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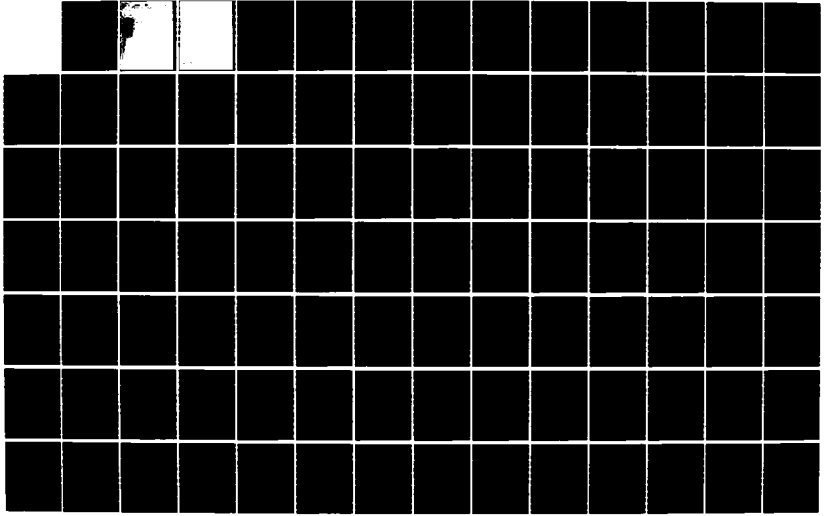
CONCEPT FOR A SIMPLE SUPPLY SYSTEM FOR SECURITY
ASSISTANCE CUSTOMERS(U) LOGISTICS STUDIES OFFICE (ARMY)
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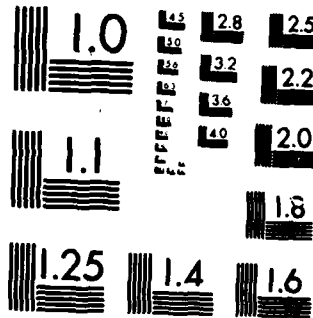
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| 20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This project seeks to develop a simple manual supply system which can be offered to a developing country which needs an effective supply system. The product offered is a booklet which discusses the several components of a supply system, and describes a concept for a simple system which can be modified and employed by a foreign customer country. A team of supply experts would have to assist in the introduction of this concept into a customer country. < | | |

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*Inventory of manual supply system, take control, provide
 information, procedures, a 1944 indicator of logistics
 communication.*

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I. INTRODUCTION

A. The purpose of this booklet is to describe and discuss the essential elements of an effective supply system. Whenever possible, general descriptive terms have been used, rather than technical terminology or terms unique to any specific supply system. It must be noted that the author is well-versed only in the US Army supply system, and had available the manuals, pamphlets, and other technical documents which pertain to that system of supply. The simple, manual supply system set forth herein, while stressing the elements of supply which must always be represented, is of necessity based on the US model. The simple supply system, however, is not meant to duplicate the US model; there will be many variations, and this was done purposely. The basic aim of the simple supply system is to present a framework from which a small country in need can develop an effective, internal system of supply. In order to do so, it is envisioned that a team of US Army supply personnel--tailored to the needs of the country involved--will initially assist in establishing and operating a supply system designed to the requirements of that army. This booklet is, therefore, designed to enable the foreign user, with help, to identify the essential parts of a supply system, see and understand the relationship between those parts, and to understand the interactions between the various essential elements of a supply system. It might also be noted that, since the supply system set forth here is based on the US model, it should be relatively easy for a user to interface with the US Army supply system.

B. The booklet is arranged into three sections. These are:

1. Introduction: A short explanation of the intent, content, and format of the pamphlet.

2. Functions of Supply: The military supply system is divided into its three major sub-elements. Each of these is subdivided into its major sub-elements and they, in turn, are further subdivided into their essential elements. This process is continued until the subfunctions of supply that are exposed are too simple to require further subdivision. The sub-elements are graphically depicted in tree-diagram form with accompanying narrative explanation.

3. A Simple Supply System: A supply system is a dynamic thing. An action taken at any level or activity within the system will produce reactions elsewhere within the system; e.g., a requisition can produce an issue, a replacement requisition, and an adjustment to inventory records. This section will describe a simple supply system, how it is designed to work, and what occurs within the system in providing supply support to a military organization. The supply system described will contain the essential elements necessary to make it effective. It does not, however, knowingly represent any specific system now in existence, nor is it thought that the system described can be placed anywhere in the world exactly as depicted. It is understood that national differences in military organization, training, education, culture, history, and the political climate will all impact the specific form and substance of a supply system. Therefore, the supply system set

forth in this booklet is quite simple and general. However, it is specific in explanation of the information and data necessary to the proper functioning of selected processes of supply. Installation of the system in a country will have to be accomplished by a small team of supply experts. Team members would make any modifications necessary to tailor the simple supply system to the country. Each supply system installed will be unique.

C. Assumptions:

1. The system is being developed for a small army (i.e., 50-250,000).

2. The supply system will be an integral part of a logistics system (i.e., maintenance and transportation systems will also be included).

3. The system will be installed by a US Army technical assistance team made up of personnel with appropriate supply expertise.

4. Supply technicians, including the supply technician in the Battalion Support Platoon, can read and write.

II. DESCRIPTION OF THE FUNCTIONS OF SUPPLY

A. The term supply encompasses several vital functions. These include determining what is needed, how much is needed, buying the equipment and supplies (acquisition or procurement), moving it to a storage or issue site (distribution), taking care of the equipment and supplies in storage, issuing and replenishing supplies, managing the supply processes, and disposing of unusable or unwanted equipment and supplies. An effective supply system ensures that the supported organization receives what is needed, when and where it is needed.

B. Supply is divided into three major subfunctions. These are:

1. Inventory Control: This is the facet of supply which determines what equipment is needed (requirements); acquires or procures the items; identifies, classifies, assigns stock numbers, and documents the items (cataloging); determines which organizations will be issued which items, and in what quantity; distributes requisitioned equipment; and disposes of unusable items.

2. Supply Control: This is the process by which an item is managed within the supply system. It includes the way a request for an item is prepared, validated, and satisfied; how items are received, documented, and stored; how an item is shipped to fill a valid requisition; the steps in issuing an item; and how excess or obsolete items are identified and classified for further disposition.

3. Stock Control: Stock control is the process of maintaining data on what items are in stock, how many are in stock, where they are stored, and their condition. Data are also maintained on types

and quantity of equipment ordered or purchased but not yet received (due-in) and types and quantity of equipment requisitioned by authorized units but not yet delivered (due-out). By knowing what is on hand, what is due-in, and what is due-out, the supply manager can be certain that adequate stocks are maintained and that new stock is procured only when it is needed.

C. Section II divides supply down into its basic components using the technique of "tree diagramming." That is, supply is divided into its major branches, which are in turn divided into their major branches. The end diagram resembles a tree, hence the name. Figure II-1 will depict the three basic elements of supply, and their components. Other figures in section two will depict the separation of the various components identified in Figure II-1 into their functions and subfunctions.

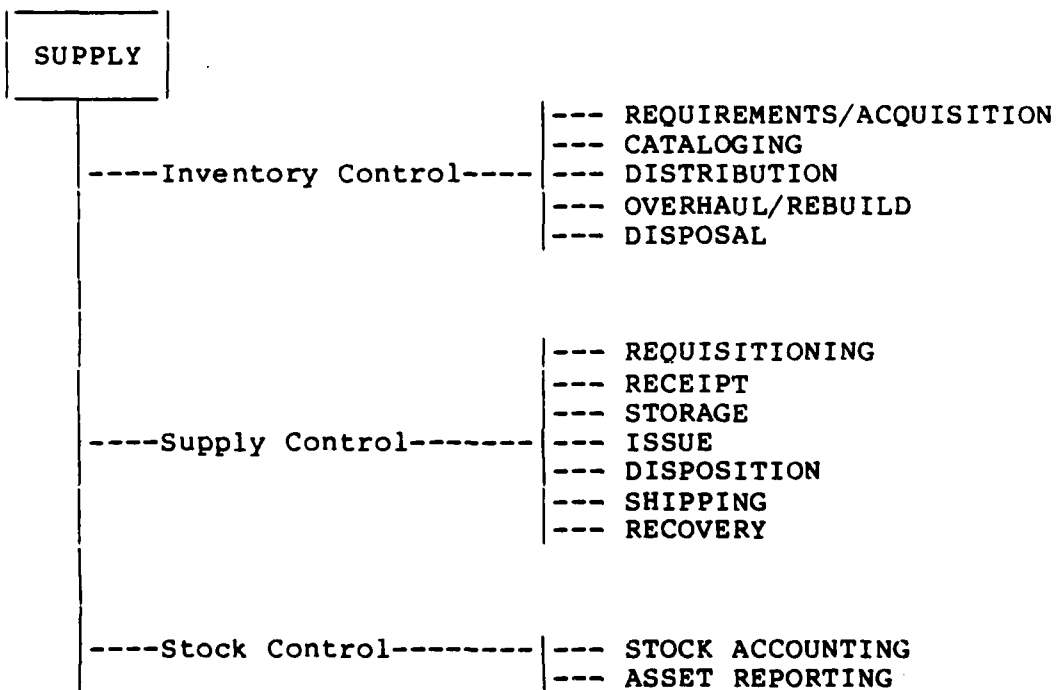


Figure II-1. Major Subfunctions of Supply

D. Supply activities are located at all echelons throughout the military establishment. Some supply functions (e.g., requisitioning) will occur, or cause reaction, from the lowest to the highest levels of military organizations; others (e.g., cataloging) do not initiate widespread action. The tree diagrams for the components of supply have three columns to the right of each figure; the columns represent the national, intermediate, and unit levels of a military establishment. An "X" will be placed in each column adjacent to components which apply at the level identified by the column.

E. The following three paragraphs (II F, G, and H) contain 14 tree diagrams which depict the components of Inventory Control, Supply Control, and Stock Control. Each figure is accompanied by a narrative description of the subfunctions and their component parts.

F. Inventory Control

1. Requirements/Acquisition (Figure II-2): "Requirements" refers to the process used to determine what equipment items are needed to support the army, and in what quantities. "Acquisition" is the process of procuring the necessary equipment.

a. Principal Item Requirements: Principal items are end products, or a combination of end products, which are ready for their intended use. Some examples are: Rifles, tanks, trucks, mobile machine shops. Generally, the number of principal items an army requires depends on the force structure. Some additional pieces also are held to accommodate any special operations planned

INVENTORY CONTROL

REQUIREMENTS/ACQUISITION

REVIEW NATIONAL LEVEL PROCUREMENT APPROPRIATION POLICY GUIDANCE; PREPARE ARMY LEVEL IMPLEMENTATION GUIDANCE.

PREPARE RECOMMENDATIONS ON EXPENDITURE OF PROCUREMENT MONIES BY PRINCIPAL ITEM.

REVIEW APPROVED OPERATIONAL PROJECTS.

REVIEW ESTABLISHED OR PROPOSED ORGANIZATIONAL AUTHORIZATION DOCUMENTS.

PRINCIPAL ITEM REQUIREMENTS

CONTINUED

CONTINUED

| Level of Involvement | National | Intermediate | Unit | | |
|----------------------|----------|--------------|------|--|--|
| | | | | | |
| X | | | | REVIEW NATIONAL LEVEL PROCUREMENT APPROPRIATION POLICY GUIDANCE; PREPARE ARMY LEVEL IMPLEMENTATION GUIDANCE. | |
| X | | | | REVIEW FORCE LEVEL TO BE SUPPORTED. | |
| X | | | | DETERMINE PRINCIPAL ITEM SYSTEM REQUIREMENTS. | |
| X | | | | ESTABLISH A SUPPLY PLAN. | |
| X | | | X | CONFIRM THE QUANTITY OF EACH TYPE OF UNIT AUTHORIZED IN THE FORCE. | |
| X | | | X | DETERMINE THE NUMBER OF ITEMS AUTHORIZED PER APPROVED OPERATIONAL PROJECT. | |
| X | | | X | COMPUTE THE NUMBER OF ITEMS AUTHORIZED PER APPROVED RESERVE STOCK-PILE. | |
| X | | | X | CONFIRM THE QUANTITY AND TYPE OF EQUIPMENT AUTHORIZED PER DOCUMENT. | |
| X | | | X | COMPUTE QUANTITIES OF EACH TYPE OF EQUIPMENT PER ORGANIZATIONAL LEVEL. | |

Figure 11-2

| CONTINUATION | CONTINUATION | | | | |
|--------------|--|--|--|---|---|
| | COMPUTE GROSS REQUIREMENTS | | | X | X |
| | DETERMINE THE QUANTITATIVE AMOUNT BY ACQUISITION SOURCE. | | | X | |
| | PERFORM A SUPPLY CONTROL STUDY | | | X | X |
| | IDENTIFY CONSTRAINTS | | | X | |
| | DETERMINE THE QUANTITATIVE AMOUNT BY ACQUISITION SOURCE | | | X | X |
| | SECONDARY ITEM REQUIREMENTS | | | X | |
| | COMPUTE FLOAT REQUIREMENTS. | | | X | |
| | COMPUTE REQUIREMENTS FOR PIPELINE STOCKS AND COMBAT CONSUMPTION. | | | X | X |
| | COMPUTE AVERAGE MONTHLY DEMANDS. | | | X | |
| | IDENTIFY PROGRAMMED AND NON-RECURRING REQUIREMENTS. | | | X | |
| | ESTABLISH REQUIREMENT LEVELS BY MONTH AND QUANTITY | | | X | |
| | STRATIFY ASSETS TO REQUIREMENTS. | | | X | |
| | DETERMINE ASSET POSITION, BOTH CURRENT AND PROJECTED. | | | X | X |
| | | | | X | |
| | | | | X | |

CONTINUED

CONTINUATION

| ACQUISITION DIRECTION | PRODUCTION DIRECTION | PROCUREMENT DIRECTION | | |
|-----------------------|----------------------|-----------------------|---|---|
| | | | DEVELOP SCHEDULE AND STATEMENT OF WORK. | X |
| | | | DEVELOP SPECIFICATIONS. | X |
| | | | PREPARE DRAWINGS. | X |
| | | | ESTABLISH DELIVERY DATES. | X |
| | | | DETERMINE SPECIAL CONDITIONS. | X |
| | | | DEFINE ANY NECESSARY APPROVALS FROM HIGHER AUTHORITY. | X |
| | | | PREPARE A PROCUREMENT WORK DIRECTIVE. | X |
| | | | PREPARE CERTIFICATE OF AVAILABILITY OF FUNDS. | X |
| | | | OBLIGATE FUNDS. | X |
| | | | DEVELOP SCHEDULE AND STATEMENT OF WORK | X |
| | | | DEVELOP SPECIFICATIONS | X |
| | | | PREPARE DRAWINGS | X |
| | | | ESTABLISH DELIVERY DATES | X |
| | | | DETERMINE SPECIAL CONDITIONS | X |
| | | | DEFINE ANY NECESSARY APPROVALS FROM HIGHER AUTHORITY | X |
| | | | PREPARE A PROCUREMENT WORK DIRECTIVE | X |
| | | | PREPARE CERTIFICATE OF AVAILABILITY OF FUNDS | X |
| | | | OBLIGATE FUNDS | X |

CONTINUED

CONTINUATION

| | |
|---|---|
| DEVELOP SCHEDULE AND STATEMENT OF WORK. | X |
| ESTABLISH DELIVERY DATES. | X |
| PREPARE OVERHAUL/REBUILD WORK DIRECTIVE. | X |
| PREPARE CERTIFICATION OF AVAILABILITY OF FUNDS. | X |
| OBLIGATE FUNDS. | X |

OVERHAUL/REBUILD DIRECTION

and to provide reserve stocks. As an example, the number of tanks needed by an army is dependent upon the number of tanks in a battalion and the number of battalions in the army. The number of replacement items needed depends on the rate at which the equipment is "washed out" of the inventory. To determine Principal Item requirements, the following must be taken into consideration:

(1) Review National Level Procurement Appropriation Policy Guidance; Prepare Army Level Implementation Guidance: Any guidance issued by a superior governmental or military level must be considered when determining what and how many principal items should be acquired. The senior level of the Army must issue its own policy guidance--based on guidance received--for use by the army planning staff. Principal Items should receive intensive management not only because of their high cost, but also because of their impact on secondary items.

(2) Prepare Recommendations on Expenditure of Procurement Monies by Principal Item: The planning staff, after consideration of policy guidance, will submit a recommended Principal Item Acquisition Plan to the senior logistician of the army. The plan should list all the principal items the staff recommends buying, their costs, and an explanation for any proposed changes in the current principal item acquisition programs. The acquisition plan should recommend total principal item requirements within the constraints of planning and fiscal guidance.

(a) Review Force Level to be Supported: For each type principal item required, the staff must determine which units will

need the equipment, and in what quantity. A formal review of the army's force levels should be performed annually to determine the numbers and mix of the units to be supported. This information is important for determining requirements and for budgeting funds for the items.

(b) Determine Principal Item System Requirements: Some weapon systems require support equipment in order to operate effectively. For example, a helicopter may require special maintenance sets to keep the aircraft operational. This aspect of acquiring Principal Items must be considered to avoid buying items which cannot be used because essential support items and repair parts were not procured.

(c) Establish a Supply Plan: A supply plan details the order in which equipment will be distributed. It will be based on the schedule for procuring the items and consideration of the force structure, equipment authorization documents, priorities, and repair parts usage.

(d) Confirm the Quantity of each Type of Unit Authorized in the Force: The mixture and quantity of each type of unit should be assessed and weighed against known or perceived threats to the country. The aim is to assure the most cost effective use of resources (i.e., equipment and personnel) to develop a balanced force structure capable of countering the threat. This is an Operations staff function; supply is impacted adversely when the wrong force structure is used to plan equipment acquisitions.

(3) Review Approved Operational Projects and Reserve

Requirements: The planning staff must determine whether any plans exist for operations or contingencies which would require an additional number of the principal items under consideration. It must also ascertain whether reserve stocks have been established which would include any of the principal items to be acquired. To do this:

(a) Determine the Number of Items Authorized per Approved Operational Project, and

(b) Compute the Number of Items Authorized per Approved Reserve Stockpile.

(4) Review Established or Proposed Organizational Authorization Documents: Organizational authorization documents prescribe the mission, organizational structure, personnel, and equipment assigned to each unit. The planning staff will review the authorization documents and

(a) Confirm the Quantity and Type of Equipment Authorized per Document, determine the minimum equipment necessary to allow successful mission completion.

(b) Compute Quantities of each Type of Equipment per Organizational Level.

(5) Compute Gross Requirements: The term gross requirement refers to the number of equipment items required to support the planned force in a wartime situation until a reliable source of supply is established to support the total wartime daily needs. The gross requirement equals the sum of the initial issue, maintenance floats, operational projects, and the number of items expected to be consumed in combat until supply is normalized. To calculate:

(a) Compute Float Requirements: Float items are those which can be established and held at specific maintenance activities to enable long-term repair actions to be undertaken without depriving the using unit of an equipment item. Essentially, maintenance activities can hold a few selected principal items on their property book. When a like item is received for a maintenance job which will be of long duration--usually because parts must be obtained--a float item can be traded for the defective one. This is a property book transaction. A float improves maintenance reaction, and increases the total number of principal items which must be procured.

(b) Compute Requirements for Pipeline Stocks and Combat Consumption: It takes time to acquire items from a manufacturer and to transport them to a user or a storage facility. The time consumed in getting an item and delivering it is identified as "the time the item is in the pipeline"; it is measured in days. The longer the pipeline is, the more items which must be acquired to assure that normal losses can be offset and the force maintained at its established strength. Combat losses should also be accommodated when determining gross requirements; here the staff will establish how long it would take to develop a reliable wartime resupply system and how many items will probably be lost to combat damage in that time. Items should be acquired and held to offset both time lost in the pipeline and items destroyed in initial combat. The factors considered in computing pipeline stocks and combat consumption include analysis of the force structure and the authorization documents, float requirements, and the consumption factors forecast.

(6) Determine the Quantitative Amount by Acquisition

Source: Not all of the needed items may have to be purchased. Any items that can be returned to stock through maintenance actions should be subtracted from the number of items which must be bought. The staff should determine the priority in which requirements are to be satisfied from rebuild, set assembly, fabrication and procurement.

b. Secondary Item Requirements: Any item not specifically identified as a principal item will be designated a secondary item. To determine which secondary items must be acquired, and in what quantities, the staff must know how many are demanded by the Army each year, how many are in stock, how many are due-in and due-out, and how many currently unserviceable items can be repaired and returned to stock.

(1) Perform a Supply Control Study: The staff will determine the "requirements objective"--that is, the maximum quantity that may be on hand or on order at any one time for each item; assets are then compared to the requirements. The resulting supply position will determine whether to acquire stock through purchase or "repair and return to inventory", do nothing, cancel due-in receipts, or to declare excess. Total asset demand, returns, and asset data at all supply levels are used.

(a) Compute Average Monthly Demands: Using the latest twelve month demand experience, determine the gross monthly recurring demands for each item. Materiel returned to stock--either through serviceable returns or items that have been repaired and returned--is subtracted from the gross demand to determine the net monthly

demand. Average monthly demand (AMD) represents the quantity of a given item that can be expected to be requisitioned during a month. It should be a fair approximation of normal usage. To compute AMD, determine net monthly demand for the last twelve months, sum the demand figures, and divide the sum by twelve. For example, in mid-November, AMD is calculated for an item with the following demand and return history.

| MONTH | GROSS MONTHLY DEMAND | RETURNS | | NET MONTHLY DEMAND |
|-------|----------------------|----------|---------|--------------------|
| | | TURN-INS | REPAIRS | |
| NOV | 12 | | | 12 |
| DEC | 11 | 1 | | 10 |
| JAN | 10 | | | 10 |
| FEB | 9 | | | 9 |
| MAR | 10 | 1 | | 9 |
| APR | 7 | | | 7 |
| MAY | 6 | | | 6 |
| JUN | 10 | 1 | | 9 |
| JUL | 9 | | | 9 |
| AUG | 11 | | 7 | 4 |
| SEP | 10 | | | 10 |
| OCT | 13 | | | 13 |

Net Annual Demand = 108

Net Average Monthly Demand = $\frac{\text{Net Annual Demand}}{12}$

= $\frac{108}{12}$

Net AMD = 9

(b) Identify Programmed and Non-Recurring Requirements:

Programmed requirements are those quantities of material needed to satisfy authorized programs such as equipment overhaul, modifications, set assembly, and special projects. Non-recurring requirements are those made on a one-time basis and include one-time programmed requirements; other examples would be one-time projects or maintenance requirements and initial stockage allowances. Such requirements are to be identified and removed from calculations to compute AMD.

(c) Establish Requirement Levels by Month and Quantity:

The requirement levels for both the wholesale (depot) and retail (Army in the field) segments of the supply system must be established for each supply level; it is based on recurring demand.

1. At the retail level, establish:

a. The Requisitioning Objective (RO) which represents the maximum allowable quantity of stock on hand and on order at any one time.

b. The Stockage Objective (SO), which is the maximum allowable stock on hand.

c. The Operating Level (OL), represents the estimated quantity required to be on hand to allow uninterrupted operations between receipts of stock.

d. The Safety Level (SL), which is the quantity of stock, in addition to the operating level, required to be on hand to permit continued operations in the event of minor disruptions of normal replenishment, or unpredictable fluctuations in demand.

e. The Order Ship Time (OST) Quantity, which represents the estimated quantity of stock used from the time a requisition is forwarded to the next higher supply echelon until that stock is received.

f. The Reorder Point (ROP), which is the level of stock at which the inventory manager must act to replenish the materiel quantity in a timely manner; it is defined as that quantity equal to the Safety Level and the Order Ship Time Quantity.

