller operations, a simple card file can be used.

a. Locator systems contain a record for each stock item with the necessary information to locate the item. At a minimum, the systems contain the NSN or other identifying numbers for non-cataloged items and the item's locations(s). These systems are updated as new locations are established or existing locations are changed.

b. Location identifiers are combinations of letters and/or numbers with each symbol representing an individual location within a subdivision of the storage facility. The major subdivisions are shown below, in diminishing order.

- Building.

- Stockroom within building.
- Bay.
- Row designation within bay.
- Storage device number.
- Storage level (floor to ceiling).
- Location in storage level.

c. Adequately mark all subdivisions to ensure the accuracy of the locator system.

4-16 When and How are Bins Used?

Bins are used to store small and medium-sized items as well as small loose items, which are not practicable to store loosely on shelves.

a. Arrange bins "back-to-back" to form a double row, and when possible, perpendicular to walls. Space along the walls also may provide desirable locations for special single-bin sections to store items that do not fit into the conventional "back-to-back" bin arrangements. Set bin rows at right angles to major aisles.

b. Clearly mark bin rows and vertical levels for each stock selection.

c. Where possible use the original storage container as a bin box, by cutting or tucking the flaps under to provide an open container.

d. The top bins should be able to be reached by a person of average height when standing on the floor.

4-17 When are Pallets Used?

Pallets are used to stack materials for storage or transportation. Place materiel on a pallet in a unit load or quantity that facilitates vertical stacking and handling by mechanical lifting equipment, such as forklifts. The stack should begin at a wall or terminal point and build toward the major aisles. Never stack higher than 18 inches below the fire sprinkler system. Use the largest suitable pallet in each individual situation to minimize handling operations.

Section 4. Warehouse Space Layout Guidelines

4-18 How is Facility and Operational Layout Determined?

Facility and operational layout is an important component of a facility's overall operations, it maximizes the effectiveness of production processes, ensures sound safety practices, and meets employees needs.

a. A logical layout contributes to safe and efficient production, providing for adequate work areas, clearly defined traffic and fire lanes and aisles, sufficient light and fresh air, proper stockpiling, and ease of production-line operations. If any of these considerations are overlooked or ignored, accidents and injuries could follow.

b. For both safety and efficiency, use warning signs and protective devices such as signs, color markings to point out physical hazards, guide signs indicating the location and identification of equipment, well maintained handrails, toe boards, and non-slip surfaces on platforms, walkways, ramps, stairways, and entrances to elevators.

c. Highlight hazardous areas, shops, or operations by using colored lights, flares, barriers, signs, audible signals, or other means to make them more conspicuous. Stop signs, one-way signs, aisle markings, and overhead mirrors will alert vehicle and equipment operators and pedestrians to hazardous conditions. Specific guidelines concerning signs and color coding are found in OSHA Standards 29 CFR 1910.144, Safety Color Code for Marking Physical Hazards, and 29 CFR 1910.145, Specifications for Accident Prevention Signs and Tags.

(1) Use red to designate danger, for the following items:

- Fire-fighting equipment and apparatus.
- Safety cans or other portable containers of flammable liquids used in warehouse or stockrooms.
- All danger signs.
- Lights for barricades, temporary obstructions, and construction.
- Stop buttons for electrical switches to stop machines in case of an emergency.

(2) Use yellow to designate caution for physical hazards such as striking against, stumbling, falling, tripping, and "caught in-between." Examples include:

- Guards for gears, pulleys, and chains.
- Handrails, guardrails, top and bottom treads of stairways.
- All caution signs.

- Self-powered material-handling equipment (may also be red).
- Construction equipment.
- Any overhead obstruction in a position to be struck by equipment or persons.
- Pillars, posts, or columns, which might be hazardous to operating equipment.
- Aisle markings designating equipment routes such as fixed conveyors.
- Any projections, doorways, trolley supports, legs, low beams, and pipes.

(3) Use green to designate safety equipment, the location of first aid equipment, and the signal for traffic to proceed.

(4) Use black and white to designate housekeeping and traffic markings or direction.

4-19 How is Materiel Handling Equipment Selected?

Many factors influence the selection of material-handling equipment (MHE) either for specific operations or for complete storage-mission performance. Consider the following in determining your MHE requirements.

a. The least handling is the best handling. Use equipment, capable of multiple applications and standardize methods for handling.

b. When selecting equipment, consider size, shape, and weight of the materiel to be handled.

c. Plan materiel movement and traffic flow requirements.

d. Coordinate between equipment users. Include factors having a direct bearing in computing requirements for material-handling equipment. Analyzing these factors will results in optimum material-handling and containing the proper mix of equipment by type and capacity. Factors to consider include:

- Physical layout, such as terrain features, locations, design characteristics, and the extent of open storage.
- Mission requirements that dictate materiel-moving patterns.
- Workload.
- Continuous multiple-shift operations (if applicable).

4-20 What are the Types and Kinds of Material-Handling Equipment (MHE)

Physical characteristics of the building, available manpower, and fiscal limitations are the basic controlling factors in determining the extent of equipment to be used. Only use equipment that meets or exceeds OSHA standards. Modify current equipment if such equipment does not meet current OSHA standards, subject to fiscal constraints. The most commonly used MHE's are listed below.

a. Forklift. This is a powered industrial vehicle operated by a skilled operator. A forklift can handle materiel that takes several people to handle manually, it is used to pick-up, carry, and stack unit loads of materiel (generally palletized loads of materiel) with special attachments available to diversify its capabilities. Because exhaust fumes can be hazardous in confined spaces without adequate ventilation, use electric powered units or those powered by liquefied petroleum gas.

b. Four-Wheel Platform Truck. This type of hand-truck is useful in moving loads of materiel from one location to another where requirements of distance and speed are minimal. The size and type of available trucks vary enough to meet most individual needs.

c. Two-Wheel Hand Truck. This is the basic piece of manual-use equipment in any storage operation. It has many uses in meeting requirements to move small and low-weight loads of materiel. Although this type of equipment has generally been replaced by a powered industrial vehicle, these relatively inexpensive units are still useful.

d. Cranes. Cranes vary in size and mobility; however wheeled cranes are more useful in the typical FAA storage operations. They are designed to lift materiel ranging up to 25,000 pounds, which should be more than adequate for most storage operations.

e. Conveyors. Conveyors are able to safely transport materials from one level to another, which when done by human labor is strenuous and expensive. There is rarely a storage operation that does not use conveyors to some extent. Except for the larger operations, the gravity-type-conveyor, consisting of a continuous platform of evenly spaced rollers that turn freely in the frames of the platform is considered the most practical.