2. At the wholesale level, determine:

a. Dues-Out on file. A due-out occurs when a valid requisition is received, accepted, processed, and retained on file because no stock is available for release to satisfy the demand.

b. Programmed Requirements, which are the quantities needed to fill a one-time requirement set forth in an authorized program.

c. Safety Level (SL) quantity, is that amount of stock required to be on hand to permit continued supply operations in the event delays occur in the receipt of stock due-in, or a short-term, unexpected increase in demands.

d. Procurement Lead Time, which is the sum of Administrative Lead Time and Production Lead Time. The Administrative Lead Time quantity is that number of items which is expected to be requisitioned between the time a procurement action is initiated and the date the contract is let, or an order is placed. Production Lead Time quantity is the number of items which is expected to be requisitioned between the time an order is placed and the first significant receipt of the materiel.

e. Reorder Point Quantity represents the level of stock at which the inventory manager must act to replenish the materiel quantity in a timely manner.

f. Procurement Cycle Quantity is that number of items expected to be requisitioned--based on average monthly demand--between successive procurement actions; it is analogous to the retail Operating Level.

(d) Stratify Assets to Requirements: This is the process of matching assets on hand and on order to known and forecasted requirements throughout the months of the requirements determination time period; the time period is the sum of the time it takes to accomplish the administrative tasks of procurement (Procurement Lead Time) and the normal time between successive procurements (Procurement Cycle). Wherever possible, requirements are matched against assets at the time they would be needed. Forecasted recurring demands, which generate the requirements for procurement lead time and the procurement cycles, are shown as they are expected to occur during the months represented by these elements. For a reparable item, the repair cycle requirement will be shown in the repair lead time months. Assets to support a repair program need be shown only in the months when they are required. Assets on hand are shown as they are available and dues-in are shown in the month in which they will be received.

(e) Determine Asset Position, both Current and Projected: When expected and known requirements are identified and time phased, they must be compared to assets on hand and due-in. Note when

programmed demands will decrement stock. Shortages which come to light are to be addressed as soon as possible, and actions taken to acquire the assets which are needed to meet demands.

(2) Identify Constraints: Determine known and anticipated constraints on the ability to meet demands. A constraint is any situation, condition, or act which has a detrimental impact on the supply system's ability to issue validly requisitioned items. A constraint can be caused by the lack of acquisition funds, the inability of a manufacturer to meet schedules, a lack of transportation because of a field exercise, or any of a myriad of other reasons. Where constraints will adversely impact the supply system, assignment of priorities may lessen the unfavorable effect on the supported units.

(3) Determine the Quantitative Amount by Acquisition

Source: Use The most cost efficient and timely source of materiel to replenish stock--e.g., procurement, rebuild, set assembly, fabrication. However, an overriding consideration such as immediate need or the desire to keep a production facility operational, may necessitate using a less cost efficient source.

c. Acquisition Direction: Materiel can be acquired for stock from three different sources. They are procurement, production (in a government facility), or overhaul (or rebuild) within military maintenance facilities.

(1) Procurement Direction: This refers to actions undertaken by a materiel manager to purchase a required quantity of materiel for delivery to a specified location in accordance with a delivery schedule.

(a) Develop Schedule and Statement of Work: In preparing a procurement contract, include a materiel delivery schedule and a specific listing of all tasks required of the contractor, in addition to all applicable specifications.

(b) Develop Specifications: Prior to entering into a contract for materiel, insure that all applicable specifications are included regarding dimensions, reliability, availability, maintainability, durability, packing, and packaging.

(c) Prepare Drawings: Prior to entering into a contract, all necessary drawings must be prepared and verified to prevent design errors.

(d) Establish Delivery Dates: Negotiate elapsed time from the signing of the contract until the first significant delivery of materiel; this time period constitutes Production Lead Time, which is an important element in the requirements determination process.

(e) Determine Special Conditions: Identify any special conditions adversely affecting acquisition and determine their impact. There is no limit to the possible special conditions which can occur. For example, difficulty may be encountered in finding a producer willing and able to meet all stated technical specifications, or to meet a reasonable delivery schedule, or to do this for a reasonable price. Other special conditions may include shortages of essential raw materials, labor difficulties, or the loss of production capability.

(f) Define Any Necessary Approvals from Higher Authority:

Whenever approval by higher authority is required prior to purchasing materiel, an estimate of the time the approval process is likely to take should be added to the Administrative Lead Time. Where the approval process is time consuming, it becomes a significant part of the requirements determination process; if ignored, it could be the cause of an out-of-stock condition.

(g) Prepare a Procurement Work Directive: When the re-

quirements determination process has been completed, this document will be prepared. It should contain a description of the item to be purchased, the quantity to be acquired, the estimate of funds required, the desired delivery dates, and the place(s) where delivery is to be made. Authorizing signatures are to be affixed to this document. This document directs procurement personnel to acquire needed items.

(h) Prepare Certificate of Availability of Funds: The

amount of funds requested on the Procurement Work Directive must be certified by the responsible finance officer. The certificate attests that adequate funds are available to make the purchase.

(i) Obligate Funds: This act officially reserves monies,

from an appropriation or a fund, to pay for the order placed or the contract awarded.

(2) Production Direction: This represents actions under-

taken by a materiel manager to obtain a required quantity of new materiel from a government production facility. The sub-elements

of Production Direction are identical to those discussed for Procurement Direction in the preceding paragraph (F,l,c,(1)) and will not be repeated here.

(3) Overhaul/Rebuild Direction: Overhaul is the process of returning an equipment item to a 100% operational condition. Rebuild returns an item to a "like new" condition. The rebuild process is more expensive than overhaul because all components are brought to "like new" standards; in an overhaul, the used components which still meet "operational" standards are not changed. If the capability exists to rebuild or overhaul equipment, the repaired items can significantly reduce requirements to buy. Overhaul or rebuild direction oversees the actions covering movement of unserviceable assets and repair parts to the proper maintenance site and direction to the maintenance activity to accomplish the desired overhaul or rebuild program.

(a) Develop Schedule and Statement of Work: A contract should be drawn up between the materiel manager and the maintenance activity; the contract will specify a work completion schedule and all tasks required, in addition to all applicable specifications.

(b) Establish Delivery Dates: Dates for delivery of completed items to the storage location, or back to the using unit, must be specified in the contract.

(c) Prepare Overhaul/Rebuild Work Directive: This document will contain a description of the work to be accomplished on each item, the quantity to be worked on, the funding request estimate, the delivery dates, and the sites to which completed materiel

is to be delivered. The document must be signed by the authorizing official.

(d) Prepare Certification of Availability of Funds: The availability of the funds requested on the work directive must be certified by the responsible finance officer. The certification represents proof that the necessary funds are on hand.

(e) Obligate Funds: Fund obligation is the official reservation of monies--against an appropriation or fund--for expenditure in payment of an order placed, a contract awarded, or a service received.

2. Cataloging (Figure II-3): Cataloging is the keystone upon which the supply system is built. It holds the component parts together by providing a uniform or standard supply language as the bond. The cataloging process is an essential management tool; it should be used in supply management operations not only in the Army, but also within the other military services and the civil agencies of the government. Cataloging establishes a "Standard Supply Language." Each time an item enters the inventory, the central catalog agency must assign the name and stock number to be used to identify it. This prevents the same item from being procured and stocked under a variety of names and numbers by one or more materiel management activities. Cataloging also provides accurate information about the identity of an item of supply. Too, the catalog system must identify the procurement source of every item in the inventory so that the manager knows where to go for resupply; and the system identifies which activity manages an

INVENTORY CONTROL

CATALOGING

DEVELOP, REVIEW AND APPLY CATALOG
TOOLS AND MANUALS

ITEM
IDENTIFICATION

ACQUIRE AND MAINTAIN CATALOGING RECORDS

ITEM IDENTIFICATION GUIDES
AND REFERENCE DRAWINGS.

SUPPLY CLASSIFICATION
STRUCTURE AND CHANGES.

ITEM NAMES.

RULES AND PROCEDURES.

PREPARE AND FORWARD ITEM
DESCRIPTION AND/OR APPLI-
CABLE DATA AND CATALOGING
CHANGE PROPOSALS TO THE
CENTRAL CATALOGING
ACTIVITY.

PROVIDE UNIFORM FREIGHT
CLASSIFICATION FOR A NEW
NSN.

DEVELOP STANDARD TRANSPOR-
TABILITY CHARACTERISTICS
DATA.

MAINTAIN CATALOG DATA.

| Level of Involvement | National | Inter- mediate | Unit |
|----------------------------|----------|-------------------|------|
| | | | |
| | X | | |
| | X | | |
| | X | | |
| | X | | |
| | X | | |
| | X | | |
| | X | | |
| | X | | |

CONTINUED

FIGURE 11-3

| | | | | | | | | | |
|-------------------------------------|---|---|--|--|--|--|--|--|---|
| CONTINUATION | | | | | | | | | |
| ARMY ITEM IDENTIFICATION | ESTABLISH MCN REGISTER | ASSIGN MCN FOR LOCAL USE. | | | | | | | X |
| | STOCKNUMBER INQUIRY ON MCN | RECEIVE AND PROCESS REQUESTS FOR NSN ASSIGNMENT. | | | | | | | X |
| CATALOG MANAGEMENT DATA (CMD) | COLLECT AND RECORD DATA | SOLICIT AND CONSOLIDATE APPROPRIATE MANAGEMENT DATA FROM ITEM MANAGERS. | | | | | | | X |
| | DISTRIBUTE DATA | RECORD CMD IN PROPER FORMAT. | | | | | | | X |
| PUBLICATIONS | DETERMINE ARMY REQUIREMENTS FOR SUPPLY CATALOGS | | | | | | | | X |
| | DEVELOP ARMY SUPPLY CATALOGS AND SUPPLY MANAGEMENT DATA | | | | | | | | X |
| INTERCHANGEABILITY AND SUBSTITUTION | ITEM INTERCHANGEABILITY | | | | | | | | X |
| | VERIFY AND DOCUMENT RECORDS | | | | | | | | X |
| ITEM REDUCTION | REDUCE UNNECESSARY VARIETY OF ITEMS | | | | | | | | X |
| | ELIMINATE UNNEEDED ITEMS | | | | | | | | X |

item and which activities, or organizations, use it. Finally, the cataloging agency must provide either the data from which parts lists and parts catalogs are developed, published, or publish and distribute the parts lists and catalogs itself.

a. Item Identification: A basic purpose of cataloging is to establish a single identity for each item entering the military inventory. Since many items are common to all of the military services--and in some cases civil agencies also--it is logical that such items should be cataloged by a single agency. This ensures that the item has the same name and identifying number no matter where it is placed into use. (As an allied matter, a single manager for such an item will make for more efficient procurement, distribution and management of common items.) The national level cataloging activity can be located within an individual military service, or outside of the military organization completely. It is essential that supply items be given standard names and numbers; exactly where that service is performed is less important. The service includes:

(1) Develop, Review, and Apply Cataloging Tools and Manuals.

An initial step in cataloging must be to establish standard rules, policies, and procedures. These are to be developed at the highest level and reviewed by and coordinated with the organizations and activities responsible for the cataloging functions. The rules, policies and procedures then must be published and distributed to all involved with cataloging. Specifically, the following should be performed:

(a) Item Identification Guides and Reference Drawings:

Cataloging must provide accurate information as to the identity of an item of supply. Its size, its weight, what it is made of, and what it is used for is recorded. Every known identifying number which it was ever assigned, from the day it was developed to the day it was sold, should be made a matter of record. When possible, an item is described with words and codes that depict its essential characteristics; when words fail, an item is described indirectly by citing references to prints and technical data developed by manufacturers.

(b) Supply Classification Structure and Changes: Each item of supply is assigned a unique identification number which is called the stock number. There are many ways to assign stock numbers. The following description generally follows the US system; it does not try to duplicate it. The system classifies items into logical categories. A supply classification system should provide standard commodity groupings and classes for all items; each item identified in the catalog system is assigned to a group. Groups classify an item either by what it is (as a truck) or by where it fits (e.g., a safety guard for a power saw is placed in the same group as the power saw). These groupings must be predetermined and standard. To identify groups, a four-digit number is assigned to each item; the first two numerals of the 4-digit number identify the specific group to which the item is assigned. Within the groups there are subdivisions which are called classes. Classes within the truck group could be cargo, utility, and heavy transport.

These too must be predetermined and standard within the catalog system. Classes are identified by the last two digits of the 4-digit number. Beyond that, each item has a unique 7-digit identification number. This number is assigned sequentially by the national level catalog activity. The national stock number (NSN) would resemble the following:

Classification

Item Identification

17 || 55

1234321

group class

(c) Item Names: A single standard name is assigned each item procured and issued by the military services. Regardless of how many users, or uses, there are for an item throughout the services, they all must use the same name for the item. Approved item names must be published in a "national item name directory for supply cataloging"; the directory should be used by both the governmental agencies and any segment of industry dealing with the government. Any colloquial names should also be listed in the directory and cross referenced to the approved item names. If more than one name exists for an item, the national cataloging activity must select the most appropriate one to be used in the national cataloging system.

(d) Rules and Procedures: Policies governing who is responsible to catalog new items, and how items will be named, classified, and identified will be established by the national cataloging activity. Rules and procedures should be justified to, and approved by, the senior national level logistician.

(2) Acquire and Maintain Cataloging Records: Each activity responsible for managing or storing equipment within the inventory must be required to acquire and maintain complete, accurate, and up-to-date cataloging records for those items over which it has responsibility. The following cataloging actions are the minimum needed to assure that cataloging records are accurate, up-to-date, and complete.

(a) Prepare and Forward Item Description and/or Applicable Data and Cataloging Change Proposals to the Central Cataloging Activity: Whenever a new item is introduced into the inventory, the responsible materiel management activity will follow standard procedure and prepare and forward to the central cataloging activity a complete item description. The materiel management activity may suggest a group and class for the item, but the NSN will be assigned by the central cataloging activity; the item identification number--i.e., the last seven digits of the stock number--will be a unique, sequentially assigned number. A Cataloging Change Proposal may be a request to change the classification portion of an NSN--the unique item identification number will never change--or the removal of an item from the inventory; all Cataloging Change Proposals are sent to the central cataloging activity for approval and action.

(b) Provide Uniform Freight Classification for a New NSN: The central catalog activity is responsible for obtaining freight classification data from the item manager, the supply source, or the manufacturer. The data must be included in the data base and provided to users.

(c) Develop Standard Transportability Characteristics

Data: To ensure safe, fast, and economic transportation of materiel, the physical characteristics of each item must be recorded and made available to authorized transportation officers. The information provided must include dimensions, weight, and volume; packing, bracing, and dunnage required for shipment; safety requirements; and any limitations because of item fragility. The transportation characteristics must be addressed for each mode of transportation.

(d) Maintain Catalog Data: Each materiel management activity is required to maintain catalog information and pertinent management data on every assigned stock number. Inherent in this responsibility is the requirement to record all changes, additions, and deletions quickly and accurately to prevent the use of erroneous information.

b. Army Item Identification: Until an NSN is assigned, the Army should assign a unique Management Control Number (MCN) to each new item of supply to permit controlled use of the item. This permits the Army manager to effectively perform the normal management functions in acquiring, cataloging, issuing, moving, and maintaining the equipment before the Central Catalog Activity assigns a stock number. The MCN enables controlled use of the asset without the assignment of an NSN. To create an MCN, the following should be undertaken:

(1) Establish MCN Register: The MCN Register is a log of assigned Management Control Numbers issued by the materiel management activity while awaiting the receipt of a proper stock number.

An MCN will be issued by the central catalog activity to the materiel management activities. The register must contain adequate information and data to identify the item, cross referenced to the MCN, to prevent administrative error.

(a) Assign MCN for Local Use: Local users of items which are not available through the normal system of supply should assign an MCN from the register for use in acquiring and issuing the non-standard items. A notification will be submitted to the central catalog activity each time an MCN is assigned, along with a request to review the item and issue a stock number to replace the MCN when appropriate.

(b) Receive and Process Requests for NSN Assignments: The central cataloging activity will receive requests for stock number assignment and assign NSN to each unique item.

(2) Stock Number Inquiry on MCN: The central catalog activity, using the information associated with the stock number assignment request, will scan the stock number record for an item which duplicates the control numbered item. If a match is found, the requesting activity is notified and the NSN in use is applied. If no match is found, a new NSN will be issued in accordance with established procedures.

c. Catalog Management Data (CMD): The central catalog activity will collect, validate, and record selected management data on each item assigned a stock number. These data identify an item specifically and provide the information necessary to accurately and economically manage it. Management data will include: Item

Data - prepared by the item manager, this is current and related logistics data required for supply management, financial accounting, acquisition, and preparation and routing of requisitions; Item Identification - recorded in Item Data, the purpose is to provide nomenclature for use in the preparation of stockage lists, supply catalogs, supply bulletins and adopted items lists; Packaging Data - prepared by the item manager, these provide details of cleaning, preserving or packaging an item, or will refer to the document which contains the needed data; Freight Data - prepared by the item manager after the Item Data are developed, they are used to establish modes of routing and rates for materiel shipments; Substitute Data - record of any approved substitute item(s) for an NSN which may be utilized by the item manager in lieu of the requisitioned item; Reference and History Data - a record of all current and former identifying numbers assigned to an item of supply; and Equivalent Item Data - identifies equivalent items--i.e., items which cannot be considered a substitute, because physical or performance characteristics vary, but which may have differing or lesser capabilities.

(1) Collect and Record Data: The central cataloging activity should direct--and provide procedural guidance for--the collection and recording of data. Sources of this information will vary; some may be obtained through physical inspection, while other data may be available from the manufacturer or they may have to be developed by transportation, supply, or maintenance engineering.

(a) Solicit and Consolidate Appropriate Management Data from Item Managers: Item managers provide Item Data, Identification Data, Packaging Data, and Freight Data to the central cataloging activity for the CMD in response to a request from the central cataloging activity.

(b) Record CMD in Proper Format: The central cataloging activity is responsible to develop the format in which CMD is to be recorded and forwarded. The item manager's data will be properly entered into the appropriate format. A standard format will assist both the item manager in recording of the data, and the catalog activity in extracting the data for the CMD file.

(2) Distribute Data: The CMD will distribute to all potential users and they will be put to various applications. Some common examples of uses are recurring reports, transportation assistance, and identification of substitute or equivalent items. The central cataloging activity will provide, either on request or in response to programmed recurring requirements, those data requested by authorized agencies.

d. Publications: The Supply Catalog should not be a single document unless the military organization is very small. Ordinarily it will consist of a series of catalogs with an Introduction to the Catalog System, containing indices which enable items to be looked up through use of the name (alphabetic index) or use of the supply classification (index listing groups and classes), and a series of supply catalogs.

(1) Determine Army Requirements for Supply Catalogs:

Catalog data are distributed Army-wide to any supply, maintenance, or acquisition activity requiring the information in its operations. The central cataloging activity must determine which catalogs, and in what numbers, are to be distributed in order to ensure both effective supply and maintenance operations and management control.

(2) Develop Army Supply Catalogs and Supply Management Data:

The central cataloging activity will develop the supply catalogs, supply bulletins, and catalog management data; it will also develop and distribute any changes. The cataloging activity will extract and prepare for publication, selected management data; it will prepare the Introduction to the Catalog System and the component list supply catalogs.

e. Interchangeability and Substitutability: Many items in the Army inventory will be very similar in form, fit, and function, but will be dissimilar enough to have been assigned different stock numbers. In some cases, items of this type may be issued in lieu of another that has been requisitioned but is not immediately available. Item managers will identify those equipment items which can be issued in lieu of another, and the central cataloging activity will document these data and publish lists identifying them.

(1) Item Interchangeability: Item managers will generate data identifying interchangeable items and substitute items, and the central cataloging activity will corroborate and record the information. Interchangeable items are defined as those which may

be freely exchanged one for the other. Substitutability is more limited in that one item may be substituted for another, but the reverse is not true. For example, a 5-ton truck may be interchangeable with another 5-ton truck but it would not be interchangeable with a 10-ton truck. The 10-ton truck, however, could be issued as a substitute for the 5-ton truck.

(2) Verify and Document Records: The central cataloging activity must ensure that Interchangeability and Substitution (I&S) data are correct and are included in the requisition processing system. Item managers must also ensure that I&S data are up-to-date and are submitted to the central cataloging activity for inclusion in the master data file.

f. Item Reduction: The fewer the items which a supply system must support, the more effectively its limited resources can be used. The central cataloging activity should look specifically for items which could be eliminated from the inventory without detrimentally affecting the Army's capability.

(1) Reduce Unnecessary Variety of Items: The central cataloging activity should review specifications, standards, and lists of items qualified to be acquired with the view of eliminating items which duplicate the function of another item--e.g., two different type squad tents. Where more than one item exists in the inventory to perform a single job, the central catalog agency should consider selecting one as standard and programming the other(s) to be phased out of the supply system.

(2) Eliminate Unneeded Items: Unneeded items exist where stocks of equipment exceed needs or where obsolete equipment still exists in the inventory. In both cases, resources are spent to store and manage the assets which might be better expended elsewhere. Excess stock may result from reorganization or inefficient management of acquisition and/or maintenance actions. Obsolete stock can accumulate when items are replaced in units but are not programmed for disposal.

3. Distribution (Figure II-4): Distribution is that phase of supply which encompasses positioning and issuing materiel items in an efficient and timely manner to satisfy requirements.

Distribution Management: This is the process of controlling the positioning and issuing of equipment items. It includes:

(1) Issue Priority Designator: Periodically the quantity requisitioned will exceed the assets available for issue. The supply activity must have some way to determine which requisitions should be filled and which should be held as "dues-out." A simple method is to arrange and process the requisitions in chronological order, but this may result in a unit receiving a repair part to place on the shelf while another unit has a non-operational - or "dead-lined" - piece of equipment awaiting that same repair part. To avoid this, a priority system should be instituted. Such a system can take many forms. A simple and effective system would be one where three priority levels are established. As an example, priority 3 is a "normal" requisition--as in a replenishment request; most requisitions should be "normal." Priority 2 would be

INVENTORY CONTROL

DISTRIBUTION

ISSUE PRIORITY DESIGNATOR
REVIEW AUTHORIZATION DOCUMENTS

REVIEW SPECIAL HANDLING REQUIREMENTS

DISTRIBUTION
MANAGEMENT

DISTRIBUTION OF SUPPORT ITEMS

CLASSIFIED & SENSITIVE
MATERIAL

HAZARDOUS COMMODITIES

PETROLEUM PRODUCTS

EXTREME COLD WEATHER
STORAGE REQUIREMENTS

MATERIEL FOR SERIAL NUMBER
CONTROL

TIME PHASE SCHEDULED
ACTIONS

SHIP SUPPORT ITEMS

PROVIDE INITIAL DISTRI-
BUTION OF REPARABLE ITEMS
AND REPAIR PARTS TO THE
SUPPORT MAINTENANCE
ACTIVITIES

CONTINUED

| Level of Involvement | | |
|----------------------|-------------------|------|
| National | Inter- mediate | Unit |
| X | X | X |
| X | X | X |
| X | X | X |
| X | X | X |
| X | X | X |
| X | X | X |
| X | X | X |
| X | X | X |
| X | X | X |
| X | X | X |

FIGURE II-4

CONTINUATION

DEVELOP A PRINCIPAL ITEM DISTRIBUTION
PLAN

DETERMINE NET ASSET
POSITION

DETERMINE DISTRIBUTION
POSITION ON PRIORITIES
ESTABLISHED AND DISTRI-
BUTION POLICIES

DETERMINE LOGISTICAL
SUPPORT REQUIREMENTS

PLAN DISTRIBUTION OF
PRINCIPAL ITEMS

X

X

X

X

X

a "deadline" requisition; this would be used when a piece of unit equipment cannot function because the requisitioned part is broken or missing, and none is available in the unit. Priority 1 is an "emergency" requisition to be used only when unit mission is significantly degraded because of the lack of the item requisitioned. (Units also can be issued a priority designator so that units with a tactical mission enjoy a higher priority than training and support organizations.) It is the duty of the requisitioner to accurately assign the proper priority code; the supply activity must act based on the priority assigned to the requisition form, filling the high priority documents first. Too, a system to edit and periodically verify the accuracy of the high priority designators assigned should be established; this would prevent abuse of the priority system.

(2) Review Authorization Documents: Requisitioners may only request items which are listed on their authorization document(s) and may not requisition and/or have more items on hand than are authorized for the unit. The supplier is also responsible to edit the requisition received for justification and authorization. That is, the editor will check whether the requisitioner is authorized to ask for the item requested; whether the quantity is in consonance with the authorization document; and, if appropriate, whether the requisition is justified. If any one of the three-- authorization, quantity, or justification--is incorrect, the requisition should be cancelled.

(3) Review Special Handling Requirements: Many items may require special handling because they are fragile or sensitive, or

in some way hazardous, or are expensive, or classified, or difficult to replace; other reasons also exist for giving some items special treatment. Such items should be identified by the materiel management activity when acquisition occurs, and the information about special handling distributed to all activities which will move, store, or operate the equipment. Supply organizations must maintain a file of materiel which requires special handling, and stock records of these items are to be annotated. Supply activities and users must periodically review special handling data to ensure all such items are identified, that special handling instructions are current, and that the instructions are complied with. The following are some commonly encountered special handling considerations:

(a) Classified and Sensitive Materiel: Some items may have a military security classification applied. Such items will require secured storage and may require guards while in transit. Sensitive items may be physically fragile; sensitive to heat, light, or radiation; potentially dangerous, as weapons; or even sensitive in a political sense. In any case, the item manager must publish special handling instructions to prevent damage or theft from occurring.

(b) Hazardous Commodities: There are various dangerous items which military forces routinely distribute. Ammunition, explosives, and corrosive chemicals (such as battery acid) come immediately to mind. Special handling instructions must be observed to safely handle, store, or transport these items.

(c) Petroleum Products: An army today will consume large amounts of petroleum, oil, and lubricants (POL), and the distribution of POL items requires special handling. Gasoline is highly volatile and the fumes ignite easily. Other petroleum products will burn readily too. Special instructions are required to ensure the safe handling of these items.

(d) Extreme Cold Weather Storage Requirements: For a military force which must operate in an extremely cold climate, special instructions are required to prevent items from being damaged while in storage or in transit. Some materials turn very brittle in extreme cold and will shatter easily. Liquids freeze or congeal; water based liquids will expand in freezing and may damage containers. Special handling is necessary to avoid unnecessary damage to those items susceptible to cold. The item managers are responsible to identify equipment which requires special handling in extreme cold.

(e) Materiel for Serial Number Control: Some items, because of high cost, or because of potential danger in the wrong hands--such as weapons--or for many other reasons determined by the item manager or the commander, will be managed by serial number. This requires special instructions to ensure that the materiel management activity knows at all times where each item is and that the transportation or using units record the serial number of the item when it is in their possession.

(4) Distribution of Support Items: The term "support items" is broad and encompasses a wide variety of equipment.

They are defined as both common and peculiar repair parts, assemblies, components, tools, test equipment, supplies, and/or materiel recommended or allocated for supply and maintenance support of an end item. To insure effective distribution of support items:

(a) Time Phase Scheduled Actions: Support items must be distributed in a timely manner. If the needed support equipment is fielded too early, money and manpower will be spent to maintain the still unneeded items at the using units. If needed support equipment is fielded too late--and this is by far the most common occurrence--the end item can sit unused because of its lack. An important consideration here is the stockage of repair parts, assemblies, and components to support the normal demand to be expected from users; since no demand experience will be available on newly introduced items, the materiel management activity will have to provide lists of these items to be stocked and an estimate of quantities needed at each level, i.e., depot, intermediate, and user. Careful planning will ensure that all support items are considered and that the support items are distributed when they are needed; i.e., slightly before and in consonance with the end item distribution plan.

(b) Ship Support Items: In accordance with the time-phased plan of scheduled actions, support items will be shipped to users and activities to sustain of the end item being introduced.

(c) Provide Initial Distribution of Repairable Items and Repair Parts to the Support Maintenance Activities: The materiel management activity must plan for, and provide to the maintenance

support activities, the means to maintain a new end item. This requires that affected maintenance shops know what they will be supporting, in what quantity, and when. They must stock repair parts, assemblies and components; in some cases special tools and test sets are needed too, and training of mechanics may be necessary.

(5) Develop a Principal Item Distribution Plan: A Principal (or Major) Item Distribution Plan shows the status and the projected distribution, or redistribution, of major items in the inventory to the current force structure. It is based on the total principal item distribution requirement which is the sum of the quantity needed to fill the receiving unit(s), plus any maintenance floats, operations project stocks, contingency stocks, and war reserves authorized. The senior army logistics officer is responsible for computing the distribution requirement and for developing and publishing the Principal Item Distribution Plan. It is distributed to major headquarters. The distribution plan is for planning purposes only and should not be construed as authority to requisition; it is expected to generate comments which should be directed to the responsible element of the senior logistics officer's staff. In planning and execution of the Principal Item Distribution Plan (PIDP):

(a) Determine Net Asset Position: The staff activity developing the PIDP determines how many items are required by each organization, to include maintenance float, projects, and contingency stocks. It also determines if any of the items are already available

to the commanders. The available assets should include items on-hand (consider excess also), plus due-in items and those in maintenance, minus any item about to be turned in for salvage, depot maintenance, or as serviceable excess.

(b) Determine Distribution Position on Priorities Established and Distribution Policies: The army's senior operations officer is responsible for establishing both a priority listing for the issuance of resources to units, and for the publication of any other germane distribution policies. The operations officer will know what approved operations plans exist; and he can, through establishment of unit priorities and policies, ascertain that the available resources are distributed in a manner which will best support the operational planning. The senior logistics officer will also establish planning guidance, based on the guidance published by the operations officer; the item manager does not determine distribution requirements for principal items.

(c) Determine Logistical Support Requirements: Fielding a principal item without first determining all support requirements, and arranging to have adequate support in place when the principal item is fielded, is a sure prescription for disaster. Support equipment, which was discussed on pages 42 and 43, constitutes an important element of logistical support requirements. The staff must also consider and plan for requirements for facilities, personnel, and training. Planners must consider the impact of the new item on support activities too; for instance, introduction of a new armored vehicle would require planners to re-examine the current

capability to transport fuel and ammunition, in addition to the more obvious impact on the maintenance facilities.

(d) Plan Distribution of Principal Items: Principal items usually are intensely controlled because of their value and/or their sensitive nature. In a small military force, the initial issue of principal items can be directed by the senior supply management activity in accordance with force structure plans, authorization documents, priority listings, and policy guidance. Normally, units should not have to requisition the initial issue of principal items.

4. Overhaul and Rebuild Direction (Figure II-5): When a depot level maintenance capability exists, overhaul and rebuild can be used to significantly reduce the number of new replenishment items required. Both processes deal with items held by the depot(s). Overhaul is the process of restoring an item to a completely serviceable condition and meeting all serviceability standards. Rebuild is a higher and more costly level of depot maintenance; it restores an item to a like new condition and meets original manufacturing tolerances. Both processes require disassembly of the item, inspection, and reassembly using new or serviceable parts. In rebuild, the disassembly is complete and reassembly will use only new or like new components; a rebuilt item has an expected service life equal to that of a new one. Overhauled or rebuilt items are returned to depot stock.

Inventory Support: Every year some items in the inventory become unserviceable because of accidents, fair wear and tear, or age;

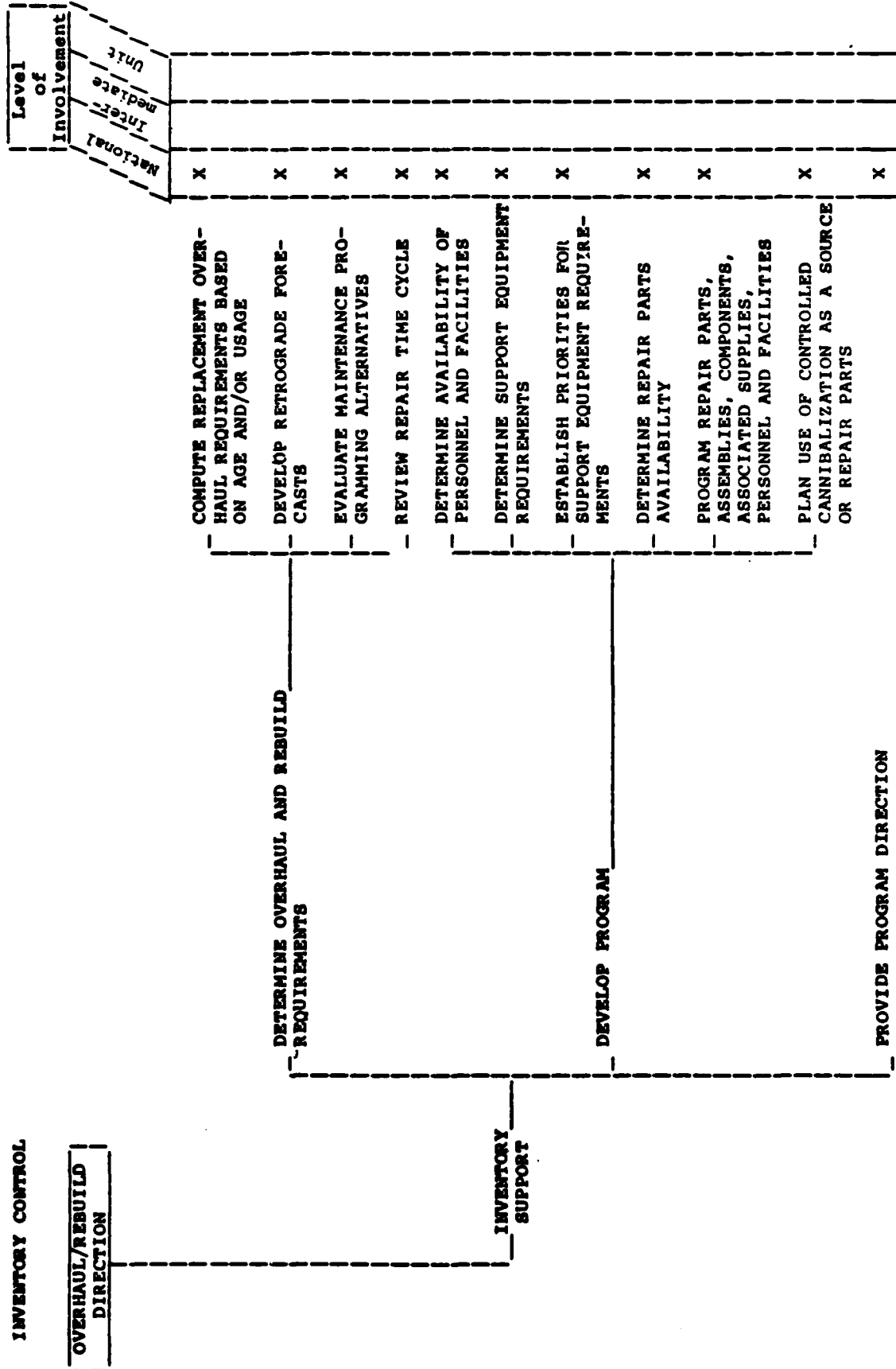


FIGURE 11-5

in war, combat damage also must be considered. It is a supply function to keep equipment item quantities at operating levels, and each year a quantity of some items normally will have to be procured to offset the loss incurred through normal attrition. Unserviceable items which can be returned to inventory, through overhaul or rebuild, reduce the quantity or new replenishment materiel to be bought. To establish and manage an overhaul and rebuild program, the following steps are to be undertaken:

(1) Determine Overhaul and Rebuild Requirements: Both principal and selected secondary items may be overhauled or rebuilt. Selection of the items to be overhauled or rebuilt is the responsibility of the Army's senior level logistician; in the selection process, the logistician must coordinate with the operations officer. An item manager is responsible to determine how many of the items will be available for maintenance. He, or she, will base this figure on the number of reparable unserviceables on hand and the number which troop units are expected to turn in. The estimate of the number of unserviceable items which can be repaired will be based on experience as modified by item age, planned usage and availability of repair parts, components, and assemblies.

(a) Compute Replacement Overhaul Requirements Based on Age and/or Usage: Item managers must maintain records on those items for which a service life is established. The service life is expressed as an age or usage factor in terms of years, or miles, or rounds fired, or hours of operation. The item manager will determine the quantity of items requiring overhaul, or rebuild,

based on the number having reached the established maximum service life.

(b) Develop Retrograde Forecasts: Each year item managers can expect that a number of the item types selected for overhaul or rebuild will be turned in as unserviceable; and, of those, a significant proportion will be reparable. The item manager must take these expected turn-ins into account when computing the number of an item to be scheduled into depot maintenance. Since he cannot know in advance exactly how many unserviceable, but reparable, items will be turned in, he must forecast as accurately as possible the number he expects to be returned. Where historical data exist, they are usually arranged into increments of three months. In forecasting, the last twelve quarters (three years) normally are used in predicting expected returns. (Where fewer than twelve quarters' historical data exist, use what is available.) To forecast the number of reparable items to be turned in each quarter (or month, or year) first divide the sum of the unserviceable but reparable items turned in during each period for which data are collected, by the sum of item densities in the same periods. In calculating the item densities, count only items in use in the hands of troops; do not count inventory, floats, or contingency stocks. The number which results from the division is called the Unserviceable Generation Factor (UGF). Multiply the UGF times the authorized quantity to be in the hands of troops to forecast the number of items which are expected to be turned in as unserviceable during the next period. For example, if the following data had been

collected and the authorized issue quantity to be in the hands of troops-density-now equals 325, then use the calculated UGF to determine the quarterly forecast as illustrated below:

SAMPLE DATA

| QUARTER | UNSERVICABLE REPARABLE | UNSERVICABLE NOT REPARABLE | DENSITY | REMARKS |
|--------------|------------------------|----------------------------|---------|-------------------------|
| 1979 Jan-Mar | 5 | | 316 | |
| Apr-Jun | 4 | 1 | 326 | 15 rtnd fm overhaul |
| Jul-Sep | 6 | 2 | 318 | |
| Oct-Dec | 4 | 0 | 324 | 10 added fm procurement |
| 1980 Jan-Mar | 5 | 3 | 316 | |
| Apr-Jun | 3 | 2 | 330 | 19 rtnd fm overhaul |
| Jul-Sep | 9 | 3 | 318 | |
| Oct-Dec | 5 | 1 | 322 | 10 added fm procurement |
| 1981 Jan-Mar | 4 | 2 | 316 | |
| Apr-Jun | 4 | 1 | 332 | 21 added fm overhaul |
| Jul-Sep | 4 | 1 | 327 | |
| Oct-Dec | 5 | 2 | 325 | 5 added fm procurement |
| 1982 Jan-Mar | 5 | 1 | 319 | |
| Apr-Jun | 4 | 1 | 332 | 18 added fm procurement |
| Jul-Sep | 4 | 0 | 328 | |
| Oct-Dec | 6 | 2 | 325 | 5 added fm procurement |
| 1983 Jan-Mar | 5 | 1 | 319 | |
| Apr-Jun | 3 | 3 | 332 | 19 added fm procurement |

To calculate the UGF:

$$\frac{\text{Sum of unserviceable reparable generated over last 12 quarters}}{\text{Sum of in-use densities over last 12 quarters}} = \text{Unserviceable Generation Factor (UGF)}$$

$$\frac{58}{3895} = 0.0149$$

$$\text{UGF} = \frac{58}{3895} = 0.0149$$

$$\text{UGF} \times \text{Authorized Troop Issued Quantity} = \text{Expected Unserviceable Generation Quantity (for a quarter)}$$

$$0.0149 \times 325 = 4.8425$$

NOTE: In the example the last twelve quarters would include the data listed from Jul-Sep 1980 through Apr-Jun 1983. Adding the "Unserviceable Reparable" column for the twelve quarters gives a total of 58; adding the density column figures for the same period gives a total of 3895. Carry calculations out to four decimal places and round results up to the next higher whole number (e.g., 4.0001 would be rounded up to 5). Note also that by simply taking an average of the unserviceable reparables generated ($58 \div 12$) a figure of 4.8333 is derived. However, if for any reason the authorized issue quantity is changed, a simple average may not accurately estimate future generations.

(c) Evaluate Maintenance Programming Alternatives: The item manager will present the overhaul or rebuild requirement, i.e., the quantity to be repaired after consideration of several factors. Generally, all unserviceable assets capable of being repaired will be considered for overhaul or rebuild, but the item manager will try to achieve the best, most cost effective replacement of the unserviceable items. He must decide if it would be best to simply repair the item and return it to stock, to overhaul the item, or to rebuild it. Rebuild is very expensive and seldom undertaken. In terms of cost outlay, simple repair would be the cheapest alternative and rebuild the most expensive. However, in the long run, it may be decided that rebuild is a more economical course than either simple repair or overhaul. To aid in the decision process, criteria should be established for the item manager's use. For example, policy may forbid overhaul or rebuild if the item is within one

year of washout--because of age, mileage/ usage or impending replacement; or if the item has been classified as obsolete; or if the item is already scheduled for modernization or improvement; or if the item is not reparable within established expenditure limits; or if the item is no longer logistically supportable because repair parts, assemblies, and components can no longer be procured.

(d) Review Repair Cycle Time: The repair cycle is the length of time required to return the item to usable condition, and it must be considered in the overhaul or rebuild requirements determination process. Historical records may be used to determine repair cycle times. Where no records are available on the item under consideration, a similar item may provide a basis from which an estimate can be made.

(2) Develop Program: A repair/overhaul/rebuild program must be prepared well in advance--a year or more where possible--to allow the depot sufficient time to procure the necessary repair parts, assemblies and components, and to make any needed tooling arrangements. The program is also of great value to those who must acquire replenishment items; they can reduce the number of items to be purchased by the quantity which the maintenance program is expected to return to the inventory. The following factors will impact program development:

(a) Determine Availability of Personnel and Facilities: The prospective location and facilities for performing an overhaul or rebuild must be adequate to accomplish the job. Such things as door openings, floor load capacity, overhead clearance, electrical

capability and other typical industrial considerations must be adjudged adequate prior to scheduling the maintenance. The proper number of maintenance personnel, possessing the necessary skills, must also be available at the start of and throughout the overhaul/rebuild program.

(b) Determine Support Equipment Requirements: For each item it is important to know, before beginning, the type and number of each particular support item necessary for the successful completion of the overhaul or rebuild program. The support equipment may range from common hand tools to forklift trucks and overhead cranes. The layout of the overhaul area must include adequate space to maneuver materiel handling equipment loaded with items or portions of items to be reworked.

(c) Establish Priorities for Support Equipment Requirements: Priorities between concurrent overhaul programs must be set and support equipment allocated as required. Programs requiring the same scarce support equipment may be impossible to run concurrently. Production schedulers must consider all possible conflicting requirements for scarce resources whether they be facilities, personnel, repair parts, or support equipment. Failure to eliminate conflicts before a program is started will cause unnecessary delays.

(d) Determine Repair Parts Availability: Before starting the overhaul or rebuild of any item, repair parts must be on hand, or on the way, in order to avoid work stoppages. Repair parts consumption experience must be considered when determining requirements. Before the overhaul or rebuild is scheduled, the depot

maintenance shop must be certain that the required repair parts, assemblies, and components will be available for use when needed.

(e) Program Repair Parts Components and Associated Supplies, Personnel, and Facilities: First, determine the quantity of a particular item to be overhauled and then determine the quantity of each repair part, component, associated supplies (as bench stocks) and the number of personnel, facilities, and type of support equipment required to perform the program. Then it is necessary to program or reserve these resources for the specific period of time in which the overhaul is to be performed.

(f) Plan Use of Controlled Cannibalization as a Source of Repair Parts for Supply Augmentation: All equipment items which are not eligible for the overhaul program (because they cannot be repaired) should be stripped of all usable repair parts and components. These parts should be identified and labeled, including their stock numbers, and added to the on-hand inventory; inventory records must be adjusted accordingly.

(3) Provide Program Direction: Procedures must be developed to provide direction for overhaul or rebuild programs. The procedures should be dynamic in nature, flexible, and they should be reviewed periodically to assure that they remain current. The office in charge of programming and scheduling overhaul actions will have input into the policies, but program direction will be the responsibility of the depot maintenance office.

b. Disposal (Figure II-6): Disposal is the act of getting rid of property under proper authority whether excess, surplus, scrap, abandoned, or destroyed.