Section 5. Storage Activities

4-21 How is Stock Received?

a. Stock is received by checking material to identify for any discrepancies with the receipted document. It is critical that all storage locations have a positive control at all times of both documentation and that the expected material is actually received. Submit transportation discrepancy reports as appropriate (i.e., damage in shipment, overages, shortages, wrong materiel, etc.).

b. To ensure effective control and to enhance materiel accountability, identify and track material in-transit adequately. Establish a control mechanism in the receiving process to identify the quantity received by the source, the date of receipt, and the identity of the receiver to ensure control of materiel after receipt and prior to storage or turn-over.

b. Record receipts in property accountability records with asset records visible to all organizations that require this information.

> **NOTE:** Assets received from the FAALC require receipt in LIS or IMPART to establish warranty.

c. Once an item is identified as hazardous, document the accountable inventory record.

> **NOTE:** If the item is not appropriately labeled by the manufacturer or distributor, place the appropriate label, mark, or tag the item in accordance with OSHA, Nuclear Regulatory Commission (NRC), and Environmental Protection Agency (EPA) requirements. This includes the actual or potential hazard associated with handling, storage, or use of the item, any hazardous chemicals(s) contained and the name of the chemical manufacturer, importer, or responsible party as defined in 29 CFR 1910.1200. Maintain this information in the item record to use when preparing reports of excess property, reassignment or transfer documents, or any other required documentation. Permanently maintain this information in all inventory records.

e. Whenever possible, use technological innovations such as bar coding in the receipt process to minimize errors in records and enhance the receipt posting process.

4-22 How are Stock Items Marked?

a. Mark stock items and their locations so they can be easily identified and located.

b. Separate materiel by categories, e.g., serviceable, reparable, F&E, excess, and contractor-owned.

c. Identify individual items in storage for issue, accountability, inventory, and location. At a minimum, show the following information:

(1) NSN.

(2) Item Name.

(3) Part Number (when applicable).

(4) Unit of Issue.

4-23 How do I Manage Items in Storage?

Manage items in storage by:

a. Maintaining material in a ready for issue condition to preclude the need for inspection, testing, and preservation at the time of shipment and to maintain availability at an optimum level.

b. Retaining only materiel representing current or anticipated need.

c. Preserving, packing, packaging, and marking items as required, prior to placing them in storage.

d. Storing items in appropriate storage facility and environment. If possible, restore material which has deteriorated or needs to be preserved to a ready-for-issue condition, checking or testing them periodically to make sure they are ready to ship or use as required to maintain a serviceable, ready for issue, condition.

e. Issuing items without a shelf-life using the "first-in first-out" method to ensure their serviceability. Move older stock to the most accessible location for stock selection. This applies to equipment, parts, and office supplies as well as to subsistence items, paints, and rubber goods. Place new stock at the back of the storage location or in a controlled auxiliary location to prevent issue until older stock is depleted.

4-24 How do I Manage Hazardous Material?

a. An authorized official of the holding organization must properly identify and certify that any property known or suspected to contain hazardous materials, hazardous waste, toxic agents, or controlled substances has been clearly labeled. Contact your hazardous material servicing coordinator for advice and assistance. Contact the Office of Environment and Energy's (AEE) Hazardous Property Management for additional information.

b. A Material Safety Data Sheet (MSDS) or a Hazardous Material Information System (HMIS) record (or equivalent) must be received with or prior to or with the shipment and maintained at the storage site. Any future shipment of hazardous material must also be identified, documented, labeled, marked, placarded, and packaged in accordance with applicable DOT regulatory provisions in 49 CFR 171 through 180.

4-25 How do I Manage Shelf-Life Items?

The term "shelf life" refers to the maximum period of time, beginning from the date of manufacture or date of shipment, which packaged materiel, can be stored at specified temperatures and still be suitable for use.

a. Identify all limited-shelf-life items upon receipt by marking the date of manufacture or date of shipment, whichever is applicable, on the container or package to minimize loss and ensure maximum use of these items before their shelf life expires.

b. Chemical and physical decomposition or reaction is the most costly form of deterioration. Examples include:

- Corrosion caused by climatic conditions and active agents in the atmosphere, such as oxygen, ozone, moisture, sunlight, temperature, wind, and dust.
- Rust promoted by condensation, due to changing temperatures.
- Evaporation, hardening, or drying out of certain preparations, such as lubricants, paints, compounds, and resins.

c. Certain items require inspection, functional test, recalibration, replacement of parts, or other maintenance action prior to issue or shipment if the shelf life has expired since it was manufactured, last inspected, overhauled, or packaged.

4-26 How do I Preserve Materiel in Storage?

You can help preserve your materiel by following these guidelines:

a. Do not open standard unit packages for storage or issue purposes, unless necessary. Keeping the unit package intact provides protection and identifies the item.

b. When several different items (not identified by the same NSN) are received packed in a single container, you can open the package and store each item in its proper location.

c. When packing items for stock purposes, make sure the containers are of minimum weight and cube, that cushioning is adequate for handling purposes, and that each unit, intermediate, or exterior container identifies the contents by NSN, item name, manufacturer's name and part (when applicable), and number of units in the container.

d. Provide adequate protection against environmental hazards.

e. When using a shed or outside storage areas, use waterproof liners, shrouds or covers to protect the items from rain, excessive heat or cold, and damage from the wind or other natural causes.

Section 6. Safety, Security, and Housekeeping

4-27 What are the Safety Requirements and Risks?

a. A safety program is an important factor in managing a storage operation. The value of a safety program depends upon the action taken to control hazardous acts by people and to eliminate unsafe conditions. Accidental injuries usually occur when people are careless or exposed to mechanical or physical hazards.

b. Safety standards and accident-prevention are the minimum requirements designed to cover average conditions found in most FAA storage operations. Safety standards are as essential for small one-man storage or supply operations as for large warehouse activities. Since it is impossible to list all types of emergencies that may arise, the cooperation and resourcefulness of all personnel are needed to cope with hazardous conditions and acts not covered.

> **NOTE:** Operating organizations should supplement the provisions of this paragraph by referring to the appropriate technical publications on the electrical and mechanical equipment with which they work and to applicable local policies and procedures.

c. Apply and enforce OSHA Standards. Those portions of the OSHA Standards (29 CFR 1910), which most readily apply to the storage of materiel are available at http://www.osha.gov/pls/oshaweb/owastand.display_standard_group?p_toc_level=1&p_part_number=1910, and are listed in the following Subparts.

(1) Subpart D - Walking and Work Surfaces.

(2) Subpart E - Means of Egress.

(3) Subpart H - Hazardous Materials.

(4) Subpart L - Fire Protection.

(5) Subpart N - Materials Handling and Storage.

4-28 What are Warehouse Safety Elements?

The following safety elements are applicable to most warehouse and stockroom operations.

a. Consider carefully all equipment requirements and prevailing working conditions prior to beginning an operation.

b. Assign work within limits of employee capabilities. Assign qualified and experienced personnel to make up at least the nucleus of a work crew.

c. Ensure employees are familiar with equipment and safe work practices, and are instructed on how to use of all protective gear.

d. Provide personnel with protective clothing and equipment needed to safely perform assigned tasks, e.g., appropriate clothing for personnel working under climatic conditions that may subject them to frostbite, sunstroke, or heat exhaustion.

e. Instruct personnel to promptly report all injuries, accidents, unsafe conditions, and equipment. For further guidance, refer to the latest version of Order 3900.19, Occupational Safety and Health Program, available at https://employees.faa.gov/tools_resources/orders_notices/index.cfm/go/document.information/documentID/8034.

4-29 What Safety Measures Should We Follow?

a. Instruct persons who manually handle materiel of any type on how to lift heavy objects. Safety precautions on how to manually handle materiel include, but are not limited to:

(1) Wearing protective clothing or accessories, including gloves, face shield, goggles, and safety shoes, as appropriate.

(2) Examining materiel for sharp edges, protruding points, frayed/weakened places in the rope or binding, and other faults which may cause injury to personnel; correcting any found defects before proceeding.

(3) Arranging stacked cargo and materiel in an orderly manner for convenient and safe handling.

(4) Removing, repairing, or replacing defective or broken strapping on cargo.

(5) Wearing a face shield or goggles when cutting steel strapping and cautioning nearby personnel to stand clear while this is being done.

(6) Not overloading wheelbarrows, hand trucks, or other similar devices. Pushing, not pulling these devices except when going up inclines.

(7) Replacing ropes, if defective, used for carrying, towing, or lifting, and scaffold lines.

(8) Using appropriate tools for each job.

(9) Disconnecting plugs when electric power tools are not in use.

(10) Blocking cylindrical objects to prevent rolling.

(11) Wearing a life line and safety belt when working at high elevations if other safeguards are impractical.

(12) Not reaching around, over, or under moving parts of any machine.

b. Supply the appropriate tools, equipment, machines, and provisions for their maintenance, and instructions on their use for every job.

(1) Employ machine guards where mechanical hazards exist or are likely to occur. This includes:

- Shielding all moving parts of friction drives, belts, and line shafts; the removing of protruding set screws.
- Shielding points of contact on machinery having cutting, punching or sawing edges.
- Shielding crushing machinery and conveyors.
- Guarding of electrical fuse boxes and switching apparatus.
- Grounding of all electrical machines.
- Placing limit switches on cranes or hoists.

(2) Limit the use of forklifts, truck, or other types of power-driven mobile material-handling equipment to qualified operators. Although accidents due to unguarded machinery occur less frequently than those resulting from unsafe operations, injuries received from contact with moving machines parts are generally severe and can result in permanent disability of the operator.

4-30 What Security Measures Should We Follow?

Warehouse managers need to provide adequate security to prevent loss from theft, pilferage, or compromise of the receipt and issue of assets in accordance with the restricted FAA Order 1600.69, FAA Facility Security Management Program. For additional information, contact the Office of Internal Security (AIN-1).

a. As warehouse and stockroom operations vary in size and activity, managers are responsible for coordinating with their supporting FAA security office to determine appropriate security measures. The supporting security office can provide the necessary advice and assistance in developing a security plan and assist in ensuring the continued integrity of the security system by means of surveys and inspections. For storage on a non-Federal airport, coordination with airport or other local officials may be needed.

b. Security measures include provisions for guards, night watchmen, distinctive identification cards, automatic alarm systems, security cages, and fenced areas, depending upon the magnitude of the operation. Also included are lock devises, intrusion detection devices,

protection lighting, and access control. The extent of protection needs to be commensurate with statutory and regulatory requirements and the possibility of theft or pilferage.

c. The greatest loss in any warehouse or stockroom is normally from pilferage of small easily concealed items, such as hand tools, electron tubes, and radio and electrical parts. The following measures can minimize pilferage:

(1) Properly select and assign responsible personnel.

(2) Separate and secure sensitive supplies such as calibration tools that may require special protection.

(3) Once a container in bulk storage is opened, immediately repack the contents or move them to a bin area. Leaving loose items in open in bulk storage areas invites pilferage.

(4) Obtain the cooperation of key personnel when apprehending offenders and begin prompt disciplinary action.

(5) Report all incidents involving theft or malicious damage to the supporting security office.

4-31 What Housekeeping Measures Should We Follow?

Establishing and maintaining standard housekeeping practices in warehouses, stockrooms, and issue points, are prerequisites to an efficient and economical operation. It is closely related and to some extent inseparable from fire-protection practices since the main objective of each are to protect life and property. Each warehouse, stockroom, and issue point should establish and enforce high standards of housekeeping. The following are a few basic requirements:

- Adequate lighting.
- Clean and orderly machines, equipment, and working surfaces.
- Adequate and orderly tool storage.
- Adequate employee safety.
- Adequate and orderly materiel storage.
- Systematic removal and disposal of scrap materiel.
- Adequate work areas to permit freedom of operation.
- Adequate supply of fresh, pure, and properly dispensed drinking water.
- Proper trash disposal.

- Adequate toilet facilities.

4-32 What Fire Prevention Measures Should We Follow?

a. Establishing and observing standard fire-prevention measures in warehouses, stockrooms, and issue points are recognized as a prerequisite to an efficient and economical operation. It is closely related and to some extent inseparable from housekeeping practices since the main objective of each is to protect life and property.

b. The term "fire protection and prevention" prescribes general fire-prevention and fire-protection practices for any warehouse or stockroom application. Thoroughly discuss the standard practices shown here in the preplanning states to ensure adequate safeguarding of personnel and government property. The following are a few of the more common causes of fires:

- Carelessness in extinguishing matches and smoking in unauthorized locations.
- Poor housekeeping.
- Sparks from impact, friction, or electric equipment.
- Static electricity.
- Loose packing materiel.
- Overloaded electrical circuits.
- Improperly handling and storing flammable liquids.

c. The manager of each storage operation needs to practice the following:

(1) Outline the fire prevention and housekeeping related responsibilities of all assigned personnel.

(2) Determine the amount and type of fire-fighting equipment needed.

(3) Establish periodic inspections of all fire-fighting equipment.

(4) Arrange for inspections to eliminate fire hazards and to enforce safety measures.