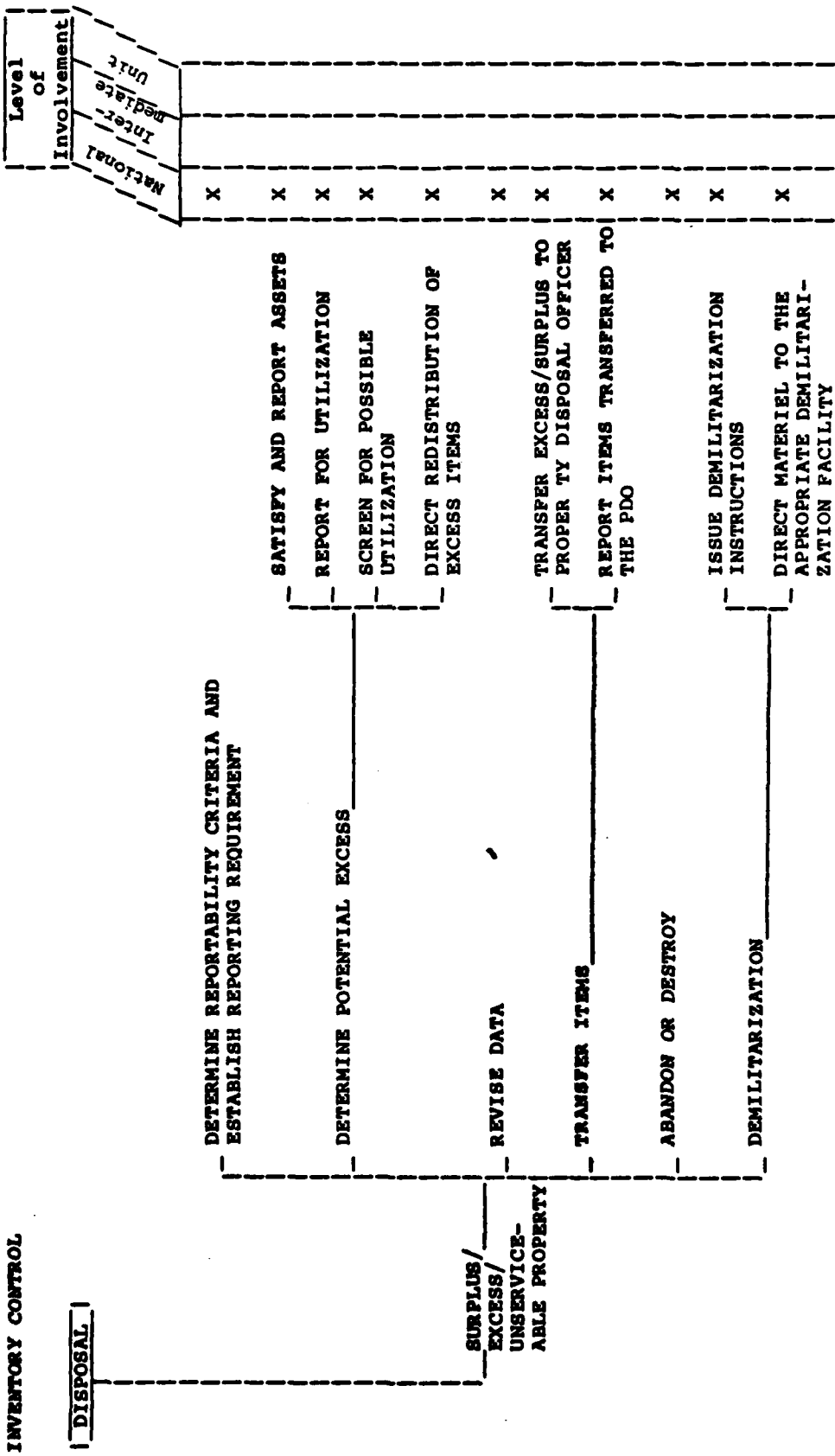


FIGURE II-6

Surplus/Excess/Unserviceable Property: An army will generate materiel that is of no further use, because it is in excess to needs or because it no longer will perform its intended function in the normal course of daily operations. Such materiel still will have some residual value which should be recouped. To do so, an organization should be designated or developed which has the objective of collecting, processing, and disposing of the excess, surplus, and unserviceable property in the most cost effective manner; excess and unusable materiel should be sold whenever possible. Property, as used in this context, includes all equipment--to include abandoned private property--but excludes real property (land and buildings) and records. As used in this document, excess property is that which is above the level of needs of the army and surplus property is that declared to be above the needs of any government service or agency. To efficiently identify and process excess materiel, the following steps must be undertaken:

(1) Determine Reportability Criteria and Establish Reporting Requirement: The reasons that excess items are generated abound; some common causes are: obsolescence, where the items grow old and seldom used; equipment modifications, which generate unneeded parts; reduction in force or change in mission, which can generate excesses; or a cost reduction program. Policies and procedures, to establish the excess and unserviceable property identification criteria and the rules for reporting it, must be developed and disseminated. Materiel excess to one battalion may be needed by another; materiel excess to Army needs may be used by

another service or civil agency of the government. Reporting requirements should be so constructed as to make every effort to utilize excess serviceable items elsewhere and save the government procurement costs rather than dispose of them through property disposal offices.

(2) Determine Potential Excess: Items requiring disposal will be generated by the accumulation of non-reparable unserviceable items and the identification of items excess to needs. Identification of both categories will occur at user organizations and at intermediate support organizations; the item manager may also be able to identify some excess materiel. At the lower levels, excess can be identified within the unit or organization; only the materiel management activity will determine if the items are excess to the needs of the army or if they are surplus to the needs of the government.

(a) Stratify and Report Assets: All levels will periodically inventory and report to the materiel management activity the type and quantity of materiel on hand, the condition, and whether the items are excess. If excess equipment is on hand, the reason for that classification will be reported also.

(b) Report for Utilization: The item manager will collate and analyze reports of excess equipment and will plan to utilize the excess to fill reported shortages. If all organizations have all of their authorized equipment, serviceable items will be programmed to refill supply stocks. Potential army users will be notified of intentions and their comments will be invited prior to

initiating any equipment transfers. When supply stocks are filled, the item manager should query other services, and finally other civil agencies, to see if they need the items.

(c) Screen for Possible Utilization: The item manager will plan to redistribute excess items after reviewing responses from prospective Army recipients and other governmental agencies. Priority of fill should be, in order: active army units, army reserve organizations, supply stocks, other services, and other government agencies.

(d) Direct Redistribution of Excess Items: The materiel management activity will direct redistribution of excess items in accordance with its utilization plan. If, after redistribution of the items, excess stocks still exist, the materiel management activity will normally declare the materiel to be surplus and plan to turn them over to the Property Disposal Office.

(3) Revise Data: Supply records at all levels must be adjusted whenever equipment is transferred or, if appropriate, the condition status changes. Because decisions are made based on these data, accuracy of records is very important.

(4) Transfer Items: Transfer entails physical movement of materiel as set forth in the redistribution plan. Unless specifically directed otherwise, all transfer of excess materiel will be accomplished through supply channels. That is, items will be turned in from using units to intermediate (DS/GS) supply organizations; transfers between intermediate supply units may occur. At each supply level, the excess items will be re-issued if they are

needed by other units. After excess serviceable items have been used first to replenish units, then the inventory stocks, and finally to accommodate interservice/agency transfer requests, then:

(a) Transfer Surplus to the Property Disposal Officer:

Any surplus items still remaining will be transferred to the Property Disposal Officer (PDO) to be washed out of the system. All property received by the PDO will be classified either as item property or scrap. The former term denotes items which can be used for their intended purpose, while the latter--scrap--can be sold only for its material value.

(b) Report Items Transferred to the PDO: When items are transferred to the PDO to be washed out of the system, property accountability records at all levels must be adjusted. The organization responsible for sending an item to the PDO is also responsible to submit a report of the action through supply channels to the appropriate materiel management activity.

(5) Abandon or Destroy: In some cases it may be more desirable to abandon excess items, or destroy them in place, than remove them to the property disposal facility. This may be so because of reasons of cost, safety, or for any of many other reasons. But, property may be abandoned or destroyed only per the written instructions of a duly authorized official; normally such authorization should come from the army's senior logistician.

(6) Demilitarization: Some types of military equipment have inherent characteristics which render them too dangerous or potentially damaging to be sold to the public. Demilitarization

is the act of destroying the military offensive or defensive properties found in this equipment. The term includes mutilization, dumping at sea, scrapping, melting, burning or alteration to prevent further use of the military or lethal aspects of the item. Demilitarization applies to both serviceable and unserviceable materiel.

(a) Issue Demilitarization Instructions: The materiel management activity will identify which items must be demilitarized and will specify the method to be used in the process. Standard instructions should exist for common military equipment.

(b) Direct Materiel to the Appropriate Demilitarization Facility: Demilitarization will normally occur at the property disposal facility, but may take place at an intermediate maintenance site or elsewhere. The Materiel Control Point for the Army will decide where an item is to be demilitarized and in what quantity. Demilitarization instructions should accompany or precede the movement order.

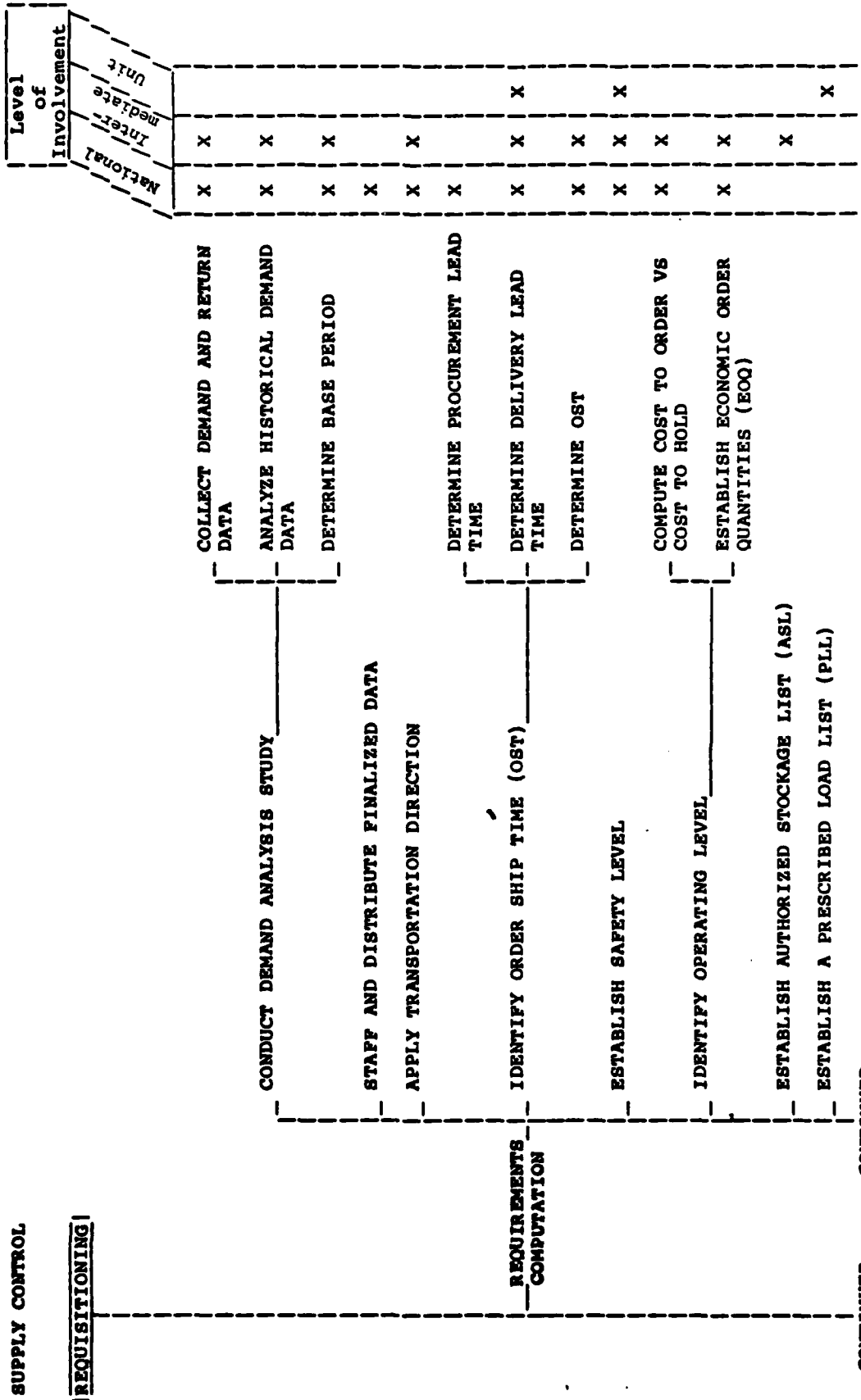
G. Supply Control

1. Requisitioning (Figure II-7): This is the process whereby an authoritative demand or request is made for supplies which are authorized but which will not be made available without a specific request. The components, and subcomponents, of requisitioning are:

a. Requirements Computation: Requirements computation describes the actions to determine quantitative needs for an item and to establish control limits so that out of stock conditions are avoided.

SUPPLY CONTROL

REQUISITIONING



CONTINUED CONTINUED

FIGURE II-7

| CONTINUATION | CONTINUATION | | | | | |
|------------------------|------------------------------------|--|---|---|---|--|
| | DIRECT EXCHANGE (DX) ITEMS | | SELECT ITEMS TO BE STOCKED | X | | |
| | | | COMPUTE DX STOCKAGE LEVEL | X | | |
| | SPECIAL CONTROLS | | DESIGNATE CONDITIONS REQUIRING SPECIAL CONTROLS | X | | |
| | | | PROVIDE MANAGEMENT & CONSTRAINT CONTROLS FOR ITEMS REQUIRING SPECIAL CONTROLS | X | X | |
| | | | PREPARE REQUISITIONS | X | X | |
| | PERFORM NORMAL REQUISITION ACTIONS | | PROVIDE SPECIAL REQUISITION INSTRUCTIONS | X | | |
| | | | ROUTING EDIT | X | X | |
| | | | ACCURACY EDIT | X | X | |
| | REQUISITION EDIT | | AUTHORIZATION EDIT | X | X | |
| | | | AVAILABILITY EDIT | X | X | |
| REQUISITION PROCESSING | | | PROCESS REQUISITIONS BY PRIORITY | X | X | |
| | | | PROCESSING INCOMPLETE OR INCORRECT REQUISITIONS | X | X | |
| | REVIEW REQUISITIONS | | PERPETUATE DOCUMENT NUMBER | X | X | |
| | | | DETERMINE SOURCE OF SUPPLY | X | X | |

CONTINUED CONTINUED

| CONTINUATION | CONTINUATION | | | |
|--------------|--|--|---|---|
| | | | X | |
| | INITIATE MATERIEL RELEASE ORDERS (MRO) | PROCESS AND VALIDATE MRO AGAINST MASTER FILES | X | |
| | | PROCESS REQUESTS BY PRIORITY DESIGNATOR | X | |
| | | PROCESS REQUESTS FOR CANCELLATION | | |
| | | CONVERT NON-MATCHED REQUISITION FOLLOW-UP TO A REQUISITION | X | |
| | STATUS AND FOLLOW-UP | FURNISH STATUS REPORTS ROUTINELY | X | |
| | | PROVIDE SHIPMENT STATUS TO THIRD PARTY | X | |
| | | FURNISH FOLLOW-UP STATUS WHEN REQUESTED | X | |
| | RECONCILIATION | | X | X |
| | REPLENISH STOCKS AND SUPPLIES | | X | X |

(1) Conduct Demand Analysis Study: Detailed historical demand records are reviewed and the recurring demands, less the number of serviceable returns, are used to determine the net average monthly demand for consumable secondary items. The calculation for reparable secondary items begins with the recurring demands, less serviceable and unserviceable returns and less those assets washed out in maintenance/overhaul, to yield net average monthly demand.

(a) Collect Demand and Return Data: Collect all historical demand and return data by stock number for each affected item.

(b) Analyze Historical Demand Data: For a given time period, historical data must be analyzed to determine a net average monthly demand for forecasting future requirements (as noted above, returns must be included in the analysis).

(c) Determine Base Period: A decision must be made regarding the length of the time period from which demand data will be considered. Although the base period can vary if circumstances dictate, a year is the normal base period for a demand analysis study.

(2) Staff and Distribute Finalized Data: Distribute the results of the demand analysis study to managers of repair parts, or higher assemblies and components so that programmed demand information is conveyed in either applicable direction.

(3) Apply Transportation Direction: Some materiel requires special transportation consideration; e.g., heavy bulk type items, such as ammunition, are best moved by rail; perishable items should be refrigerated; and critically needed items may merit air movement.

Specific transportation instructions must be developed and utilized in deciding the proper method of movement of such items. Specific movement data, to include unit and cube and special handling instructions, must be recorded for each item known to require special transportation handling. These data, and any special transportation instructions, must be published and provided to every unit which will ship or transport the items.

(4) Identify Order Ship Time (OST): The order ship time represents the length of time to order and receive materiel. To compute:

(a) Depot Level. If the depot is to receive items which procurement personnel are buying from a manufacturer, or commercial vendor, OST is computed as follows:

1 Determine Procurement Lead Time: Procurement Lead Time is the time period required to acquire equipment from the manufacturer or commercial vendor. It is composed of two elements. The first is administrative lead time, or that time period consumed from preparation of a contract, or invitation to bid, through subsequent negotiations, and ending with the signing of the contract. The second is production lead time, or the time from signing of the contract until the first significant production of materiel. Administrative and production lead time are normally expressed in months. They are based either on historical information or information acquired during contract negotiation.

2 Determine Delivery Lead Time: This is the time it takes to deliver the items after the conclusion of production.

(b) Supply Storage Activity (SSA) and Unit Level: When a requisition is submitted to an SSA, OST is a measure of the time which elapses from submission of the request until the item is received by the requisitioner.

(c) Determine OST: For the depot receiving a shipment of procurement items, total procurement lead time (administrative plus production lead times) plus delivery lead time equals OST. For the requisitioner placing a demand on stocks, OST represents the time it takes to pass a requisition to the supporting SSA, process the demand, pick and pack the item(s), and transport the materiel to the requisitioner.

(5) Establish Safety Level: A level of stock must be held so that minor interruptions in resupply, or temporary increases in a demand pattern, will not result in the inventory being depleted. It will avoid the possibly attendant result that a unit is unable to continue with its mission or function due to missing or unserviceable equipment. The safety level will vary with the organizational level at which it is held; the depot may hold a safety level of three months while the intermediate supply activity will usually measure its safety level in days. To compute safety level, first determine the average demand for the period used to determine the safety level, then multiply the average demand computed by the number of the time periods in the safety level. For example, if safety level is expressed in months, determine the average monthly demand and multiply that figure by the number of months of safety stock to be held. For example, if the following data are used, safety levels can be computed thus:

| MONTH | DEMAND DATA |
|-------|-------------|
| Aug | 5) |
| Sep | 6) |
| Oct | 5) |
| Nov | 7) |
| Dec | 4) |
| Jan | 3) |
| Feb | 8) |
| Mar | 6) |
| Apr | 7) |
| May | 6) |
| Jun | 5) |
| Jul | 6) |
| Aug | 5) |
| | <hr/> |
| | 68 |

Use the data from the last twelve complete months; in this case, September through August.

$$\frac{\text{Total Data}}{\# \text{ Periods}} = \text{Avg demand for the period}$$

If safety level is two months, to compute find average monthly demand and multiply by two, e.g., $68/12 = 5.6667$ (average monthly demand $5.6667 \times 2 = 11.3334$. Always round up to the next whole number; therefore, safety level for two months is 12. Or, if safety level is five days: $68/360 = 0.1889$ (average daily demand). $0.1889 \times 5 = .9445$. Therefore, safety level is 1.

(6) Identify Operating Level: The operating level is that level of stock held to sustain operations from the receipt of a replenishment shipment until the next replenishment shipment is received. The best operating level quantity is dependent on the rate of demand. If the operating quantity is increased while demand remains constant, certain supply costs will increase. Primarily these are the costs of the stock itself and the costs of maintaining the increased inventory. (Cost of stock will increase simply because more items are being procured; i.e., it will cost more to buy 15 of an item than it will to buy ten. It should be

noted that a manufacturer may lower the item price when a larger quantity is bought; even so, the cost of stock increases when the buy-quantity is increased.) At the same time, the costs to order the item will decrease because it is procured less often; and some other functions, such as packaging and transportation may experience savings which occur because of economies of scale. When operating levels are decreased, but demand remains constant, the opposite effect occurs. That is, procurement and holding costs are reduced, but ordering costs are increased. This is because fewer items must be ordered and held, but orders probably will be placed more often. An important function of the materiel manager is to determine how many items are needed and how often to order them so as to provide effective supply support at the lowest possible cost. There are times, however, when the materiel manager will purposely not select the most economical order quantity and frequency. But a good reason must exist for not doing so (e.g., compelling military reason, rapid item deterioration, seasonal buys, economic production runs, lack of storage space, lack of procurement funds, shelf-life limits). Calculations to determine how much to order and how often to order are both based on consideration of the costs involved in performing these functions--e.g., costs to order, costs to buy, costs to hold. The costs can be classified as fixed and variable; fixed costs are those which are neither affected nor dependent on how much of or how often an item is procured. An example of this might be utility costs for the storage facility or wages for the core administrative staff which must be paid regardless of activity.

A variable cost is dependent on the quantity and frequency of acquisitions. Only variable costs are considered when determining when the total supply costs are the lowest.

(a) Compute Cost to Order versus Cost to Hold: In order to make the best use of limited funds, the materiel manager should compare the costs of buying items with the costs of holding them. To compute these costs, the elements of each must be identified and assessed. Costs to buy, or ordering costs, include direct labor costs at the materiel management activity and the procurement activity (review, contract placement, administration, documentation), indirect labor costs, and support costs. Although the costs will vary with each item procured, it is normal to establish ordering costs which will be used when ordering any item; they are based on the value of the order. (In the US Army costs to order are: For orders less than \$2,500 - \$125; for orders between \$2,500 and \$10,000 - \$745; and for call-type orders - \$90.) Holding costs include investment costs (the interest lost because the government cannot invest the procurement monies elsewhere), obsolescence (costs involved in holding aging equipment in the face of technological advance), storage costs (cost of caring for the equipment and amortization costs of the storage facilities), and other losses (pilferage, shrinkage, and inventory adjustments). The US Army computes holding costs as a percentage of the value of the average inventory. Current costs are: investment - 10%; obsolescence - 10%; storage - 1%; other costs - 2%; therefore, holding costs for the US Army are 23% of the average inventory. Other organizations, based

on their own experience, use other percentages to compute holding cost; for example, the US Defense Logistics Agency uses 15% of the average inventory. Average inventory is the order quantity divided by two. As an example of how the value of orders will determine total costs, take an item which costs one dollar and which has yearly issues amounting to \$1,200 (or pounds, francs, marks, etc.). The following table illustrates how total variable costs are affected by the size and frequency of orders when the cost of ordering is \$4 per order and the holding cost is 10 percent of the value of the average inventory. Total costs are least - \$31 - when order size value is \$300 and order frequency is every three months.

| a | b | c | d | e | f |
|----------------|--------------------|------------------------------------|-------------------------------------|------------------------------------|---------------------------------|
| Value of Order | No. Order Per Year | Variable Ordering Costs (b x 4) | Average Active Inventory (a - 2) | Variable Holding Costs (d x .1) | Total Variable Costs (c + e) |
| \$1,200 | 1 | \$ 4 | \$600 | \$60 | \$64 |
| 600 | 2 | 8 | 300 | 30 | 38 |
| 400 | 3 | 12 | 200 | 20 | 32 |
| 300 | 4 | 16 | 150 | 15 | 31* |
| 240 | 5 | 20 | 120 | 12 | 32 |
| 200 | 6 | 24 | 100 | 10 | 34 |

*Least total variable cost

(b) Establish Economic Order Quantities (EOQ): Using the preceding table, with the stated cost and demand data, a simple analysis will establish the EOQ. If an entire year's supply--\$1,200 worth--were purchased once each year, the total variable cost of ordering would only be \$4. The average value of stock on hand would

be \$60 (one-half of the value of the \$1,200 order); and since the variable holding costs equal 10% of the average value of stock, \$60 is what will be spent in holding the stock. The total variable costs of making only one annual purchase would be \$64. Two orders of \$600 each year would result in \$8 in ordering costs, but only \$30 in holding costs (average value of stock: \$300 times 10%). Three orders a year reduce total variable costs to \$32 a year, and four orders a year even further reduce the total cost to \$31. A continuation of the process reveals that beyond this point the increase in the variable ordering costs will always be greater than the decrease in variable holding costs, thus driving up the total variable costs. Therefore, the EOQ for this item is 300, and an order would be placed every three months.

(7) Establish Authorized Stockage List (ASL): The ASL is the list of repair parts and spares which an intermediate support unit will stock in order to effectively support its customers. The ASL contains two categories of items; the first includes the many secondary items which are required on a recurring basis by units in the field. It is normal for intermediate supply support units to stock those items for which repetitive requests are received if an item is requisitioned six or more times in a year. These are called "demand supported items." The second category is designated "mission essential" items. The mission essential item is one which is needed to keep a piece of equipment operating. If demand does not indicate that the item should be stocked, the commander may designate it mission essential and add it to the ASL. Care should

be taken that the ASL quantity does not exceed the support organization's ability to store, manage, and move it; if this does occur, a more restrictive demand criteria may be applied. Item demand history will be periodically and systematically reviewed to ensure that the ASL accurately reflects current demand. Items for which insufficient demands are received will be dropped from the ASL and new items will be added as demand warrants.

(8) Establish a Prescribed Load List (PLL): Customer units that are authorized the personnel, tools, and equipment to perform maintenance will normally keep a PLL. The PLL will be made up of two components; these are the basic load and the operational load. The basic load is kept to support a unit's organizational maintenance operation in combat for a prescribed number of days. The basic load list will be established and distributed by the army staff usually. The operational load is kept to support the unit's daily organizational maintenance operations; normally this is also for a prescribed number of days. The exact number of days will depend on the average number of days the customer must wait to have a requisition filled; it should generally vary from 10 to 30 days. Like the ASL, the PLL cannot be allowed to become so large that the unit has difficulty in either storing, managing, or moving it. It is normal that an arbitrary limit be established on the number of "lines" a PLL may carry; three hundred lines would be a good starting position for this limit. The PLL must be reviewed and updated periodically and systematically. A suggested system is to review all demands each 90 days for the last 180

days. Stockage criteria for demand supported items is three demands in the most recent 180-day period. If a demand supported item that is stocked has had fewer than three demands in the last 180 days, it should be deleted from the PLL. If a nonstocked item has three or more demands recorded, it should be added to the PLL.

(9) Direct Exchange (DX) Items: DX items are reparable items which are supplied to customer units on a one-for-one direct exchange basis. The user unit takes the unserviceable item to the DX activity and exchanges it for a serviceable one. The DX activity is a part of the intermediate (i.e., US Army DS/GS) or depot level maintenance support unit. The unserviceable item turned in is repaired by the maintenance shop and returned to DX stock. If it cannot be repaired, it is turned in as unserviceable through supply channels and a replacement is requisitioned. A DX item normally will not be stocked by the intermediate level supply unit, and DX accounting records are used instead of stock accounting records. To establish a DX list:

(a) Select DX Items to be Stocked: The officer in charge of stock accounting and the maintenance shop officer will jointly select reparable items for DX; not all reparables have to be selected. Items selected must be authorized for repair at the maintenance officer's shop, or by a local supporting contractor, and should need repair at least six times a year. Repair rate data would be available from maintenance shop records. (To be retained on the DX list, items should require repair at least three times a year.) The commander may add items to the DX list which do not meet the

aforementioned criteria. Lists of DX items should be sent to all customer units and updated quarterly; lists should show stock number, name, end item(s), and authorized stock level.

(b) Compute DX Stockage Level: To calculate how many items will be stocked, first find the Average Monthly Repair during the most recent 12 months. To do this, total all the items repaired and divide by 12. (If 12 months data are not available, compute the average for as many months as are recorded.) Next find the average Repair Cycle Time in days. Include weekends and holidays in the calculation. Repair Cycle Time is the average number of days it takes to repair and return DX items to stock. Use the six most recent repairs and determine time by comparing the date that the job order was sent to maintenance and the date that the job order was closed out. (Any delays that are clearly unusual one-time delays should be omitted from the calculation.) To calculate the Repair Cycle Level of stock for 30 days--with a 25% safety level--multiply the number of Average Monthly Repairs times Repair Cycle Time in day times 1.25 and divide the product by 30. If the result contains a decimal, round to the nearest whole number; i.e., from .01 to .49 round down and from .50 to .99 round up. (An example calculation is shown on page 76.) Next, determine the Order Ship Time Level. To do that, calculate the average Order Ship Time for the six most recent replenishment actions, find the number of days between the requisition document date and the receipt of the replenishment stock for each. Then total the days and divide by six. (Exclude unusual one-time delays.) Next, determine the

average number of items demanded during a 30-day period; to do that, count the number demanded in the most recent 12 months and divide by 12. To calculate the Order Ship Time Level with a 25% safety level, multiply the average order ship time times the average number of items demanded in 30 days times 1.25 and divide the product by 30. Round the result to the nearest whole number. Both the Repair Cycle Level and the Order Ship Time Level represent amounts of stock to offset that amount which may be in repair or on order to replace the items which cannot be repaired. The sum of the Repair Cycle Level quantity and the Order Ship Time Level quantity equals the Reorder Point quantity. The final element in the authorized DX stockage quantity is the Operating Level. This represents the amount of stock needed to reach the maximum quantity authorized to be on hand and on order at one time (i.e., the Requisitioning Objective). In a supply system which maintains financial records at all levels, the Operating Level quantity usually represents the Economic Order Quantity, or that order quantity which allows effective supply support at the lowest achievable cost. In a system where financial accounting is not maintained below the highest levels, the average number of items demanded during Operating Level will be expressed in Days of Supply, or that quantity which will supply the force for a specific number of days. The Days of Supply level selected would result from an analysis of several factors--e.g., item availability, urgency of need, demand rate, item pack, and value of the item. The important thing is to understand that establishment of the Operating Level must be a flexible

process which weighs need against ability to provide the item, the value of the item (based on cost, importance to the mission, or scarcity), and other germane considerations. An acceptable starting point would be 30 days of supply or the calculated Average Monthly Repair quantity. As an example, if:

$$\text{Average Monthly Repair (AMR)} = 6$$

$$\text{Repair Cycle Time (RCT)} = 12$$

$$\text{Average Monthly Demand (AMD)} = 2$$

$$\text{Order Ship Time (OST)} = 20$$

$$\begin{aligned} \text{Repair Cycle Level} &= \frac{\text{AMR} \times \text{RCT} \times 1.25}{30} \\ &= \frac{6 \times 12 \times 1.25}{30} \\ &= 3 \end{aligned}$$

$$\begin{aligned} \text{Order Ship Time Level} &= \frac{\text{AMD} \times \text{OST} \times 1.25}{30} \\ &= \frac{2 \times 20 \times 1.25}{30} \\ &= 1.67 \quad 2 \end{aligned}$$

$$\begin{aligned} \text{Operating Level (30 days)} &= \text{AMR} \\ &= 6 \end{aligned}$$

$$\begin{aligned} \text{DX Stockage Level} &= \text{Repair Cycle Level} + \text{Order Ship Time Level} + \text{Operating Level} \\ &= 3 + 2 + 6 \\ &= 11 \end{aligned}$$

NOTE: If the Operating Level (OL) was selected as 15 days and using the foregoing example, then OL = $\frac{\text{AMR}}{2}$

$$= \frac{6}{2}$$

$$= 3$$

(10) Special Controls: Special controls are those management steps, above and beyond the normal supply controls, which are taken to manage critical materiel.

(a) Designate Conditions Requiring Special Controls: The responsible commander and his logistician may direct special controls be applied to an item for any reason he deems pertinent. Some common reasons would be high procurement costs, item criticality, limited shelf life, susceptibility to pilferage, and item scarcity. Items which require special controls must be identified, listed, and the list distributed to all concerned (users and supply organizations).

(b) Provide Management and Constraint Controls for Items Requiring Special Controls: Special controls should be tailored to fit the circumstances. It must be recognized that the special controls will require extra effort and resources; they are to be instituted only when and where necessary. Some items warrant special controls because of cost; either the individual piece is very expensive or the total Army-wide annual cost of the item is so great that special controls are placed on their issue. Other items may be so vital to the operation of an organization, or to an important weapon system, that strict and intense management controls are developed to preclude any waste of the precious assets. Some items are so personally desirable that in-storage pilferage becomes a problem and special security measures must be undertaken to prevent losses. Some items will not be issued—even if a valid requisition has been received—until the unserviceable asset has been turned in, or accountability

has otherwise been established. The purpose of special controls is to achieve the most effective use of the items designated as critical.

b. Requisition Processing: Authorization documents establish what equipment the organizations are supposed to have and in what quantities. Specific procedures have to be developed to provide a standard method of requesting items from supply. The procedures must provide for determining the validity of a request, deciding which of multiple requisitions should be handled first, and identifying requests for equipment requiring special controls. The following subparagraphs will describe what should happen when an organization requests materiel.

(1) Perform Normal Requisition Actions: The using organization which lacks an authorized item of equipment (part, assembly, component, or end item) must normally prepare and submit a request, in some standard format, to initiate action on the part of the supply system. In certain cases, however, an unserviceable item may be directly exchanged for one that is serviceable. Upon receipt of a requisition, the supply organization must undertake several actions to validate the request, fill the valid requisition, and assure that subsequent requisitions can also be filled.

(a) Prepare Requisitions: Using the proper form and instructions, record all applicable information regarding stock number, quantity, "ship to" address, priority, and all other information necessary to obtain the desired item.

(b) Provide Special Requisition Instructions: The national supply level must determine if items require special requisition instructions due to criticality, cost, issue limitations, or other reasons, and to which items these instructions may apply. Requisitioners must be told of all such restrictions to avoid having them submit requisitions which will be cancelled because special instructions have not been satisfied.

(2) Requisition Edit: A check of the requisition document must be made to ensure completeness and correctness. Edit actions are to be taken at all levels which process the requisition, including that which prepares the document. Within supply organizations, the stock control section must help units submitting incomplete documents whenever possible. Documents should not be returned without first trying to get the needed information. Edits will include:

(a) Routing Edit: Make sure the requisition is from a supported customer and for an item managed by the supply activity. If not, return the document to the requester.

(b) Accuracy Edit: Check all documents for accuracy to include those that provide or request information. Requisitions should receive a detailed edit for accuracy to determine whether:

1. Sufficient information is provided to identify the item; if not, reject the requisition.

2. A quantity is shown; if not, enter a quantity of one and continue.

3. A priority is shown; if not, assign a routine priority and continue.

4. A unit of issue is shown; if not, try to determine and provide. If unable to find, reject the requisition.

5. A document number is shown; if not, reject the requisition.

6. Obvious errors exist such as document dated in the future.

7. A like item was turned in if that is a requirement; if not, has an acceptable explanation been provided?

(c) Authorization Edit:

1. Check the authorization document of the requesting unit for the item requested; if the item is not listed, reject the requisition.

2. If the item is a repair part, make sure the level of maintenance is within the requester capability.

(d) Availability Edit: If the requisition is valid, the next step is to decide whether to fill the request, add it to the back order file, or forward it to the higher source of supply. Priority requisitions should be processed before routine requests are handled. Requests for principal (major) items must be identified and sent to the item manager for processing. The edit process would have to answer the questions listed in the following checklist:

1. Is the requested item in stock? If the answer is yes or no, continue processing.

2. Are there enough items in stock to issue the total quantity requested? If yes, prepare an MRO for the entire amount. If no, prepare an MRO for the available quantity and continue processing.

3. Can a substitute item be issued? If yes and the substitute item is in stock, go back to question 2. If no, continue processing.

4. Can the requisition be placed on backorder? Unless backorder is specifically disallowed, it will be routinely used. If backorder is disallowed, the requisition normally will be rejected; the requisitioner should be notified of the action as quickly as possible. If backorder is allowed (the normal case), continue processing.

5. Is the item due in on a replenishment requisition? If yes, establish a due-out to the customer. If no, take acquisition action and send a status report to the customer.

(3) Review Requisitions: In addition to edit checks, certain other review actions are required in processing requisitions. Some of these are:

(a) Process Requisitions by Priority: All users and supply organizations must know how important it is to assign priority codes to the requisitions they prepare. The priorities usually will cover two facets of the request. The first is the priority status of the organization submitting the requisition (e.g., a tactical battalion will enjoy a higher priority than one with a training mission), and the second is the importance of the requisition based on the unit mission. In the latter case, a requisition for a repair part needed to take a mission essential item off of deadline--i.e., return it to an operational status--must be given a higher priority of need than the request for the same item to

replenish inventory stocks. Priorities will be processed in order of importance as described by the priority code assigned; the basic purpose of the priority system is to ensure that available materiel is used to support the most urgent requests first.

(b) Processing Incomplete or Incorrect Requisitions:

Rejection of a requisition should occur only when an essential element of information is required and cannot be provided by the supply activity and the customer cannot be reached to get the necessary information. Even though it is the responsibility of the requisitioner to ensure that all required information is entered correctly on the requisition form, the supply activity will prevent delays each time it can complete and process an incomplete or incorrect request for materiel.

(c) Perpetuate Document Number: The document number assigned to each valid requisition is a very important identifier. It, therefore, must be unique. Any subsequent action will use the document number to refer to the original transaction and the same document number must be used by any supply activity which may process it. Examples of some subsequent actions are a follow-up, a status report, a backorder, a cancellation, or a request to modify the requisition.

(d) Determine Source of Supply: For the user, the supply source will be the designated support support activity (SSA), and the SSA will deal with a designated support activity also. But for requisitions which are passed to the item manager without being satisfied, multiple supply sources may be available. The item

manager may direct any supply support activity to fill a requisition, regardless of its normal mission, if mission exigencies so dictate.

(4) Initiate Materiel Release Orders: Materiel Release Orders notify a storage location to pick, pack, and ship the materiel designated on a corresponding requisition to the "ship-to" address. The materiel manager initiates MROs in response to a requisition.

(a) Process and Validate MRO Against Master Files: The materiel manager (item manager or stock records clerk) processes and validates MRO against the inventory records to ensure that sufficient materiel is available to satisfy the requisition. Materiel released must be subtracted from the stock record account.

(b) Process Requests by Priority Designator: Priority designators will be assigned by the requisitioner depending on the importance of a unit's mission. Requisitions will be filled using a high to low priority sequence.

(5) Status and Follow-Up: Any time there is a change to a request, or the way it is to be satisfied, the customer is to be notified. Supply status must be provided if the requisition is rejected, or if it is to be satisfied through the use of a materiel release order to a depot (from the item manager), or the items are placed on backorder, or the requisition is passed to a higher supply source, or if the request is partially filled with the remaining quantity backordered, or if it is passed. Customers submit a "follow-up" to get information on earlier requests, to ask for a better estimated shipment date, or to request a tracer action on a past due shipment.

(a) Process Requests for Cancellation: Many times a customer will find that all or part of the requisitioned items are no longer needed because of any of a variety of reasons; these will vary from changes to authorization documents to the fact that the needed item has already been acquired from another source. Normally, a request for cancellation is honored whenever possible. If the materiel has already been released when the cancellation request is received, however, then no cancellation is possible.

1. Cancellation of Procurement Items: A procurement action undertaken as a direct result of a requisition which is later cancelled requires careful consideration. The materiel management activity must notify the purchasing activity. The decision to continue or cancel the procurement will be based on several factors such as current and expected need for the item, the cost involved, contract provisions, and the point in the production schedule the manufacturer has reached. Any action taken must also be in strict accord with local laws and customs.

2. Process of a Cancellation Before a Materiel Release Order is Made: If a requisitioner cancels a requisition before the Materiel Release Order is sent to a storage location, then the requisition should be terminated.

3. Process of a Cancellation After an MRO for Critical Items is Processed: If a cancellation request is received after the MRO is sent to the storage location, an attempt to cancel should be made. If the materiel has not left control of the storage depot,

and unpacking and removal of the item from a multiple pack is feasible, the requisition should be cancelled. If the materiel has left the storage depot, cancellation cannot be performed. Naturally, the requisitioner should return the materiel upon receipt. This is particularly important for critical, hard-to-get, or expensive items.

(b) Convert Non-Matched Requisition Follow-Up to a Requisition: If a follow-up is received but no matching requisition is found in the master record, then the follow-up should be converted to a requisition if all required information is present. If the follow-up is incomplete, a status message should be sent to the requisitioner. This should contain the message that no requisition exists, and one should be submitted if the materiel is still required.

(c) Furnish Status Reports Routinely: Status reports of action taken with requisitions processed should be routinely furnished to the requisitioner. These would include such things as the intent to process the requisition, or that a substitute or partial quantity will be shipped, or that a requisition is being passed to another supply echelon. There are many possible reasons for using supply status reports, but generally they are to provide information to any organizations affected by the transaction.

(d) Provide Shipment Status to Third Party: Status may be sent to a third party, such as a consignee, consignor, or a control office, whenever and wherever the third party has need of the information.

(e) Furnish Follow-Up Status When Requested: A status report responds to a follow-up request from the requisitioner. A

follow-up will ask the status on a requisition, request expedited shipment, or it may request a tracer action on a shipment not received. In any event, the supply support activity must conscientiously answer any follow-up request submitted.

(6) Reconciliation: Once each month customer units and supporting organizations should reconcile open requisitions which are more than 30 days old, and validate any requests not previously validated by the customer. Whenever possible, this should be done at a face-to-face conference at the Supply Support Activity (SSA); the SSA should establish a schedule for each customer unit to appear and set the cutoff date before which requisitions will be validated or reconciled. The steps in the validation and reconciliation process are:

(a) Review each open request, dated before the cutoff date, in the customer's document register.

(b) Compare the data in the customer's document register with the supply activity's records. Resolve any differences. Have the customer submit new requests for needed items shown as still open for which the SSA has no record or shows as completed.

(c) Have the customer confirm a continued need for open items in the quantities requested.

(d) Have the customer request cancellation of any items no longer needed; this could be partial cancellation of a request.

(e) Provide the customer unit with the latest status; if the status report reveals a need, request follow-up action.

(7) Replenish Stocks and Supplies: As a unit (PLL) or SSA stocks reach the designated reorder point, a replenishment request must be submitted to the supporting supply activity. This action must be undertaken promptly to ensure that the replenishment stocks are scheduled to be received before the remaining stocks are issued.

2. Receipt (Figure II-8): Materiel receipts are usually supplies that are received from higher supply sources, other supply support activities or directly from civilian sources. Receipt and shipping documents normally accompany the supplies. Receipts may also be materiel returned from using units or lower supply sources; such returns will be made to rid the sending unit of excess or un-serviceable equipment, and to return the items to the supply system for reuse or removal from the inventory. Receipts are normally processed as quickly as possible. If the receipt is in response to a high priority requisition, every effort should be made to process it within the first 24 hours after delivery, even on weekends. Routine receipts should be processed within two working days and equipment received without documentation should be processed within five working days. The processing of receipts entails two sets of actions. These are the steps to receive and process the materiel and the steps taken to process to the documentation.

a. Item Processing: Equipment received may be destined to be placed into storage or for transfer elsewhere. It must be classified, identified, and inspected to be certain it is what it purports to be; that, if appropriate, the serial number is known and is correct, and that the equipment condition is what it is supposed to be.

SUPPLY CONTROL

RECEIPT

CLASSIFICATION AND IDENTIFICATION

ITEM PROCESSING

PROCESS PHYSICAL STOCK

DOCUMENT DIRECT DELIVERY RECEIPTS

REVIEW DUE-IN RECORDS

PREPARE MATERIEL INSPECTION RECEIVING REPORTS

PROCESS RECEIPTS NOT DUE-IN

PROVIDE DOCUMENT IDENTIFICATION, FORMAT AND CODES

CONTINUED

| | Level of Involvement | | |
|--|----------------------|---------------|------|
| | National | Inter-mediate | Unit |
| INSPECT AND ACCEPT MATERIEL AT DESTINATION AS REQUIRED | X | X | X |
| PROCESS UNIDENTIFIED TURN-INS | X | X | |
| PROVIDE FOR PROCESSING WITHOUT DOCUMENTATION | X | X | |
| PERFORM PHYSICAL TECHNICAL INSPECTION | X | X | X |
| PERFORM SERIAL NUMBER CHECK IF APPLICABLE | X | X | X |
| | X | X | X |
| | X | X | X |
| | X | X | X |
| | X | X | X |
| | X | X | X |
| | X | X | X |

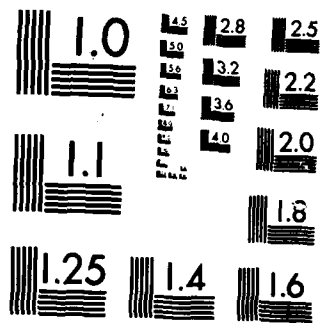
FIGURE II-8

CONTINUATION

| | | | | |
|--|---|---|--|---|
| - ESTABLISH RECEIPT PROCESSING TIME STANDARDS | X | | | |
| - REPORT DISCREPANCIES INCIDENT TO SHIPMENT | X | X | | X |
| - PREPARE AND PROCESS MATERIEL RECEIPT CARD | X | X | | X |
| - UTILIZE PROCEDURES FOR RECEIVING SERIAL NUMBERED ITEMS | X | X | | X |
| - FORWARD DOCUMENTATION TO STOCK CONTROL | X | X | | X |
| - INITIATE DISCREPANCY REPORTS | X | X | | X |

(1) Classification and Identification: As items are received they are classified and identified so they can be properly stored, transferred, or reissued. Classification determines whether the item is serviceable or unserviceable and, if unserviceable, whether it is in that condition for reasons other than fair wear and tear. Identification is the process of determining the item's unique and standard stock number and nomenclature. If this is not possible, any information known must be recorded--as supply group and supply class or end item application--to assist eventual positive identification.

(a) Inspect and Accept Materiel at Destination as Required: Materiel received at an SSA must be inspected prior to acceptance. The inspection is performed to verify that the correct item has arrived in the proper quantity and in the proper condition and agrees with, in all respects, the data listed in the accompanying shipping and receiving documents. Discrepancies must be reported to the stock records officer. Turn-ins from customer units will be inspected to ascertain that all ammunition, explosives, and extraneous matter have been removed; the equipment has been cleaned; all accompanying maintenance records are current and as complete as possible; and any normal and necessary preservation and packaging has been applied. Unserviceable items turned in for a replacement need only a visual check to make sure that their condition agrees with the request for turn-in. Excess items will be given a visual and a working check. If the inspection confirms the condition on the request for turn-in, the items will be accepted as stated; if not,



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

the excess items will be accepted but the stock record officer will be notified and a technical inspection will be scheduled.

(b) Process Unidentified Turn-ins: Materiel turned in without documentation which cannot be readily identified can present a problem. Every reasonable effort must be made to identify the item or at least place it into a supply group or class (e.g., vehicle part or radio part). Any identifying number found on the item such as a manufacturer's part number should help in the identification. Local expertise may be sought to assist in identification. For example, if the item is thought to belong on a radio, a signal repairman may be able to identify it. Until an item is positively identified, it cannot be placed back into the supply system. If after a reasonable effort (which should not exceed five working days normally) an item cannot be identified, it should be passed to the higher supply activity. If the depot cannot identify an item, it will be sent to a property disposal activity.

(c) Provide for Processing Receipts Without Documentation: Receipts are normally accompanied with documentation. Those from a supply source would be accompanied by a requisition form shipping document, and a receipt form. Turn-ins from a customer unit (a user) would be accompanied by a turn-in form (usually on a requisition form) and a shortage list, if applicable. The shortage list can be placed on a hand receipt form; the words "Shortage List" must be prominently displayed. If the turn-in is for the purpose of having a replacement issued, then the equipment should also be accompanied by a maintenance inspection form which classifies the item as unserviceable. Items arriving at an SSA without

documentation cannot be processed until they are identified and receipt documents prepared. For identification purposes, get as much of the following information as possible: stock number, nomenclature, unit of issue, quantity, document number, source of supply, condition of the equipment, and transportation control number. Check with the stock control office for an advance copy of the receipt document or other information to help identify the item; if available, use the information to prepare documentation and process the receipt. If no information is available from the stock control office, recheck the package or container in which the shipment was received. Prepare receipt documentation from the package markings and process the receipt. If the documents are later obtained, the records should be consolidated and any discrepancies corrected.