(5) Conduct periodic fire drills and building evacuations.

(6) Provide a method for notifying the local fire department, when necessary.

(7) Establish procedures for reporting discrepancies in equipment and practices.

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Chapter 5. Physical Inventories

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Chapter 5. Physical Inventories

Section 1. General

5-1 What is a Physical Inventory?

A physical inventory is a physical inspection of items of property to confirm that quantities on record equal quantities on hand. This involves comparing the count results to recorded quantities, conducting research on differences, and determining and posting accurate adjustment to the on-hand balance.

5-2 Why Do We Conduct Physical Inventories?

Physical inventories are performed:

a. To validate the official property record, and ensure inventory accuracy. These controls improve visibility and reduce the risk of: (1) undetected theft and loss; (2) unexpected shortages; and (3) unnecessary purchases of property already on hand. Managers need to know how much inventory is on hand and where it is located in order to make effective budgeting, operating, and financial decisions.

b. As stated in the GAO Executive Guide 02-447G, Best Practices in Achieving Consistent, Accurate Physical Counts of Inventory and Related Property, Background section:

> The ability to accurately count physical inventories is critical in verifying that inventory actually exists and that on-hand balances agree with financial and property records...The lack of reliable information impairs the government's ability to (1) know the quantity, location, condition, and value of assets it owns, (2) safeguard its assets from physical deterioration, theft, loss, or mismanagement, (3) prevent unnecessary storage and maintenance costs or purchase of assets already on hand, and (4) determine the full costs of government programs that use these assets.

5-3 How do Managers Use Physical Inventories?

Managers use physical inventories as a management tool to determine the effectiveness of the inventory and the organization's supply management program. Inventory results may point to needed improvements in supply system operations, control procedures, and personnel performance. It is important that lessons learned from each physical count result in changes that improve the process.

5-4 What Types of Materiel are Inventoried?

a. The following chart identifies those types of materiel that require formal physical inventories and the organization responsible for maintaining the materiel:

Organization / Materiel Type	Physical Inventory Required
FAALC	
Operating Materiel	YES
F&E materiel (owned by program offices)	YES
Bench stock (nuts and bolts)	NO
Fabrication materiel for distribution FAA-wide	NO
Shop items (decentralized purchase)	NO
William J. Hughes Technical Center (FAATC)	
NAS Spare Parts:	
Controlled (reparable)	YES
Non-controlled	NO
F&E Materiel awaiting installation	NO*
Fabrication for distribution FAA-wide	NO
Centralized supply storerooms for FAATC-wide use	YES
Shop items (decentralized purchase)	NO
Aircraft spare parts	YES
ATO-W field facilities	
NAS spare parts:	
Controlled (reparable)	YES
Non-controlled	NO
ATO-W Service Area Staging Areas/Warehouses	
F&E materiel for distribution within the service area	NO*
Fabrication materiel for distribution FAA-wide	NO
Loan pool for regional office/service area	YES
ATO-W Aircraft Maintenance Facilities	
Flight inspection aircraft spare parts	YES
ARC-060 Hanger 6	
Aircraft spare parts	YES
Other Organizations	
Centralized supply storeroom operations	YES
Decentralized supply rooms for local use	NO

*F&E materiel at a project site or staging area has to be inventoried only if it has been in storage at the site for 12 or more months.

> **NOTE:** The general FAA standard for inventory frequency is on an annual basis. However, this does not preclude inventorying items that are considered sensitive (e.g., classified items, items susceptible to misappropriation, etc.) on a more frequent basis (e.g., quarterly), or inventorying low dollar expendable items on a less frequent basis (e.g., triennially).

b. Storage locations that must be inventoried (have a "YES") maintain items that are either:

(1) Considered part of FAA's financial statement as inventory held for sale or OM&S, or

(2) Made up of controlled NAS spares (reparable) or accountable property; e.g., loan pool materiel.

c. Storage locations that are not required to inventory items (have a "NO") do not need to complete a physical inventory because they do not meet the criteria identified in the above paragraph b. However, while FAA does not mandate physical inventories of these stocks, it is a good management practice to periodically perform a physical count of items in stock against stock records, especially for larger operations.

5-5 Are all Physical Inventories the Same?

No. There are several types, each with different requirements and timeframes. Each type offers distinct advantages and serves some purposes better than another. Listed are the different types of inventories:

- Initial Inventory.
- Cyclical Inventory.
- Wall-to-Wall Inventory.
- Special or Spot-Check Inventory.
- Perpetual Inventory.

a. Initial Inventory. This type of inventory is used to describe the process of verifying that an item received/accepted matches the item acquired when establishing the property record.

b. Cyclical Inventory. This type of inventory counts a portion of the entire inventory (normally a pre-established percentage) periodically until the entire inventory has been counted over a period of time. Cycle counting serves the following purposes:

(1) It supports the reliability of the on-hand inventory quantities used in management decisions and financial reporting.

(2) It normally results in increased operational efficiency.

(3) It is a control mechanism to reduce the risk that the inventory process and systems are functioning incorrectly.

c. Wall-to-Wall Inventory. This type of inventory is an inventory in which the entire inventory is counted at a point in time, usually at the end of an annual or interim period.

d. Special or Spot Inventory. These types of inventories count selected items or groups of items at times other than regularly scheduled inventories. They are used to acquire information at a particular point in time to determine a stock position or condition, evaluate effectiveness of management controls, accuracy of records, or inventory performance.

e. Perpetual Inventory. This is an inventory is an inventory count method that is an ongoing physical audit/count of inventory locations to verify an actual count of property within a location. Perpetual inventory audit/counts are scheduled based upon either a NSN count criteria, commonly referred to as ABC count criteria, or an area or location audit/count criteria.

5-6 How are Inventories Accomplished?

The entire physical inventory process includes the following phases or processes: Each is described in detail within this Chapter.

- Planning for the Inventory.
- Conducting the Inventory.
- Reconciling Inventory Results.

5-7 Can an Inventory Requirement be Waived?

Yes. The AM&NSST may authorize a request for a waiver to the physical inventory requirement. Waiver requests must be in writing and include:

a. Type and location of the inventory involved and the approximate number of line items.

b. A justification for the request such as natural disaster, inclement weather, pandemic, etc.

c. The last accuracy rate of the inventory being waived.

d. The date of the last inventory.

e. The date when the inventory will be taken.

Section 2. Planning For the Inventory

5-8 What Encompasses Inventory Planning?