(d) Perform Physical Technical Inspection: Items received as serviceable, which the initial inspection reveals or indicates are unserviceable, should receive a formal technical inspection by qualified maintenance personnel. The technical inspector will classify the items as either serviceable or unserviceable. If a turn-in is found to be unserviceable because of reasons other than fair wear and tear, the stock control officer will be notified; and the unit should be required to report how the item was damaged and who was responsible. (Pecuniary responsibility may be assigned in these cases.)

(e) Perform Serial Number Check, if applicable: Certain items are considered to be of such importance that they are to be

managed and issued by serial number. Aircraft, vehicles, weapons, and other such critically important items are managed by serial number. This permits an item to be intensively managed and allows the item manager to know at all times where each piece of such equipment is, since any supply action must list the item serial number.

(2) Process Physical Stock: Once the items are classified and identified and the documentation has been provided to the stock control office, the receiving section will either be instructed to send the equipment to the storage section--to be added to the inventory of the SSA--or to the shipping section. Items going to shipping will have one of three destinations usually; i.e., they will be issued, transferred to another SSA, or they will be sent to property disposal. Items going to storage will have packaging and crating material removed and must be checked to be sure that required preservatives are applied. Items to be transferred will be properly packaged and crated prior to transshipment.

b. Document Processing/Process Receipts: Concurrent with physically processing the materiel received, the associated documentation must be processed to initiate a record of the transaction. The following subfunctions are involved in this document processing.

(1) Document Direct Delivery Receipts: Direct delivery of materiel from procurement (or contract maintenance) must be inspected and documented as to stock number, condition, quantity, and adherence to specification if this was not already performed by government inspectors prior to shipment. These actions are

intended to ensure that materiel received and paid for satisfies the contractual specifications. Receipt of such materiel will normally offset a previously established due-in.

(2) Review Due-In Records: As materiel is accepted by a storage activity, inventory records must be adjusted to reflect the addition to stock and to reduce the due-in record by the quantity received and accepted. The quantity accepted may differ from the quantity received either due to damage or because of partial/incomplete shipments.

(3) Prepare Materiel Inspection Receiving Reports: Document the true condition of materiel, as it is received, on materiel inspection receiving reports. This information will be used when adding materiel receipt quantities to the stock accounting records; for determining the proper storage location; and, if necessary, for scheduling technical inspections.

(4) Process Receipts Not Due In: At times materiel will arrive at a storage location that has not previously received documentary notification of its impending arrival. This materiel may result from a procurement, or from a misrouted consignment, or from materiel recovered from disassembly.

(5) Provide Document Identification, Formats, and Codes: To ensure standard system operation and implementation, only one office should be authorized to design and develop the formats and codes necessary to properly document the supply system. The documents developed must be provided with instructions on their purpose and use.

(6) Establish Receipt Processing Time Standards: In order to expedite the processing of materiel receipts and to minimize the congestion of transportation and receiving facilities, a time standard for processing materiel, and moving it to storage, is essential. Once set, these standards should be reviewed periodically. An initial standard is two working days to process routine receipts, five working days to process undocumented receipts, and 24 hours to process receipts of materiel issued in response to "deadline" or emergency requisitions. The 24-hour limit would apply on weekends and holidays.

(7) Report Discrepancies Incident to Shipment: If any discrepancy exists between the materiel as received and the shipping documentation, it should be reported to the shipping activity. The receipt and inventory records at the receiving activity must accurately reflect the materiel received and not the information extracted from the documentation. Shipping discrepancies are those which clearly occurred in shipment and would include in-transit damage, shortages due to pilferage, and improper delivery.

(8) Prepare and Process Materiel Receipt Card: Materiel receipts will be documented. This materiel receipt documentation must be prepared as materiel is received and should identify the materiel, quantity and condition as received. The document should then be forwarded to stock control for processing.

(9) Utilize Procedures for Receiving Serial Numbered Items: Some materiel is managed by serial number within a stock number. In this situation the serial number of the materiel received will

be recorded on the receiving documents. This will help to continue the audit trail which must be maintained on each serially numbered item.

(10) Forward Documentation to Stock Control: Materiel receipt and shipping documents must be sent to the stock control organization so that inventory records can be adjusted to show the date, stock number, quantity, condition, document number, and shipping bill of lading number.

(11) Initiate Discrepancy Reports: A discrepancy report will be filed and forwarded to the supply source when the item, condition, or quantity received disagrees with the data annotated on the issue document. The discrepancy report will be sent to the stock control office, and the report will be provided to the SSA or contractor which provided the materiel. Accountable officers at both levels must adjust inventory records to reflect the true inventory balance.

3. Storage (Figure II-9): The act of storing, or the state of being stored; the keeping or placing of property in a warehouse, shed, open area, or other designated facility. Storage is a continuation of the receiving operation and is preliminary to the shipping or issuing operations.

a. Storage Operations: Storage operations include all functions necessary to properly store and maintain materiel pending shipment to satisfy customer requisitions. This includes planning, establishing and maintaining storage sites; assignment of custodians; protection of materiel against weather, pilferage, and misuse at

SUPPLY CONTROL

STORAGE

| | Level of Involvement | | |
|---|----------------------|---------------|------|
| | National | Inter-Mediate | Unit |
| QUALITY CONTROL (QC) | X | | |
| CARE AND PRESERVATION | X | X | X |
| PACKAGING AND PACKING | X | | |
| WAREHOUSING | X | X | X |
| DEVELOP COMMODITY STANDARDS | X | | |
| ESTABLISH AND IMPLEMENT A DEPOT QUALITY CONTROL PROGRAM. | X | | |
| ESTABLISH QC MANAGEMENT PROGRAM AND REPORTING PROCEDURES. | X | | |
| BASIC CARE AND PRESERVATION PROGRAM ACTIONS. | X | X | X |
| SPECIAL CONSIDERATIONS IN THE CARE AND PRESERVATION OF STORED MATERIEL. | X | X | X |
| PACKAGING LEVELS. | X | | |
| PACKING LEVELS. | X | | |
| UTILIZE STORAGE SPACE. | X | X | X |
| LAYOUT STORAGE. | X | X | X |
| AISLES. | X | | |
| DETERMINE SPECIAL STORAGE REQUIREMENTS. | X | X | X |

CONTINUED

CONTINUED

CONTINUED

FIGURE II-9

| CONTINUATION | CONTINUATION | CONTINUATION | X | X | X |
|--------------------------------|---------------------------------------|--|---|---|---|
| | | MAINTAIN A STOCK LOCATION FILE. | X | X | X |
| | | WAREHOUSE ITEMS AS RECEIVED | X | X | X |
| | | PROVIDE SECURITY AND ACCESS CONTROL. | X | X | X |
| | CARE OF STOCKS IN STORAGE | | X | X | X |
| | LOCATION | DESIGN OF A STOCK LOCATION SYSTEM. | X | X | X |
| | | LOCATION SITE IDENTIFICATION. | X | X | X |
| | | MAINTAINING THE LOCATION SYSTEM. | X | X | X |
| | | PROCESS ASSEMBLY AND DISASSEMBLY DOCUMENTATION. | X | | |
| | SET ASSEMBLY/DISASSEMBLY | SUBMIT SHORTAGE REPORTS FROM ASSEMBLY DEPOT TO ACCOUNTABLE SUPPLY DISTRIBUTION ACTIVITY. | X | | |
| | | PERFORM REQUIRED ASSEMBLY AND DISASSEMBLY. | X | | |
| | PRINCIPLES OF INVENTORY CONTROL | | X | X | X |
| | INVENTORY PLANNING | | X | X | X |
| | INVENTORY TRAINING | | X | X | X |
| INVENTORY (PHYSICAL INVENTORY) | PREPARATION OF MATERIEL FOR INVENTORY | | X | X | X |

every custodial level; systematic placement of stock to ensure efficient withdrawal of inventory; safeguard of classified materiel in consonance with security requirements; and determination of the type of storage and the amount of protection to be provided to each item during storage by its class and characteristics. The following elements are prime considerations of storage operations.

(1) Quality Control (QC): QC is that function of management which strives to ensure that the user is provided with an item of the required quality. QC procedures, methods, examinations, and tests are employed during procurement, receipt, storage, and issue of materiel. The depot should establish a Quality Control program for all materiel it manages. The QC program must be independent of the other depot functions (e.g., procurement, production, maintenance, storage) and answerable directly to the commander. As a minimum, the QC program should accomplish the following:

(a) Develop Commodity Standards: The materiel management activity is responsible for developing and publishing commodity oriented policy and technical guidance concerning quality control; it will also establish storage serviceability standards for all items of supply, including shelf life items. The standards should be furnished to intermediate (DS/GS) supply support units and will be applicable at that level also. Standards will use a standard format and will be kept current. They will include as a minimum: Item life expectancies and shelf life; inspection and test procedures; criteria for determining compliance with prescribed standards; criteria for determining actions to restore items economically restorable;

and inspection frequencies. Frequency of inspection must be developed based on the equipment and local factors; the following table is used by the US Army and can be adopted or adapted for use:

| TYPE STORAGE | INSPECTION INTERVAL IN MONTHS |
|-------------------------------|-------------------------------|
| Controlled Humidity Warehouse | 60 |
| Heated Warehouse | 24 |
| Unheated Warehouse | 18 |
| Shed | 12 |
| Open | 6 |

(b) Establish and Implement a Depot Quality Control Program:

The commander of each depot is responsible for:

1. Insuring that all supplies at his installation are subjected to Quality Control procedures, inspections, examinations, and tests.

2. Insuring that there are sufficient personnel, test and measurement equipment, and facilities to perform the Quality Control functions.

3. Making periodic Quality Control checks, on a sampling basis, of overhauled and rebuilt items received from contractors, or from an Army maintenance activity, to determine the adequacy of the work.

4. Training Quality Control personnel in QC policies, procedures, and techniques.

5. Evaluating periodically and systematically the quality of shelf life items to detect materiel deterioration.

6. Where possible, providing as part of the QC function an internal system for calibration of the inspection measuring gauges and test equipment. Calibration should be done at established intervals and must be against certified standards.

7. Insuring that QC personnel make optimum use of statistical sampling procedures and tables.

8. Insuring that the data generated from the QC function are used to identify and segregate deficient supplies from serviceable materiel and to establish economical inspection cycling.

(c) Establish QC Management Program and Reporting Procedures:

The establishment of QC policies and the development of a QC management program should be a staff responsibility of the senior logistician of the army. Management of the total QC program will also be the responsibility of the army's senior logistician. The Quality Control function must provide for complete and reliable records of inspections and tests performed and the appropriate analysis of these data. The major objectives of the QC management program are: To insure a clear assignment and delineation of responsibilities for Quality Control; to provide a QC capability; to provide periodic quality inspections evaluating supplies to insure their readiness; and to improve the quality of materiel by the application of improved management techniques, engineering methods, and statistical techniques. Records and analyses produced by QC inspections and tests will be used--in the form of reports--to identify nonserviceable stocks, to detect the causes of deficiencies, to determine and direct restorative action, and to determine and direct the adjusted shelf life of restored materiel.

(2) Care and Preservation: The care and preservation of supplies to assure a "ready for issue" condition is an important task. The Army must prepare and publish detailed instructions to provide for the care of all items for which they have storage responsibility. A program for the care and preservation of stocks must include: A QC system for inspection and test of items; a system for reporting and recording of QC data; provisions to enter the true condition of materiel into the item balance records; exercising equipment items that require it (e.g. cannon in storage must have the recoil mechanism exercised periodically to prevent seals from deteriorating); and a system to assure corrective actions are taken to remedy the materiel deficiencies which are uncovered by inspections. The amount of effort programmed into the care and preservation of different items in storage will depend on the type item, the type of storage which is provided, and how long the items are expected to remain in storage.

(a) Basic Care and Preservation Program Actions: Any program to preserve and care for materiel in storage will include the following actions:

1. Systematically schedule and perform inspections of materiel in storage.
2. Systematically schedule and perform required exercising of equipment.
3. Properly identify and record identification data on all items in storage.

4. Determine the proper storage, preservation, packing, and marking of items received for storage.

5. Determine the adequacy of the storage environment and the preservation, packing, and marking of items in storage.

6. Accurately determine the condition of stored items and ensure that the condition is correctly posted in the stock records.

7. Stop all forms of deterioration of items in storage that will adversely affect the use of the item for its intended purpose.

8. Wherever possible, restore deteriorated items to a serviceable condition for issue.

9. Detect fungi, mildew, spoilage, insect infestation, and rodent or other pest damage to stocks; prescribe or administer treatment; and ensure that adequate preventive and corrective measures are taken to eliminate the condition.

10. Ensure that all applicable and interested activities are informed of any unsatisfactory conditions discovered to exist in the stocks, the reason(s) for the conditions, and the corrective actions required and taken. They must also be provided any pertinent data which can be used to improve the item and its care.

11. Recommend to the headquarters responsible for establishing the standards, basic changes in the storage, preservation, packing, or marking standards found to be inadequate (this could be a change in storage conditions specified, a change in inspection frequency, or even a recommendation to reduce the degree of preservation--to save cost-if it appears warranted).

12. Ensure an efficient and effective execution of the materiel stocks Cyclic Inspection System so that stored equipment items are inspected at the intervals indicated by the assigned shelf life, the established inspection frequency, or the type of storage given the items. The data generated by the Cyclic Inspection System must be thoroughly analyzed, summarized, and furnished systematically to management to assist in the elimination of causes for deficiencies.

(b) Special Considerations in the Care and Preservation of Stored Materiel: The following special considerations merit discussion:

1. Materiel in open storage is difficult to protect adequately; but as covered storage is always limited, there will be occasions when items must be stored in the open. These items must be preserved properly to withstand exposure to the elements. Where possible, use tarpaulins, plastic sheets, or portable shelters to provide additional protection.

a. Care must be exercised when covering materiel placed in open storage. Humidity and temperature changes cause moisture to condense on the equipment. Unless the moisture is evaporated and removed by adequate ventilation, it will cause mold, rust, or decay.

b. When covering equipment with tarpaulins, or the like, a clearance of 12 to 18 inches (30 to 45 CM) should be left between the bottom of the covering and the ground. In covering equipment which is not boxed, the tarpaulin should reach but must not extend below the top of the dunnage on which the items are stored. To further induce air circulation in and around the equipment, an

opening should be provided in the upper area of the stack covering; the opening should be arranged so that rain cannot enter the stack.

c. All materiel stored outdoors should be elevated above the ground by use of dunnage or specially built platforms (with the exception of vehicles). On well-drained paved areas, dunnage should provide a minimum clearance of four inches (10 CM) between the items and the ground. On well-drained gravel or similarly surfaced areas the dunnage should be increased to provide a minimum clearance of eight inches (20 CM). Where a poorly drained or ungraded area must be used, the dunnage must provide at least 10 inches (25 CM) of clearance above the highest possible water level. It is not possible to specify a standard dunnage bearing surface; it will vary with the supporting quality of the ground surface and weight of the stack. On a good concrete surface, a relatively heavy stack could be supported by 4 by 4-inch dunnage on 2-foot centers. If the same stack were placed on an ungraded, comparatively soft surface, the bearing surface of the dunnage would have to be increased in proportion to the decrease in the supporting quality of the ground. In some cases--as when dry rot, wood beetle infestation, or termite infestation is likely to occur, or when wood is in short supply--concrete blocks may be used for dunnage, even though it is normally more costly.

d. Materiel stored in the open requires closer attention than items in warehouses or sheds. Inspection must look for indications of preservation failure such as paint blisters, or flaking or peeling of paint. After storms, open storage should be inspected

for accumulations of snow or water and for damage to corrosion preservatives. When the atmosphere contains dust, salt, or high humidity, or when there is a wide variance of temperature, more frequent inspections are indicated.

2. Some items will deteriorate over time even if not used. In order to ensure that such equipment will perform satisfactorily when issued, the length of time they may remain in storage is assigned--item by item. This storage time period is called shelf life. There are two types of shelf like items. The first type has a definite and non-extendable shelf life which is terminated by an expiration date; the expiration date is established by empirical (i.e., based on experience or experiment) and technical test data. This type of item should be identified and designated. The second type of shelf life item will have an assigned shelf life which may be extended after an inspection or restorative action. Storage personnel must execute the shelf life control program, performing inspections as required and identifying shelf life item and expiration dates on stock records. Warehousing practises should permit ready access to the oldest stocks, and control measures should ensure that shelf life items are issued on a basis of first items into stock are the first issued.

3. Storage serviceability standards will require the exercising of certain stored equipment (e.g., weapon recoil mechanisms, certain vehicles, certain aircraft components). These exercising actions must be performed when and as specified.

4. Sometimes storage personnel will want to identify certain specified stocks. This can occur for a variety of reasons (e.g.,

materiel becomes mixed during shipment, storage, or maintenance, or when physical evidence of inspection is necessary to prevent duplicate inspections.) For this purpose tags and/or labels should be developed; their use should be restricted to those situations where problems could arise. The tags/labels should be conspicuously marked and must be tightly controlled. QC personnel will normally apply them. The following tags/labels would be commonly needed and are suggested.

- a. Serviceable: To identify serviceable materiel.
- b. Unserviceable (reparable): To identify unserviceable equipment that is potentially reparable.
- c. Unserviceable (condemned). To identify unserviceable equipment unsuitable for restoration to a usable condition.
- d. Suspended: To identify equipment awaiting classification or held pending negotiation or litigation.
- e. Test/Modification: To identify serviceable materiel that requires test, modification, conversion, or disassembly prior to issue.

(3) Packaging and Packing: The word packaging is used as a synonym for "preservation and packaging;" it refers to the application or use of protective measures sufficient to prevent deterioration; it includes the use of appropriate cleaning procedures, preservatives, protective wrappings, cushioning, interior containers, and complete identification marking on interior containers. Packing operations include the use of exterior shipping containers; the assembly of item packages into the packing container; anchoring,

blocking, bracing and cushioning of item packages within the packing container; weatherproofing; strapping of containers; the testing of packs; and the making of palletized and unitized loads. The objectives of both packaging and packing are to: Provide efficient and economical protection to materiel from environmental, physical, and mechanical damage during handling, shipment, and storage; assure maximum life, utility and performance of materiel through prevention of deterioration; facilitate efficient receipt, storage, inventory, transfer, and issue; provide identification, handling, shipment, and destination markings; assure the greatest practicable uniformity in developing the requirements for packing and marking the same, or similar, items for shipment; and save resources by assuring the use of shipping containers of a minimum weight and cube consistent with the anticipated storage and shipment hazards.

(a) Packaging Levels: To keep from spending money unnecessarily, there should be differing levels of protection which are dependent on the hazards of storage, transportation, and handling expected. Three levels are recommended, and their performance criteria are summarized as:

1. Level A packaging should protect against direct exposure to all extremes of climate, terrain, transportation, and operations with no protection other than that afforded by package and pack. Items requiring level A protection are expected to: Receive multiple rough handling in transportation and storage; be exposed to shock, vibration and static loading during shipment which may include shipboard deck loading; be exposed to the elements during transit

where warehouse facilities are inadequate; be exposed to extended open storage, particularly while under static loads imposed by stacking; or be used in support of field or combat operations. Level B protection is used when conditions will be less severe than those requiring level A. In general, use level B if any or all of the following conditions are anticipated: Multiple handling, during transit and intransit storage; shock, vibration, and static loading of shipment by truck, rail, aircraft, or ocean vessel; favorable warehouse environment for extended periods; exposure to the elements during shipment and intransit transfers, excluding loading on a ship's deck; and supported stacking--reducing static load weight--during shipment and extended storage. Level C is the degree of protection required under known favorable conditions during shipment, handling, and storage. In general, level C packaging should be used if: Only limited handling is expected during transit and intransit storage; limited shock, vibration, and static loading is anticipated during transportation; a warehouse will be used for permanent and temporary storage periods; exposure to the elements would occur only during shipment and intransit delays; and supported stacking--reducing static load weights--is expected during shipment and during any storage periods to include temporary ones.

(b) Packing Levels: There also are three packing levels and they closely resemble the levels described for packaging, with level A designed to afford the most protection and level C the least. Packing seeks to protect item packages from the rigors of movement, handling, and weather (e.g., abrupt starts and stops,

vibration, jolting, dropping, puncture, crushing, wracking, jarring, smashing, rain, snow, extreme cold, salt spray, high humidity, dry intense heat and weather cycles. Generally, level A packing entails placement of packages into a nailed wooden box. Level B packing places a fiberboard (cardboard) container into a nailed wood frame. Level C pack are simply fiberboard containers. Use level A when the ultimate destination is unknown; the duration or condition of storage is unknown; unfavorable transportation or handling conditions are anticipated or known; open or shed storage is known or expected; or the item is known to require the maximum degree of protection. Use level B when favorable transportation, storage, and handling conditions are known to exist. Level C packing can be used when movement does not involve ocean transportation and storage and handling conditions; and truck, rail, and aircraft shipments are for immediate use at the first receiving activity.

(4) Warehousing: Warehousing can be defined as the scientific and economical receipt, storage, and issue of materiel while ensuring their best safekeeping and rapid availability. The scientific approach, which is the careful, reasoned method of solving the problems of warehousing, assures that the job will be performed in an economical manner. The purpose is to save space (in terms of cubic feet), labor (in terms of man-hours) and equipment (in terms of equipment hours and equipment types), and to reduce or eliminate damage, accidents, and waste in every form. The term best safekeeping implies protection of the materiel against theft, fire, and deterioration (damage caused by weather, careless handling,

and poor stacking conditions). Rapid availability is an important part of warehousing; it is achieved by laying out the warehouses so that all stock can be reached easily.

(a) Utilize storage space: Space is the basic resource in the warehousing operation. The effective storage operation hinges upon the efficient utilization of space. Space is measured and utilized in terms of cubic feet (or cubic meters), not square feet (meters). Except where floor load capacities limit full use of cubage, materiel must be stacked as high as features of pack, facilities, and handling equipment permit in order to take full advantage of cubage and thereby save in square feet.

(b) Layout Storage: Two prime factors influence the storage layout of available space; one is the characteristics of the facility--the capacity factor--and the other is the characteristics of the equipment to be stored--the commodity factor. In planning the where and how of storage, the one factor influences the other through all phases of the storage operation. The aspects of the capacity and commodity factors which impact storage layout are:

1. Facility Characteristics: The following characteristics of a storage facility must be known when planning storage operations:

a. Type of Building: There are two types: Single story and multistory. The single story has several advantages; these are: No elevators; fewer posts and columns; direct contact with shipping and receiving docks; greater floor load limits; better transportation facilities. The multistory building has two advantages: It covers less ground area and it can be located in a metropolitan area.

b. Size of the Building: To determine the available storage space, four elements of information are needed. These are: The number of buildings there are; and of each building, the usable length, width, and height. These factors enable available cubage to be computed.

c. Shipping and Receiving Platforms: Three things must be considered about platforms or docks: Location (in relation to receiving, storage, and shipping sections, and to rail and truck terminals); size (docks that are small, or narrow, may inhibit use of handling equipment, and they quickly become congested); and height (important when loading or unloading trucks and rail cars; six inches (10 CM) is the maximum difference which will still enable efficient operations).

d. Doorways and Entrances: Doors should be of sufficient size to enable mechanical equipment in use to pass each other. Too many doors can be a hindrance because they reduce the wall space available for storage.

e. Support Columns: Storage layout will be controlled to a great extent by the columns (or pillars or posts) which are necessary as floor and roof supports. They reduce the amount of storage space available and must be considered in storage planning. Columns tend to be more massive in multistory facilities than in single story ones and much storage space is lost to them. And unless great care is exercised, even more space is lost when placing stacks around them. Where possible, use columns as aisle guides and to define the size and location of bays.

f. Windows: The light and air admitted by windows improve working condition; but from the point of view of storage operations, they are a handicap. If the window is left accessible, wall space and floor space are lost. If the window is blocked by supplies, the stacks can be damaged by weather if the window is broken.

g. Floor Load Limits: A weak floor load limit can cause a significant reduction in the usable cubic feet of storage space. The floor load limit usually occurs in multistory buildings where limits usually range from 100 pounds to 350 pounds per square foot (490 KG to 1710 KG per square meter). Floor load limits are normally determined by reference to building plans and the floor capacities are customarily designated in pounds per square inch (or kilograms per square meter) on these. Where floor load capacities are not available, a competent engineer must establish them.

h. Elevators: Elevators are the arteries of the multi-story warehouse. The number and location of elevators are important factors in determining the general plan of floor layout. Elevators can constitute serious bottlenecks in the storage operations. The primary characteristics which determine the capability of an elevator are: Location (where elevators are and their number influence stock locations); size and capacity (determines the type of materials handling operation which can be performed; care must be taken not to overload an elevator); and speed (this will affect the timing of storage operations). In essence, elevators are small and slow; they require proper maintenance and careful training of operators. However, with careful planning and thought, most potential bottlenecks can be avoided.

2. Commodity Characteristics: The method of layout and the allocation of space depends not only on the type and size of storage facilities available, but also on the number and kind of commodities to be stored. The information needed about the supplies to be stored which will affect layout management are:

a. Kind and Amount: The supplies handled will consist of thousands of different types of items. These will vary greatly in size, weight (from a small package of bearings to a truck), shape, and fragility. Packaging will include boxes, crates, cartons, bags, bales and drums. Before space can be allocated and warehouse layout planned, some advance knowledge must be known about what and how much will be stored. The materiel management activity must provide as much information as possible concerning stock levels, tonnage, item forecasts, and delivery schedules to assist storage planning. Knowing what commodities will be stored, and how much, will allow the systematic planning to occur which will eliminate storage bottlenecks and unnecessary rewarehousing. The experience gained through the receipt and issue of materiel will be of great help to storage personnel in determining the best layout for commodities. It must always be remembered that the stock level data furnished will be an estimate only; storage layout must be kept simple and flexible. Usually the first indication of incoming stock will be a distribution directive, a delivery schedule, a letter of award, or the like. Storage personnel must study such "dues in" and plan how to receive the items and where to store them. To plan efficiently, storage personnel must also calculate the average activity

expected--i.e., receipts and issues--for each item. They will also receive advance notice of shipment.

b. Popularity, Size, Weight, Shape, and Perishability:

The general storage plan is based on the amount of materiel which has to be stored, and the amount of space needed to store it. The actual location of the materiel will depend to some extent on item characteristics. Large and bulky items should be placed as close to the shipping and receiving points as possible to reduce handling. The same is true for rapid turn-over items; slow moving items can be placed in less accessible locations. Perishable items should not be placed near windows or doors to avoid possible damage from rain, snow, or sunlight. Bagged items are often perishable; generally they should be kept in areas having the least temperature changes and where "sweating" of floors and walls is no problem. Items which need periodic turning--as kegs of vinegar or pickles--must be easily accessible. And materiel which can absorb odors must be kept away from those items which emit them.

(c) Aisles: Aisles are necessary to provide access to doors, loading docks, elevators, and to the supply stacks. They provide space for operating the handling equipment, and they form the hauling routes for moving supplies. They also waste storage space.

1. Layout of Aisles: Aisles must be planned and laid out after careful consideration to the local operation; "standard" aisle plans should be avoided. Aisles should be kept to the minimum

number and size without hampering the operation. As a rule of thumb, 65 percent of available gross space should be used for storage of materiel and the remaining 35 percent of the gross space will be used for offices, restrooms, pillars and posts, and aisles. The aisle size can significantly alter the percentage of space used for storage. In building 120 feet by 180 feet (36.6 meters by 54.9 meters) 21,600 square feet (2009 square meters) of gross space is available. If four main aisles of 10 feet (3 meters) each exist, two running the length of the building and two running the width, 5600 square feet (513 square meters) of storage space is lost. That represents about 26 percent of the gross space. Reduction of the main aisles by one foot (30.5 CM) would increase storage space available by 524 square (about 49 square meters). The space gained would allow the storage of some 200 more pallet loads (where they are stacked three high). Before laying out aisles, storage personnel must consider: Where and how far away docks and door openings are; approximately how much space will be needed for each item and the sizes of the lots which are expected to be stored; whether changes are expected in the type and/or quantities of item lots expected to be held and, if so, whether changes can be anticipated so as to avoid extensive rearrangement of aisles; where fire walls and fireline valves are; how many posts support the roof and floors, and where they are, how big they are, and how far apart they are; whether materiel will be block-stocked or binned (where binned, aisle space must be reserved in front of each bin); whether supplies will be stored mechanically

or by hand (forklift trucks cannot work in tight spots behind columns, nor pass packages around a corner); and which size of the forklift trucks to use (a 6000-pound forklift will require a wider aisle than a 2000-pound truck).

2. Types of Aisles: There are three types of aisles commonly used. These are:

a. Main Aisles: These constitute the lifelines, or arteries, of a warehouse. Their location, number, length, and width depend on the layout plan which is dependent on the type of storage (mechanical or manual), size of handling equipment, location of doors, and size of lots. Ten feet (about three meters) is the normal width of a main aisle and that will accommodate a 4000-pound capacity forklift truck. To operate a 6000-pound forklift, 11 1/2-foot aisles (about 3.5 meters) are needed; a 2000-pound forklift can operate efficiently with a 7-foot (2.1 meter) aisle. The number of aisles used will depend on the number of doors, elevators and commodities, and the size of the lots.

b. Cross Traffic Aisles: These serve as feeder aisles to the main aisles. Their location, length, and width depend on the lots they serve and the handling equipment which must use them. The cross traffic aisles provide access to all stocks which cannot be reached from the main aisle.

c. Fire Aisles: Fire aisles are necessary, but they should be reduced to a minimum in number and width because they waste valuable space. Generally speaking, a fire aisle need not exceed

two feet (about 61 CM) in width. Fire extinguishers or hose fixtures must be easily accessible from the aisle, and fire aisles must be placed adjacent to windows that will be used as an entrance by firemen. Fire aisles are not necessary against exterior walls or standard fire resistant walls; however, a 2-foot (about 61 CM) fire aisle is maintained along substandard walls. Suggested minimum standards for fire resistant walls are: Clay brick 8 inches thick (about 20 CM); concrete of 7 1/2 inches (about 19 CM); concrete blocks of 10 inches (about 25 CM); or structural tile of 12 1/2 inches (about 32 CM).

(d) Determine Special Storage Requirements: Special storage requirements for any item should be cataloged and maintained for use when selecting storage locations. Many reasons exist for establishing special storage requirements. For example, some items may require protection from rain, snow, and temperature extremes; frequent inspections may be directed; or protection from moisture, may be necessary. Failure to determine and use special storage requirements can result in loss of service life, or a reduction in performance ability of the item.

(e) Maintain a Stock Location File: The locator system must be kept as simple as possible, yet enable the rapid location of any item on call. There are two things the stock location system must provide; these are the location of the needed item and which of the items stored there is the oldest. The stock location system must be recorded and understandable to anyone who may have to find materiel. A good locator system starts with a plan of the

storage area. The system for numbering warehouses, sections, bays, and rows must be kept as simple as possible; do not complicate it by including such extras as inventory figures, stock levels, and records of receipts and shipments. These will obscure the system's purpose--to quickly and accurately locate requested supplies. The system must be readily understood by all personnel working in the storage area, e.g., warehousemen, stock pickers, checkers, and laborers. There must also be a file which contains the data necessary to identify the item and which reflects all established locations of the item and the dates of receipt. This file will be used to ensure stock is properly rotated; items held the longest should be issued first. Finally, stock locator records are useful only if they are kept accurate and up to date; this cannot be stressed too strongly. Without periodic audits--i.e., surveys to compare the locator records with the survey established location--accuracy will diminish. A locator system that is not accurate is of no value.

(f) Warehouse Items as Received: Insofar as possible, materiel should be placed into its storage location promptly upon receipt. If the materiel is received in damaged condition or some other discrepancy is discovered, a record should be made and investigative actions initiated to establish responsibility for the fault. If necessary, actions to preserve the equipment should be undertaken to prevent physical deterioration. Prompt placement of items into storage, and prompt adjustment of the inventory accountable record, will minimize the chance of improperly cancelling a requisition for lack of stock.

(g) Provide Security and Access Control: The protection of property, including the prevention of internal pilferage or major thefts of military supplies is a function of warehousing. This includes items both in storage and in transit. The most practical way to prevent pilferage is the establishment of an adequate system of physical security and psychological deterrents. The latter is accomplished by educating employees and convincing them that they will lose much more, if caught, than could be gained by stealing. Supervisory personnel must set a proper example and maintain high ethical and moral standards. The commander is responsible to establish the necessary physical security measures to protect classified (materiel requiring protection in the interest of national security), pilferable (materiel with a ready resale value or with civilian application, e.g., watches, hand tools, clothing), and sensitive items (materiel requiring special control due to statutory requirements or regulations--e.g., narcotics, precious metals, high value items, hazardous items, small arms, ammunition, and explosives). Personnel involved with classified items must be limited in number and both authorized and well-versed in the handling of classified materiel. Classified items should be stored separately from other materiel. If possible, it should be kept in a separate building; if not, a room, cage, or crib may be constructed. Classified items will be given a higher degree of physical protection than other supplies, and they are not to be stored with sensitive materiel. Similarly, sensitive and pilferable items are to be afforded a higher degree of physical security than the normal

supplies; they will be stored in an area which restricts access only to specifically designated personnel. Classified materiel and some sensitive items--as small arms--must be subjected to a 100 percent verification of quantity upon receipt.

(5) Care of Stocks in Storage: The basic actions of care of stocks in storage are:

(a) Performing scheduled inspections on materiel in storage.

(b) Performing required exercising actions.

(c) Identifying items properly.

(d) Determining the adequacy of storage environment, preservation, packing, and marking.

(e) Accurately determining item condition and posting the condition to stock records.

(f) Arresting all forms of deterioration that will adversely affect the end use of required items.

(g) Restoring required items to a serviceable condition for issue.

(h) Detecting fungi, mildew, spoilage, insect infestation, and/or rodent, or other pest damage to stocks; prescribing or administering treatment; and ensuring that adequate preventive and corrective measures are taken.

(i) Inspecting shelf-life items and assigning condition codes as appropriate (i.e., serviceable, unserviceable reparable, unserviceable-condemned).

(j) Assuring that all applicable elements are informed of any unsatisfactory conditions found to exist in stocks and the reasons therefore, the corrective actions required and taken, any pertinent data which can be used to improve the item and its care, and the packaging and/or storage environment considered to be best suited for its continued storage.

(k) Recommending to the Materiel Management Activity basic changes in serviceability standards, or adaptations to local conditions when warranted; examples are adjustment of the frequency of inspection, changing the preservation procedures, or modifying defect classifications.

(6) Location: Stock location systems must pinpoint an exact storage location in a simple, easily understood manner. This will minimize training requirements while providing timely and accurate storage or selection of stock. The systematic placement of stock also provides for the optimum utilization of storage space.

(a) Design of a Stock Location System: A "planograph" is a drawing of the actual layout of a storage structure or an outside storage area. It portrays how the total available space within the storage area (covered or open) is subdivided; it identifies storage areas, shipping and receiving areas, main aisles, cross aisles, fire aisles, offices, restrooms, and locker rooms. The chief of the storage activity is responsible for the preparation and use of planographs; it normally should be mounted on a wood back, covered with a clear acetate--so grease pencil can be used--and located in a prominent place in each warehouse.

1. A perimeter, or boundary, will be drawn around each storage area. Bulk storage areas will be divided into 52-inch (132 CM) squares, or "grids." This size grid is used because of the dimensions of the general purpose pallet which are 40 inches by 48 inches (101.6 CM by 121.9 CM) plus 4 inches (10.2 CM) have been added for materiel overhang and handling space. (If the perimeter line along any side of the storage area is not equally divisible by 52 inches (132 CM), the marginal difference should be prorated to increase each grid proportionately.) Bulk storage areas for large lots (four or more pallet stacks) and medium lots (one to three pallet stacks) are similar in design. Both are sizable areas designated either as large-lot or medium-lot storage areas, and delineated with perimeter lines; medium-lot storage areas will be smaller. Small-lot (less than one pallet stack) storage areas must be designed so that each lot is accessible from an aisle. For storage areas with bin, shelving, or pallet rack storage aids, the 52-inch grid will be disregarded and the dimensions of the storage aids will govern the planograph layout. Figure II-10 depicts an example of bulk storage areas for large lots; Figure II-11 depicts an example of medium lot storage; and Figure II-12 shows an example of small lot bulk storage and shelf or bin storage.

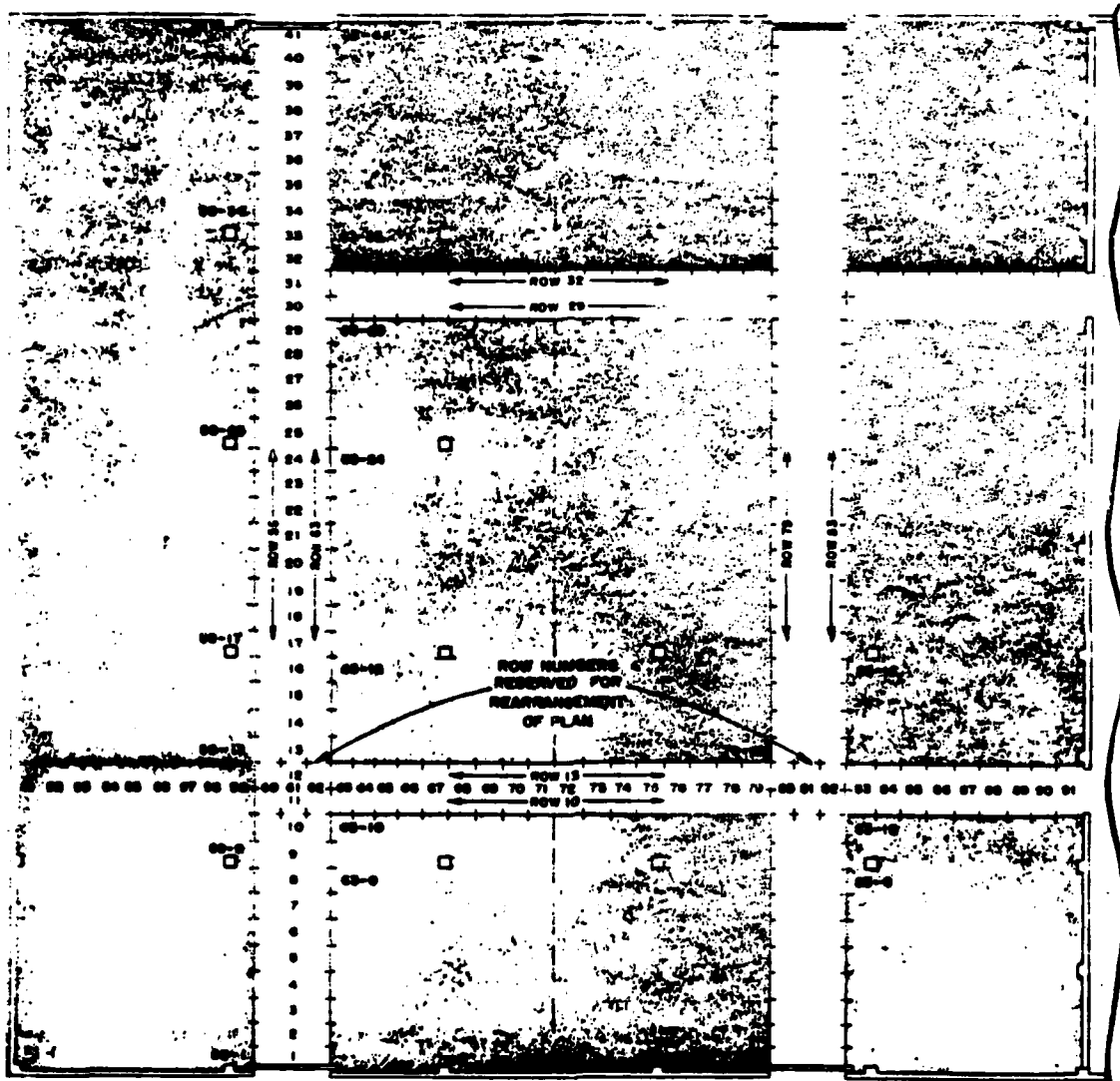
a. Identification of Grids: The identification of grids normally will begin at the bottom left side of the planograph and the numbering will occur on both the vertical and the horizontal axes. To identify individual grids, the rule is "read right up," that is read first along the horizontal axis and then read up

along the vertical axis. The following grid is an example of the numbering system described:

| | | | | |
|---|-----|-----|-----|-----|
| 4 | 1-4 | 2-4 | 3-4 | 4-4 |
| 3 | 1-3 | 2-3 | 3-3 | 4-3 |
| 2 | 1-2 | 2-2 | 3-2 | 4-2 |
| 1 | 1-1 | 2-1 | 3-1 | 4-1 |
| | 1 | 2 | 3 | 4 |

The sequence of left to right identity may begin anew for each section or bay if desired, or the numbering may continue through the entire structure. Whichever system is selected, it should be consistently used throughout the installation; this will help storage personnel orient themselves in the various storage areas. In order to provide the flexibility, grid identities should also be provided for aisle space surface areas on bulk storage area planographs. That way, if any storage layouts must be increased into aisle areas, grids will be available--in the proper sequence--without disturbing the established grid system.

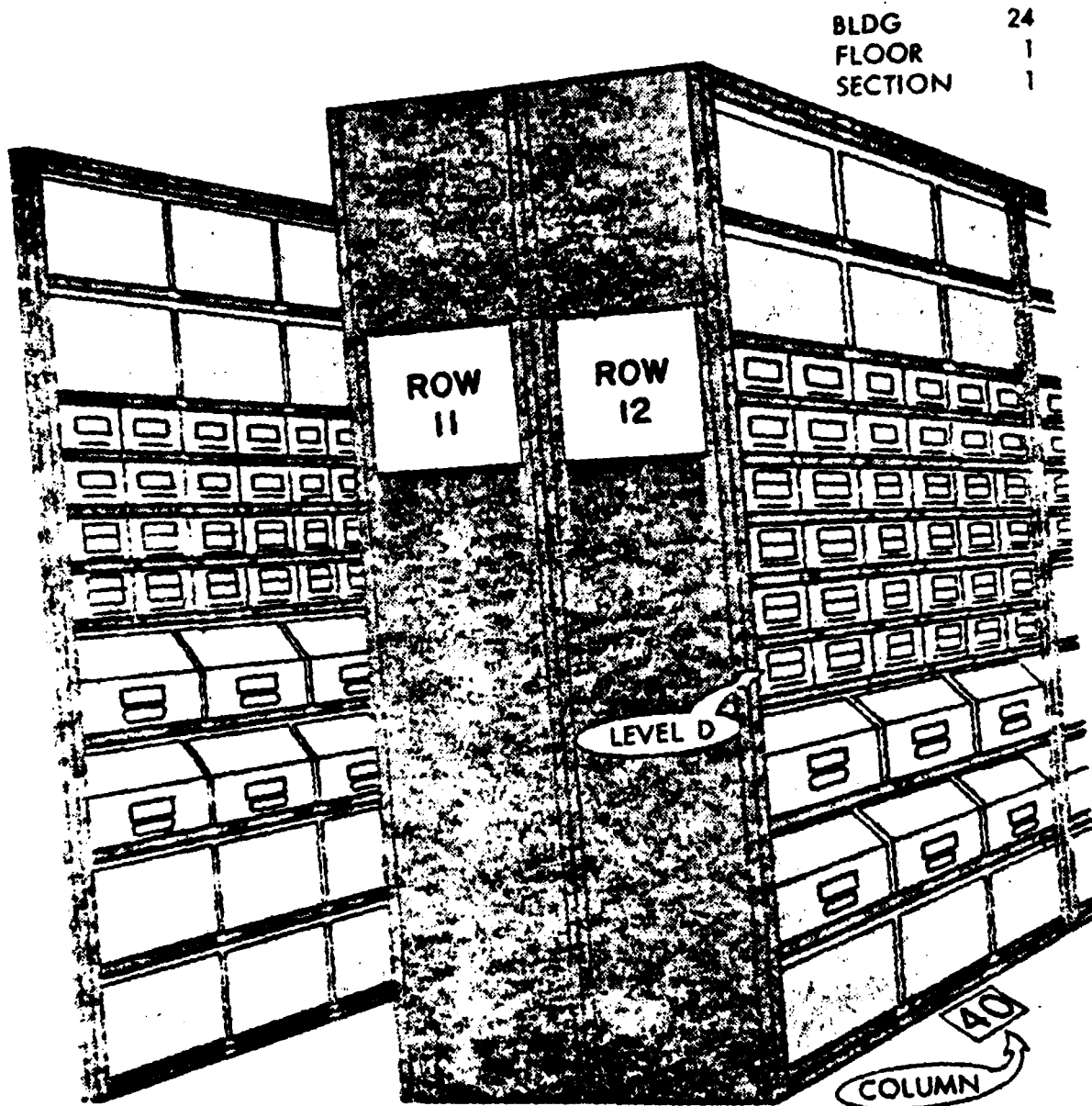
b. Location Description Pattern: Each materiel location in storage must have a description pattern which will permit immediate recognition of the specific site. The description should consist of a series of numerals, or letters and numerals, and it should be separated into groups for easier reading. The order and significance should be established at Army level for all Army supply storage activities. As an example, the following is a location sequence



Example of stock location layout for large lot bulk storage.