Inventory planning includes all those functions required to secure success of the program and to accomplish dependable and accurate inventories with a minimum expenditure of resources and interference with daily operations. Use the following guidelines, as appropriate, in preparing for inventories:

a. Determine the population to be inventoried.

b. Make a preliminary audit far enough in advance to correct any operational deficiencies such as supply and housekeeping procedures, questionable custodial areas, pipeline documentation delays, stock rearranging and other factors which would adversely affect the inventory and reconciliation.

c. Establish, coordinate, and publish planned inventory schedules and procedures with all applicable organizations and personnel. If possible, schedule inventories to coincide with other reviews, studies, and/or surveys, required by other property management systems and procedures.

d. Ensure the uninterrupted flow of issue and receipt transactions during inventory.

e. Define personnel assignments and responsibilities. Provide written instructions and on-the-job training if necessary.

f. Ensure inventory balances are not known by persons taking the inventory.

g. Whenever possible, physically separate or group unidentifiable items, which might cause discrepancies or interfere with the normal sequence of the inventory.

h. Sequence the counting of items so that none will be missed.

i. Hold a pre-inventory meeting with appropriate personnel.

5-9 What Should be Covered in a Pre-Inventory Meeting?

The pre-inventory meeting should cover the following:

a. Assigning inventory locations to inventory takers. Location can be an organizational unit or a building, room, bay, row, etc.

b. The inventory starting date and estimated completion date.

c. What procedures to follow, including how to report any damaged items, follow up procedures that may be required if any areas are inaccessible to the inventory takers, and how to process items found that are not recorded on the inventory record.

d. Whom to contact to resolve any questions.

5-10 What is Included in Inventory Training?

Training is a prerequisite to an efficient physical inventory. Each individual assigned a role needs adequate on-the-job training to include the following:

a. Purpose of the inventory.

b. The correct reading of stock numbers or other item identification criteria, units of issue, nomenclature, and warehouse locations.

c. Counting methods and procedures.

d. Use of documents used to take the inventory.

e. Identification of items, particularly hazardous materials, including the presence of hazardous chemicals in the workplace as required by Title 29, U.S.C. Occupational Safety and Health Act.

f. Any difficulties that may be encountered at each type of location.

g. Any safety or security requirements.

Section 3. Conducting Inventories

5-11 How Are Physical Inventories Conducted?

Physical inventories may be performed on a manual basis or on an automated basis using a scanner. Regardless, taking an inventory consists of a physical examination of the property and a review of custodial areas to make sure all items are properly and accurately recorded. Take the following steps, as appropriate:

a. Make a detailed search of each assigned location, and record all necessary item information. Although a "blind" inventory must be taken (i.e., the count should be made without reference to any previous inventory, property records or other listing of property), an inventory listing by location can be used. The listing helps to prevent overlooking items during the count and provides the recorded condition status, if applicable, for comparison with items being counted.

b. Items need not be removed from cartons unless they show signs of being opened and resealed or if there is no external identifying information on the carton. However, cartons should be opened if necessary to determine their contents.

c. Count the items in a given area systematically (e.g., progressing from left to right, top to bottom, etc.).

d. Note the condition code, where appropriate.

e. On the inventory sheets or scanner, mark the results as appropriate.

f. Serial numbers and lot numbers must be verified also, when inventorying aircraft parts.

5-12 Do Inventory Processes Vary?

Yes. Depending on the type of property being inventoried and the inventory system in which the property is located, specific procedures may vary as follows:

a. For inventory held at the FAALC and maintained in LIS and WMS, specific inventory requirements and processes are contained in the FAALC Inventory Integrity Guide maintained by the FAALC Business Systems Group, AML-020.

b. For field spares inventory contained in the LIS FSI module, procedures are contained in the Physical Inventories section of the FAA Field Spares Inventory Management Guide, available at:
https://intranet.faa.gov/FAAEmployees/org/linebusiness/ato/operations/technical_operations/amnsst/manage_team/field_spares/pol_guidance/.

c. For other inventory locations, follow local written guidelines.

5-13 How Long Should a Physical Inventory Take?

Inventories need to be accomplished on a timely basis. How long is "timely" depends on a number of factors, including; the number of items being counted, their location, and how many individuals are doing the count. If all possible schedule the inventory during slack seasons or work time to avoid any disruption in work and customer service. According to the GAO Executive Guide 02-447G, Best Practices in Achieving Consistent, Accurate Physical Counts of Inventory and Related Property, Key Factor 10: Execute Physical Count:

Timely counts are important due to management's reliance on the information in the inventory system for making operational decisions. Whether completing a single count or multiple counts, the leading-edge locations expect their count teams to complete their assignments as quickly as possible. The majority of the leading-edge locations expect the initial count and any necessary recounts to be completed within 24 hours.

5-14 What Happens if Local Procedures Conflict with this Guide?

When conflicts occur between this Guide and local instructions, the information contained in this Guide takes precedence.

Section 4. Reconciling the Inventory

5-15 What Happens After the Inventory Count?

The inventory taker(s) should return the completed inventory worksheets to the property custodian/inventory supervisor, who will:

a. Review the results for completeness (i.e., all required data entries have been made).

b. Spot check the results by selecting a few items and verifying the count.

c. Sign the inventory record.

d. Update the record to reflect the date the inventory was completed.

e. Maintain supporting inventory documentation as part of the inventory custodial record.

5-16 Are Recounts Ever Taken?

Yes. If an item is not found or the quantity differs from the property record, a recount, by a different counter or person verifying the record is taken to try and resolve the discrepancy.

- If both counts agree, but differ from the record balance, accept the count as being correct.
- If the second count matches the record, no further action is required.
- If the first count, recount, and record balance are all different, continue counting until two counts agree, or a reasonable determination of the adjustment is agreed upon.
- If these counts match the stock record, no further action is required.
- If the agreeing counts differ from the record balance, record the record as discrepant.

5-17 Are all Discrepancies Handled the Same Way?

No. Some discrepancies, because of the number of items or dollar values involved, are accepted and the records adjusted without any further action. The quantity, value, and characteristics of the property involved must justify the time and expense of a reconciliation action.

5-18 Why are Discrepancies Researched?

Research is an essential element of an effective physical count process. When properly conducted, research provides support for adjusting inventory records, identifying causes of variances between the physical count and property record, and providing management with information with which to implement corrective actions. Variances may indicate that something is wrong with the inventory system or warehouse operations. To reduce the potential for future errors, it is important to identify and correct the causes of variances in a timely manner. A Report of Survey may be required depending on the value of the discrepancy or the reason for the discrepancy.

5-19 How are Discrepancies Researched?

Research of discrepancies includes physically looking for missing items. Which requires searching through property records, acquisition documents, shipping and receiving reports, disposal reports, or other property related documents to determine whether any incorrect entries or omissions have been made to the property records. It also includes checking for errors in tally counting and totaling quantities in pipelines such as holding areas, repair shops, on loan and in transit. Research also can include talking with people to find out if someone "remembers where something went."

5-20 When is a Report of Survey Required?

a. A Report of Survey is normally required when Government equipment is lost, damaged, or destroyed. It is not required for inventory if there is no reason to suspect negligence, misuse, theft, or fraud. Use an inventory adjustment when such adjustments have been properly certified to be the apparent result of warehouse inventory transaction processing discrepancies, such as those found at the FAA Logistics Center.

b. In addition to the Report of Survey, notify the Servicing Security Element (SSE) within 24 hours of the discovery of any such property loss or theft, in accordance with FAA 1600.69, FAA Security Management Program.

5-21 How are Inventory Adjustments Made?

The person responsible for preparing the adjustments identifies all pertinent facts to support the adjustment action. The approving official approves the adjustment or returns it to the originator with instructions for further research.

5-22 Who can Approve Inventory Adjustments?

a. Signature approvals on inventory adjustments are determined at the local level. However the research that occurred to determine the cause of the imbalance needs to be documented and approval levels need to be established in writing, e.g.:

- Discrepancies under $1,000 can be approved by the organization's first-line supervisor.
- Discrepancies between $1,000 and $10,000 can be approved by the second-level supervisor.
- Discrepancies greater than $10,000 must be approved at a level at least equal to the third-line supervisor.

b. Under no circumstances may the person responsible for taking an inventory adjust the inventory record without approval, in writing, by the designated approving official.

Appendix 1. Terms & Definitions

The following table contains the terms used in this Guide along with their definitions.

Terms	Definitions
Accountability	The obligation imposed by law or lawful order or regulation on an officer or other person for keeping accurate record of property, documents, or funds. The person having this obligation may or may not have actual possession of the property, documents, or funds. Accountability is concerned primarily with records, while responsibility is concerned primarily with custody, care, and safekeeping. Refer to responsibility.
Accountable Record	Formal records which assign responsibility for tangible personal property, including inventory; maintained to identify the quantities of items on-hand, unit prices, locations, physical condition, receipt and issue records, item identification, and other such information necessary to properly account for materiel and exercise other inventory management responsibilities.
Acquisition Lead-time	The amount of time generally required to process procurements.
Acquisition Review Point	The asset level at which procurement action should be considered and shall consist of both serviceable and unserviceable units.
Administrative Stocks	General items of supply required to sustain day to-day business operations such as office supplies.
AM&NSST	As designated by the FAA PMO, AM&NSST, AJW-161 is responsible for inventory and warehouse management policy, procedures, programs, and development of requirements for related automated systems and training.
Approving Official	The person designated by the head of the organizational element (i.e., region or center) has the final authority to approve findings and recommendations of the Survey Officer.
Bay	One of the major storage subdivisions in a stockroom, separately identified from other bays, and outlined by markings on columns, posts, or floor.
Bench Stock	Expendable material used routinely in any job.
Bin	A box or other receptacle or enclosed space for storing articles.

Terms	Definitions
Contractor Depot Level Support (CDLS)	Contractor provided in-service depot repair support activities. The contractor furnishes all required labor, facilities, support equipment, materials, equipment, preservation, packaging and marking required to provide depot level repair and supply support.
Classified Storage	Space that stores materiel classified Confidential, Secret, or Top Secret in accordance with the latest version of FAA Order 1600.2, Safeguarding Classified National Security Information.
Computed Demand	Use of demand to calculate stock levels, either on the basis of average demand (average of actual past demand history) or forecasted demand (past demand modified by a trend factor).
Condition Code	A classification of materiel that reflects its readiness for issue and use or to identify the action.
Constant Temperature Storage	A location with either a continuing or occasional need for refrigerated storage space. Other storage spaces may require heating (or alternate heating and cooling) to maintain a proper temperature.
Controlled Environmental Storage	Storage areas that includes: a. Classified Storage. b. Dehumidified Storage. c. Protected Storage. d. Constant-Temperature Storage.
Controlled Field Spares	Reparable operating materiel (NAS spare parts) located at ATO field locations.
Covered Storage	Storage space within an enclosed building, with or without environmental control; e.g., cooling or heating facilities.
Cross Servicing	The provision of services by one agency for another agency. Such services are covered by a written agreement made between the two agencies.
Cyclical Inventory	An inventory that counts a portion of the entire inventory (normally a pre-established percentage) periodically until the entire inventory has been counted over a period of time.
Dehumidified Storage	Storage space used to store materiel requiring controlled humidity.

Terms	Definitions
Distribution	An official delivery of anything, such as supplies. The operational process of synchronizing all elements of the logistic system to deliver the "right things" to the "right place" at the "right time."
Economic Order Quantity (EOQ)	A mathematically proven method for arriving at the lowest total cost for ordering and holding inventory to meet expected supply requirements.
Economic Retention Limits (ERL)	The maximum quantity of materiel authorized to be retained in inventory. It is the sum of the stockage objective and the economic retention quantities.
Exchange And Repair (E&R) Items	A reparable item, which when unserviceable, is reported to the FAALC for replacement, with the unserviceable item returned to the FAALC for repair.
Expendable Items	Materiel required for day-to-day operations that: (1) is considered to be consumed in use or (2) is reparable but is not managed as a reparable item.
Fabrication Shop	A designated area used to fabricate systems or components of projects for NAS implementation projects prior to reaching the job site.
Field Spares Coordinator	Individuals responsible for the oversight of operational activities needed to manage and control NAS spare parts located at various field locations.
Fill Rate	The number of issue requests (line-item stock requisitions) filled from inventory on-hand when requests are received and are expressed as a percentage of the total number of requests received.
Forklift	A powered industrial vehicle designed to pick-up, carry, and stack unit loads of materiel, generally, palletized loads of materiel, with many special attachments available to diversify its capabilities.

Terms	Definitions
Hazardous Material	Any material that, because of its quantity, concentration, or physical or chemical characteristics, may pose a real hazard to human health or the environment. Hazardous materials include the following categories: Flammable and Combustible Material. Toxic Material. Corrosive Material. Oxidizers. Aerosols. Compressed Gases.
Hazardous Material Storage	Any storage space used to hold inventory, which by virtue of its potential danger requires control to ensure adequate safety to life and property.
Hazardous Materials Identification System (HMIS)	A computerized database of Material Safety Data Sheets (MSDS). It provides information for people working in hazardous materiel management and provides basic technical information required for all levels of hazardous materials to aid in their proper handling, storage, transportation, and disposal. HMIS also provides information about safety, health, and environmental functions.
Insurance Item	Items for which requirements are unpredictable, the items are essential, and the lead time required to obtain them when needed would create an unacceptable situation. Insurance items may be expendable or reparable.
Intermediate Inventory	Those between field (end user) and wholesale inventories. Unlike wholesale inventory management, which is between Government organizations, intermediate inventory management activities are internal to FAA.
Inventory	(1) Personal property acquired in advance of actual need or use and held in storage by an inventory holding activity for issue or use such as reparable field spares and project materiel. It includes both inventory maintained in central and regional storage facilities with substantial inventory values and levels of activity as well as smaller, point of use facilities. (2) A physical inspection of items of property to confirm that quantities on record equal quantities on hand. This involves comparing the count results to recorded quantities, conducting research on differences, and determining and posting an accurate adjustment to the on-hand balance.

Terms	Definitions
Inventory Adjustment	Changes made to the official inventory records when physical counts and official records do not agree. All such changes require specific approvals.
Inventory Effectiveness	A determination (measurement) of how well an inventory is managed, meets national and local guidelines, and customer's requirements (for inventory locations supporting multiple users) and the cost for attaining a given performance level.
Inventory Management	The program by which FAA determines what items it should stock, how many are needed, and where and how they should be stored, managed, and distributed.
Inventory Management System	A method of tracking inventory in a warehouse. Typically this is done via a computerized database.
Inventory Manager	Individuals, identified in writing by name or organizational position, responsible for implementing FAA's inventory management policies and procedures and managing inventory under their control.
Inventory, Special or Spot Check	A type of inventory that counts selected items or groups of items at times other than regularly scheduled inventories.
Lead-time Stock (Level)	That portion of the operating stock level expected to be issued from the time a replenishment order for an item is placed until the order is received; i.e., the interval of time required replenishing stock through repair, procurement or production actions.
Maintainability	Ability of an item to be retained in or restored to a specified condition when maintenance is performed.
Material	The substances of parts, goods, or stock. The tangible substances that go into the makeup of a physical object; that which may be worked up into a more finished form.
Materiel	Any materials or tools needed for the FAA to accomplish its mission, from pens and paper clips to National Airspace System (NAS) computer systems, radars, navigation aids, etc., are referred to as materiel, versus "material."

Terms	Definitions
Material Safety Data Sheet (MSDS)	A form containing data on the properties of a particular substance. It is intended to provide workers and emergency personnel with procedures for handling or working with that substance in a safe manner, and includes information such as physical data, toxicity, health affects, first aid, reactivity, storage, disposal, protective equipment, and spill handling procedures.
National Stock Number (NSN)	An official label consist of a 13-digit number which is applied to an item that is repeatedly bought, stocked, stored, issued, and used throughout the Federal supply system. The number is registered in Federal Logistics Information System (FLIS) and maintained world-wide by Defense Logistics Service Center (DLSC). The NSN consists two parts, described below: (1) Federal Supply Classification (FSC). The FSC is a four-digit code. The first two digits identify the group, and the last two digits identify the class within the group. (2) National Item Identification Number (NIIN). The NIIN is a series of nine numbers. It differentiates each individual supply item from all other items of supply. The first two digits signify the National Codification Bureau (NCB), usually a country in which the item of supply is manufactured. The NCB codes assigned to the United States are 00 and 01. The following example illustrates the NSN format: FSC NCB NIIN 9999 00 123-4567
Nomenclature	An item's name.
Non-controlled Field Spares	Expendable field spares located at ATO field locations.
Operating Materiel	General, technical and administrative items of supply required to sustain day to-day operation of all activities.
Operating Materials and Supplies (OM&S)	This includes tangible personal property that is (a) held for future use and (b) to be consumed in normal operations.
Ordering Office	Any FAA organization authorized to place requisitions directly for operating and maintenance materiel.

Terms	Definitions
Outright Issue	Issues of a serviceable E&R item for which no unserviceable like item will be returned. There are two types of outright issues, initial and replacement.
Outside Storage	An area located outside a completely enclosed building for storing materiel usually set aside by fencing or other suitable means.
Pallet	Portable platform on which materiel (usually a quantity of the same item) may be placed to facilitate stacking upon and under other pallets similarly loaded, as well as lifting and carrying by material-handling equipment.
Part Number	A unique identifier of a part used in a particular industry. Its purpose is to simplify referencing to that part. A part number clearly defines a part within a single manufacturer.
Personal Property	Property of any kind except real property. Formal accountable records are required for personal property defined as accountable.
Perpetual Inventory	An inventory count method that is an ongoing physical count of inventory locations to verify an actual count of property within a location.
Physical Inventory	A physical inspection of items of property to confirm that quantities on record equal quantities on hand. This involves comparing the count results to recorded quantities, conducting research on differences, determining and posting accurate adjustment to the on-hand balance.
Program Office (Washington)	Washington headquarters offices and services having primary program management responsibility for national activities conducted by service areas and centers.
Project Materiel	Materiel acquired by the FAA for a specific project and held in inventory until needed for installation. Generally, it is used when installing or modifying existing facilities/equipment or when constructing new NAS or infrastructure facilities.
Property Management Officer (PMO)	The principal official appointed by the Administrator is responsible for developing and implementing agency policy, standards, procedures, systems, training requirements, and performance measures for personal property. He/she is the focal point for all program matters impacting personal property, both within and outside the FAA.

Terms	Definitions
Protected Storage	A type of storage space that protects high-risk items from misappropriation or misuse.
Quantity Due In	The number of items expected to be received, normally from a procurement action.
Quantity On Hand	The number of items physically located at a site.
Receiving	This process to identify the quantity received by the source, the date of receipt, and the identity of the receiver to ensure control of materiel after receipt and prior to storage or turn-over.
Receiving Area	A designated area in the warehouse that receives material from an outside origin. This materiel is temporarily stored until it is relocated to the appropriate warehouse storage location or shipped to a site.
Recurring-demand Item	Item for which repetitive demands are expected based on past usage, or sufficient knowledge is available to reasonably predict repetitive demands. A recurring-demand item may be either expendable or reparable.
Repair Activity	Actions that either fix inoperable property or correct damage to property to bring it as near as possible to its original condition and efficiency, without upgrade to, improvement of, or change in the form of the property.
Repair And Return (R&R) Item	An item that is reparable and is returned to the repair source for repair and return to the ordering office. The repair source may be the FAA Depot or a commercial contractor with which the Depot has a repair arrangement.
Reparable Materiel	Materiel essential to maintaining system operational readiness that can be repaired at considerably less cost and time than purchasing replacements. Reparable materiel is further designated either as E&R or R&R.
Report of Survey	A formal document (FAA Form 4630-8) used to the report loss, damage, or destruction of government property. The report is used to investigate and review pertinent facts to determine the extent or absence of an employee's responsibility for such loss, damage, or destruction.

Terms	Definitions
Reserve Stock	That quantity of recurring expendable operating and exchange and repair materiel inventory reserved to satisfy specific one-time, non-recurring requirements.
Responsibility	The obligation of an individual to ensure government property entrusted to their possession or supervision is properly used/cared for and that proper custody, safekeeping, until final disposal is provided.
Retention Limit	The maximum quantity of on-hand materiel that may be retained in stock, as determined by applicable retention rules.
Rotable Issue	Issue of a serviceable E&R item for which an unserviceable like item will be returned.
Safety Stock	Provides protection against stock-outs due to unexpected demand for a product or delays in receiving a replenishment shipment from a supplier.
Servicing Security Elements (SSE)	The headquarters, region, or center organizational element responsible for providing security services to a particular activity.
Shelf Life	The maximum period of time, beginning from the date of manufacture or date of shipment, which packaged materiel, can be stored at specified temperatures and remain suitable for use.
Shipping Area	A designated area in the warehouse to temporarily house material that is awaiting shipment.
Space Planning	The process of determining space requirements and establishing proper storage allocation.
Spare Parts	A replaceable component, sub assembly, and assembly identical to and interchangeable with the item it intends to replace.
Staging Area	An area in which equipment and materials are assembled and prepared prior to the start of a project.
Stock Locator System	A system that pinpoints the exact storage location of an item in a simple, easily understood manner.

Terms	Definitions
Stock Number	An identifying number assigned to an item of supply. It can be: (a) A national stock number (NSN) consists of the 4-digit Federal Supply Classification (FSC) code and the 9-digit national item identification number (NIIN). (b) A local stock number, consisting of a 13-digit alpha-numeric number. (c) An "F&E" stock number, consisting of a 13-digit number and a 1-digit suffix. Refer to National Stock Number.
Stock Record	A physical record of the actual transactions and balances of items held in storage for future issue under perpetual or summary stock control.
Stockage Objective	The maximum quantities of material to be maintained on hand to sustain current operations, consisting of the sum of stocks represented by the operating level and the safety level.
Storage Activity (Government)	A Government activity or facility used for the receipt, storage, and issue of supplies, materials, and equipment, including storage of reserve or excess stocks or in transit storage. The activity may be both government owned or leased, and either government or contract operated.
Storage Activity	The organizational element of a distribution system which is assigned responsibility for the physical handling of materiel to its check-in and inspection (receipt), its keeping and surveillance in a warehouse, shed, tank, or open area (storage), and its selection and shipment (issue).
Storage Management	Refer to Warehouse Management.
Supplies	Expendable personal property, which is consumed in use.
Supply Support	This is an element of integrated logistics support. It represents all management actions, procedures, and techniques used to determine requirements to acquire, catalog, receive, store, transfer, issue, and dispose of items of supply. This includes provisioning for initial support as well as replenishment supply support.

Terms	Definitions
Unit of Issue	Physical measurement of count or quantity (such as dozen, gallon, kilo) in which an item is procured, stored, and released (issued), and managed.
User Level Inventory	Inventories maintained by FAA organizations who order operating, maintenance, and administrative materiel and identified for purposes of this FAA Guide as: Repairable field spares, e.g., Exchange and Repair (E&R) and Aircraft spare parts.
User Stock	Expendable material used routinely in any job. Also referred to as common stock).
Wall-to-Wall Inventory	This type of inventory counts the entire inventory at a point in time, usually as of the end of an annual or interim period.
Warehouse	A facility that contains storage areas (both indoor and outdoor), shipping/receiving, administrative and packaging areas.
Warehouse Management	Includes the activities of receiving and placing items in storage, storing, providing for the proper care of material in storage, and issuing material. It also includes preservation, packaging and packing and determining the fitness of material for issue.
Warehouse Management System (WMS)	A system used by FAALC to track inventory by warehouse location and a scanning system to track the National Stock Numbers (NSN).
Wholesale Inventory	Those inventories between Government organizations in which the inventory manager is responsible for government-wide control of materiel, providing supply support (acquires, stocks, stores, and issues materiel) for local or agency use (e.g., the FAA) and for other Federal agencies.

Appendix 2. ACRONYMS

The following table contains the acronyms used in this Guide.

Acronym	Definition
AEE	Office of Environment and Energy
AJW	ATO Technical Operations Services
AM&NSST	Asset Management and NAS Support Team, AJW-161
AMEG	Aircraft Maintenance and Engineering Group, AJW-34
AML	FAA Logistics Center
ARC	Regions and Center Operations
ATO	Air Traffic Organization
ATO-W	ATO Technical Operations Service
CDLS	Contractor Depot Logistics Support
CFR	Code Of Federal Regulations
CRS	Contract Repair Service
DOD	Department Of Defense
DOT	Department Of Transportation
E&R	Exchange And Repair
EOQ	Economic Order Quantity
EPA	Environmental Protection Agency
ERL	Economic Retention Limits
F&E	Facilities And Equipment (appropriation)
FAA	Federal Aviation Administration
FAALC	FAA Logistics Center

Acronym	Definition
FAATC	William J. Hughes Technical Center
FAR	Federal Aviation Regulations
FLIS	Federal Logistics Information System
FPMR	Federal Property Management Regulations
FSC	Federal Supply Class
FSI	Field Spares Inventory (System)
FSIO	Financial System Integration Office
FUE	Failure Under Warranty
GAO	General Accountability Office
GSA	General Services Administration
HMIS	Hazardous Material Information System
ICDLS	Interim Contractor Depot Logistics Support
ILM	Inventory Logistics Maintenance
IT	Information Technology
JFMIP	Joint Financial Management Improvement Program
JLC	Joint Logistics Commanders
LIS	Logistics Inventory System
MHE	Material-Handling Equipment
MRP	Materiel Requirements Planning
MSDS	Materiel Safety Data Sheet
NAS	National Airspace System
NCB	National Codification Bureau
NIIN	National Item Identification Number

Acronym	Definition
NRC	Nuclear Regulatory Commission
NSN	National Stock Number
OM&S	Operating Material And Supplies
OPS	Operations (appropriation)
OSHA	Occupational Safety Health Administration
OST	Office of the Secretary, Transportation
PICA	Primary Inventory Control Activity
PMMS	Project Materiel Management System
PMO	Property Management Officer
R&R	Repair And Return
RE&D	Research and Development (appropriation)
SICA	Secondary Inventory Control Activity
WMS	Warehouse Management System