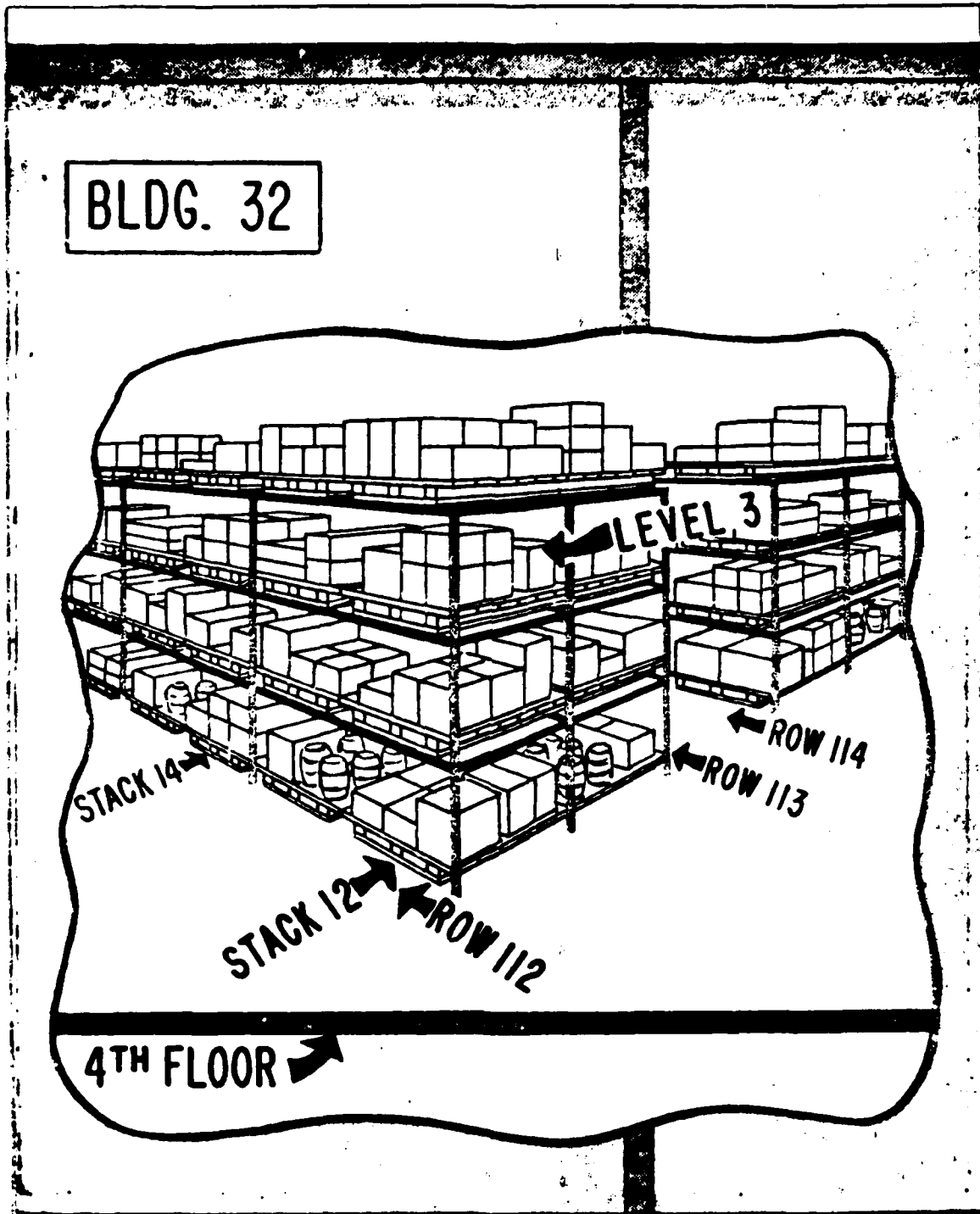
which could be used: Building or area/floor - section - row/
column (grid) - level (e.g., 24/1-1-12/40-D; see Figure II-13;
or, 32/4-0-112/12-3; see Figure II-14).

(b) Location Site Identification: When the planographs have been drawn and the location description pattern has been established, location identifications at the actual sites are necessary. In warehouses, where floor surfaces permit, location description markings should be displayed on the floor; markings can be with decal or paint. When applied to a clean floor, and protected by a coat of clear lacquer, markings can last several years. Markings should be placed in aisles, so they are visible at all times, but located and at the edges of the aisles to reduce wear. When the floor cannot be used, markings can be placed on posts facing operational aisles or on other suitable and easily visible structural member. Insofar as possible, markings in sheds and transitory shelters will be displayed in the same manner as in warehouses. In open areas, appropriate location identification will be shown on permanent weatherproof signs. The number of location markings will be as directed; but, as a minimum, every aisle intersection will be marked and every fifth grid should be marked along working aisles. In areas where bins, shelves, and other storage aids are used, the standard grid method of marking may not apply because of variations in dimensions. However, suitable location identification markings will be posted on the storage aid ends facing working aisles, and additional markings may be painted on the floor--as was depicted in Figure II-13. Marking is also required for vertical



Example bin location descriptive pattern, including use of vertical location identifier.

FIGURE II-13



Example of view of a pallet rack type stock location layout.

location identification in certain cases. This type marking is required on bin, shelf, and pallet rack openings to designate a particular vertical location; as shown in Figures II-13 and II-14, both letters and numerals may be used.

(c) Maintaining the Location System: Maintaining the stock location system is a responsibility of the storage management activity. Warehouse personnel do not normally keep records of receipts and issues, or maintain balance records. The heart of the stock location system is the stock locator file; it is an address directory for all stored materiel. To initially develop the locator file, a complete wall to wall survey of materiel on hand should be conducted. Appropriate location information is then entered into the locator file; the file must contain a locator record for each item stored. A locator record should reflect, as a minimum, the item stock number, a condition code, the unit of issue, and storage location(s). Other data which may be entered into the record are such things as the name (noun nomenclature), applicable physical security or pilferage codes, shelf life codes or expiration dates, and ammunition lot numbers. It is very important that all additions, deletions, and location changes be promptly and accurately reflected in the locator records; procedures must be established to positively control the recording process. (Where at all possible, an item should be stored in a single location; this requires careful forethought.) Only one locator file is maintained by the Stock Record Office; an exception to this rule may exist when security items are held. Their control may require a supplementary file.

1. Receipt of Materiel: Upon receipt of supplies, the locator file will be screened for the stock number received. If the materiel is already stocked, the replenishment items will be sent to that location upon completion of identification and classification actions. If the quantity received obviously will not fit in the existing location, the materiel will be sent to an appropriate warehouse for selection of a final location by the warehouseman; for receipt of materiel not already stocked, the items will be sent to an appropriate warehouse also. Placing items into an existing location, establishing a new location, or deleting a location all require feedback to the locator file control activity. For this purpose, receipts moving to a storage location must be accompanied by a form or a copy of the receiving document. The document accompanying the materiel to storage must be annotated by the warehouseman with the final location data and returned to the locator file control activity to be recorded. Figure II-15, below, depicts a type form which can be used to record the transfer, addition, or deletion of items to stock locations.

| | | |
|---|--|---------------|
| MATERIEL TRANSFER RECORD | | Date Received |
| Consignor | | |
| Invoice Number | | To (Building) |
| Location Data | | Quantity |
| 1. Enter stock number and nomenclature of item. | | |
| 2. Enter existing location(s). | | |
| 3. Warehouseman will annotate final location data and return card to the locator file control activity. | | |

FIGURE II-15

2. Issue of Materiel: Issue documents must go to the locator file control activity which will annotate the materiel location on stock selection documents and send them to the proper warehouse. If the issue action reduces the location balance to zero--unless that location has been designated as permanent--the warehouseman will prepare a location delete action and forward it to the locator file control activity.

3. Location Changes: Whenever warehousing actions involve movement of stored materiel, either to a new location or to effect consolidation of item stocks, the locator file control activity must be informed. Such warehousing action can result in location additions or deletions which will be immediately annotated by the warehouseman on a form and forwarded to the control activity. The form can be an adaptation of the Materiel Transfer Record (Figure II-15).

(7) Set Assembly/Disassembly: Some equipment will be issued by the army as a set, or a grouping of components, which may be principal items in themselves. Such "sets" are normally procured as individual components and then assembled by the depot. Examples of sets of this kind could be a mechanic's tool set (composed of a tool box and various common and item peculiar tools), an automotive test set (which can be composed of an electronic testing device, a generator to provide power and a trailer to transport the set to the field), and a communications van (composed of a cargo truck, a van body, a radio set, and a switchboard). The Materiel Management Activity should appoint a manager for each equipment "set." It will be that manager's responsibility to calculate what

must be procured to assemble the required number of sets. These needs must be made known to the authorities who will authorize and direct their acquisition. (Items required to assemble sets are added to the quantity which will be bought to replenish losses due to attrition. As such, they are delivered to the depot and reported to the item manager.) When all of the various components are available within the supply system, the set manager must assemble the parts and prepare the set for issue.

(a) Process Assembly and Disassembly Documentation: The set manager is responsible to plan how, when, and where to assemble the sets and store them. If more than one depot exists in the system, then the set manager will have to arrange the movement of components to the assembly depot. Assembly itself may be simple--as assembling a tool set--or it may require a significant degree of effort; to assemble a communications van would require a means to hoist the van body onto the truck bed where it must be secured using special hardware, the van itself must be wired to receive the communications equipment, and the truck engine may have to be modified to support the extra demands for electrical energy. The activity assembling the set--normally the depot--must be informed of what has to be done, any support equipment needed, and when the assembly is desired. (The "when" is normally an item to be negotiated between the set manager and the depot.) When the plan to assemble is approved, the set manager will put the process into action with a series of documents which will direct the item managers to release the necessary items for assembly and will direct the depot

to assemble the sets. The depot will notify the set manager when assembly has been accomplished. (Note: In some circumstances, the sets may be assembled by the depot only after a requisition has been received; the set manager will decide if this course of action is desirable and feasible.) Under normal circumstances, accountability for the component principal items, which become parts of a set, will remain with the item managers; stock records will be annotated to identify the items which have lost their individual identity to a set. The set manager will assume informal accountability for the principal items absorbed into the set and is responsible to inform the item manager if an item is destroyed or lost.

(b) Submit Shortage Reports from Assembly Depot to Accountable Supply Distribution Activity: The depot activity which will assemble the sets must carefully and immediately inventory the components received to ascertain the proper items have been delivered, in the proper quantity and condition. Any discrepancy will be reported to the responsible supply activity at once so that corrective action may be taken and assembly can proceed on schedule, or as close to it as possible; the item manager concerned and the set manager should also be sent copies of the report of discrepancy.

(c) Perform Required Assembly and Disassembly: After receipt of all components, the assembly depot will assemble the sets and store them for subsequent issue as directed by the set commander. When a set--for any reason--is to be disassembled, the set manager will plan the disassembly and have the plan approved by the materiel

management activity. Item managers will be notified of the dis-assembly and of the condition of their individual components. Based on item condition, the item manager will direct disposition of the returned items.

b. Inventory (Physical Inventory): To help achieve optimum economy in the management and use of supplies, it is essential that accurate records of quantity, condition, and ownership of the individual items be maintained. Periodic verification of these records is accomplished through physical inventory. In its most basic form, physical inventory is an actual count of an item at its storage site. In the broad sense, inventory of military property involves a number of actions other than just a physical count; these would include the verification of stock record balances, the investigation, analysis, and disclosure of the cause(s) of inventory discrepancies, and the adjustment of stock records and--if maintained--financial records. Certain items, because of their characteristics, are called controlled items. Controlled items must be identified, accounted for, secured, and handled in a special manner to ensure their safety or integrity. Materiel in this category includes classified, sensitive, and pilferable items; for definitions of classified, sensitive, and pilferable items see Paragraph G,3, a, (4),(g) on page 120.

(1) Principles of Inventory Control: Physical inventory procedures must try to achieve as accurate a count as possible. Because inventories normally occur during a period of "business as usual," items will continue to be received and added to stocks, and to be drawn from stocks for issue during the period that physical

counts are being taken. Such items--and the documentation--are described as "in-float." In-float documentation includes materiel release orders, receipts, adjustments, and catalog data changes. Storage and stock record activities must agree on cutoff dates for inventory purposes; pre-inventory and post-inventory actions must be identifiable to ensure proper consideration in balance reconciliations. Effective inventory control must also include:

- (a) Establishment of an inventory control organization to perform all related inventory functions.
- (b) Establishment of training programs to develop the optimum capability to conduct the inventory.
- (c) Establishment and maintenance of accurate stock location records.
- (d) Performance of all directed physical inventories.
- (e) Control over any movement of materiel undergoing inventory.
- (f) Accomplishment of required research prior to processing adjustment actions (Research and investigation of discrepancies are an important part of an inventory; it is the responsibility of both the stock accounting and the storage activities. Discrepant counts will result in another physical inventory of stock, and the stock control activity will research documents to determine if any materiel was in-float. Research can usually eliminate inventory adjustments. After adjustments have been processed, a complete investigation will be made on items with unresolved discrepancies as designated by the accountable property officer).

(g) Isolation of causes of potential or actual discrepancies, and initiation of corrective action to prevent recurrence.

(2) Inventory Planning: Each physical inventory must be planned, taking into consideration the following:

- (a) Number of items involved.
- (b) Number of locations involved.
- (c) Manpower requirements.
- (d) Anticipated productivity.
- (e) Scheduling to obtain maximum efficiency and accuracy.
- (f) Preparation of materiel in storage to facilitate inventory counting.

(3) Inventory Training: Each individual participating in the inventory should be given a specific assignment; prior to starting inventory actions, all necessary training must be completed. Such training will involve personnel from different activities, and it should be coordinated with all elements concerned. Suggested points for emphasis are:

- (a) Purpose of the inventory
- (b) Familiarization with the inventory organization and each participant's part therein.
- (c) Importance of achieving the highest degree of accuracy attainable.
- (d) A thorough orientation in:
 - 1. Recognition of correct stock number, nomenclature, and unit of measure.
 - 2. Preparation of documentation.

3. Item identification.
4. Condition classification (serviceable, unserviceable-reparable, unserviceable-condemned).
5. Counting techniques; difficulties involved in counting at each type location.
6. Recognition of improper or unsafe materiel storage practices.
7. Safety requirements.
8. Security considerations.

(4) Preparation of Materiel for Inventory: Proper storage practices will arrange and maintain stored materiel in the best possible manner. Prior to taking an inventory count, ensure stocks are:

- (a) Properly identified and clearly marked.
- (b) Identified as a "Do Not Inventory" item, when the items are not to be included in the inventory count.
- (c) Stored in the minimum number of separate locations commensurate with proper storage practices.
- (d) Stored uniformly with respect to quantity per container and containers per pallet.
- (e) Clearly highlighted to show where non-standard quantities per container or containers per pallet exist.

4. Issue (Figure II-16): Supplies are issued by a Supply Support Activity (SSA) in response to a valid request from a customer unit. Supplies will be issued either from a supply support warehouse or from a Direct Exchange Activity (DXA). An SSA may

SUPPLY CONTROL

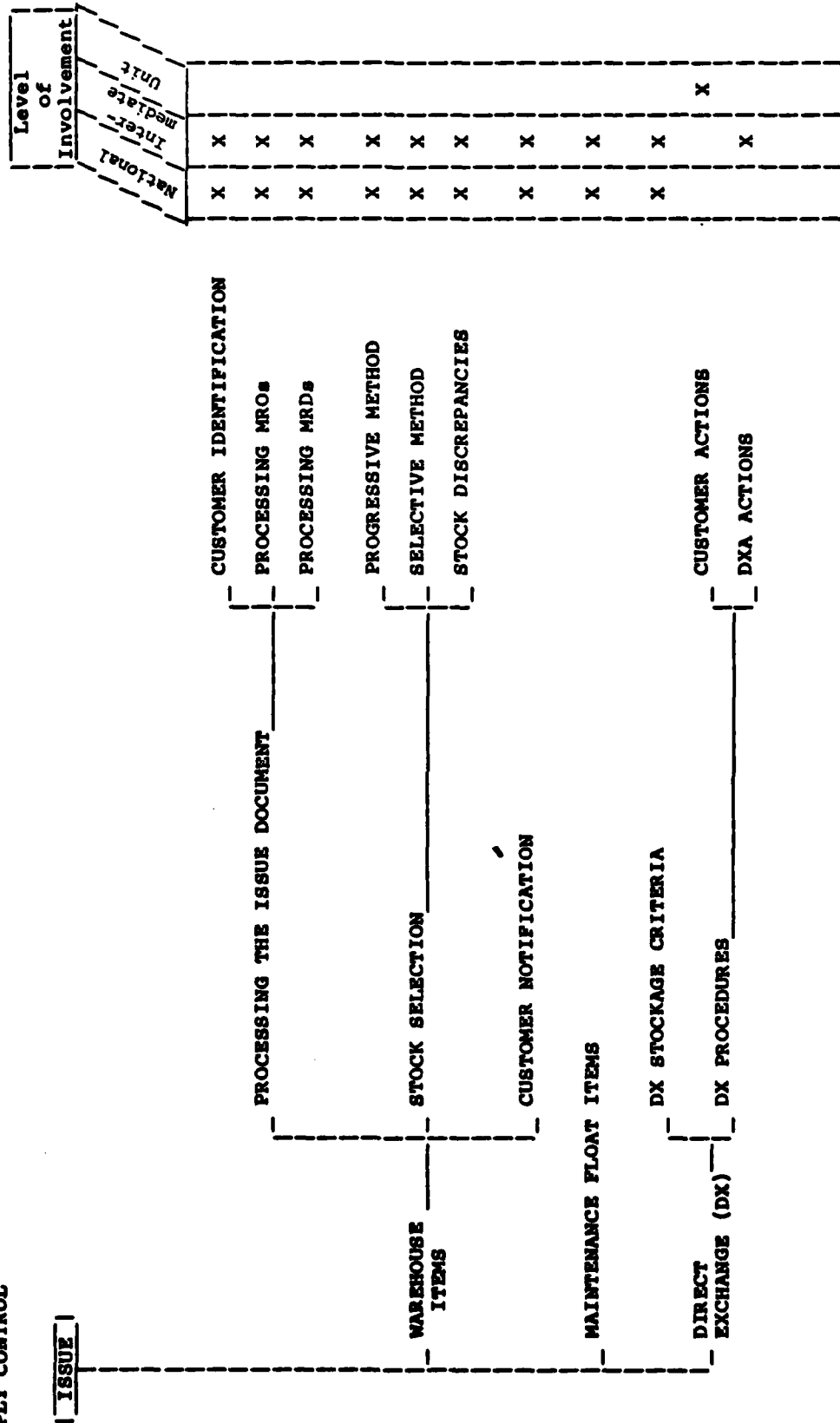


FIGURE II-16

process warehouse issues in one of two ways. The "pre-post" transactions credit--or post--the stock accounting record before on-hand stocks are made available for issue; "post-post" transactions are those where on-hand stocks are issued before the stock accounting record is posted.

a. Warehouse Items: These items are those held in open storage, in sheds, or in warehouses either at a depot or at an intermediate supply support activity. Stock record accounts will be established for the items held in such storage facilities.

(1) Processing the Issue Document: The issue document normally will be received in the form of a requisition, and it will be sent to the Documents and Records Section for validation. The requisition will be checked to ascertain that the requesting unit is supported by the SSA receiving the document, that the requisitioner is authorized the item(s) requested, and that the requisition data are complete and correct. The document is then given to the individual responsible for the stock record of the item requested. That person prepares a Materiel Release Order (MRO) or a due-out for the items. The MRO is a directive from the stock accounting activity to the storage activity--e.g., the warehouse--to pick, pack, and ship the items. The MRO can be a specially designed form, or it can simply be standard notations made on the requisition form. If the demand cannot be satisfied, a due-out is prepared. The due-out notifies the requisitioner that the request for materiel is valid, but the items are not currently available for issue. On occasion, in prescribed

circumstances, the requisition may be passed to the next higher supply support activity. As in the case of a due-out, when the requisition is passed, the SSA will notify the requisitioner.

(a) Customer Identification: Each SSA must keep a current list of the units which they support, a file of the current assumption of command orders, and a file of the orders appointing the current property book officer for each customer unit. Any person authorized to requisition or sign for supplies must have a signature card with his or her signature filed at the SSA. The SSA will use the file to verify the authority and identity of personnel requisitioning of picking up supplies.

(b) Processing MROs: On receipt of the MRO, storage section personnel would find the correct location of the item to be issued in the locator file; the stock location would be entered on the MRO. (The location data would be posted as directed by the national level materiel management activity. The format developed would be standard, at least within all Army organizations.) Next, the stock will be picked. Storage personnel will compare the data on the MRO with the data shown on the bin (shelf or pallet) and that on the actual materiel. The warehouseman must make sure the correct item is selected. He will then take the quantity indicated on the MRO and move it to the issue area. (Normally bulk sensitive and pilferable items are not sent to the issue area but are issued from location. Local control procedures must be established to issue such items directly from their storage locations.) When the quantity to be issued is not available, or only partially available,

warehouse personnel will check the locator deck for another storage location and continue to process the MRO. If all of the storage locations have been checked and still only part of the MRO quantity is available for issue, process the MRO for the available quantity and prepare a Materiel Release Denial (MRD) for the quantity not available. On the MRO form, enter the quantity issued (normally the quantity requested) and, when appropriate, the quantity due out (that is, the amount not available for issue). Finally, the person picking the items will place the date and his initials on the MRO and move the MRO and the materiel to the shipping point (or customer pickup point). For bulk, sensitive, or pilferable items, only the posted MRO document is placed at the shipping (customer pickup) point; only when the controlled (or bulk) items are to be packed and shipped (or the customer arrives), should they be moved to the shipping (customer pickup) point. If no items, or insufficient items, are in stock, the receiving point and associated documentation should be checked to see if any are available in-float. If so, process the MRO by notifying the receiving point to set the items aside, send the MRO there and have receiving personnel initial and date the MRO (as making the materiel available for issue). The items then will be sent to the shipping (or customer pickup) point. When customers receive the materiel, they will date and initial the MRO. Serial numbered items will be issued by serial number and must require the serial numbers to be written on the back of the document. For sensitive materiel, the document should be signed--not initialed--by the authorized customer representative.

(c) Processing MRDs: An MRD is prepared by storage personnel when the quantity of an item in stock and in-float (in receiving) is too low to satisfy the quantity listed on the MRO. The MRD may be for part or all of the quantity requested. MRDs are sent to the stock control activity. When only part of the released quantity is not available for issue, an MRD is prepared for the amount denied and processing of the MRO is continued for the quantity that is available for issue. (To do so, the warehouseman will line through the quantity released and write in its stead the quantity available and his initials. Then he will list as "due-out" the quantity not available for issue, the date, and his initials.) When no items are available for issue, convert the MRO to an MRD and return it to the Stock Control Section.

(2) Stock Selection: Generally, the oldest items should be issued first. There are two commonly used ways to select stock; these are:

(a) Progressive Method: This can also be called "first in, first out." Stock is selected on the basis that the first item to enter the warehouse is the first item to leave it. This method is used with materiel not given a shelf life expiration date.

(b) Selective Method: In this method stock is selected on the basis of picking the oldest item first (regardless of when it was received in the warehouse). This is done by checking and selecting the item(s) with the oldest date of pack. This method is used with all items which have established shelf life expiration dates; to vary from the selective method of issuing should require special authority.

(c) Stock Discrepancies: In the process of selecting stock, the warehouseman may discover that item condition has changed or that the item identification is incorrect. Such a discovery is reason to adjust stock accounting records. If the MRO is for an item that needs adjustment action, make the MRO an MRD and notify the storage supervisor of the reason for the denial; enter the reason on the MRD also. (Normally, such a denial will be based on one of three reasons. These are: Materiel is not available in the condition requested; the materiel is not available within the established shelf life limits; and the materiel is being re-identified.

(3) Customer Notification: The stock record office will notify customer units when: the supplies are ready for pickup; the requisition is rejected; the requisition is passed to a higher level SSA; or a due-out has been established. For a high priority requisition, notification should be telephonic where possible; for routine requests, notification will take the form of returning the requisition form to the customer unit.

b. Maintenance Float Items: A maintenance float may be established at depot level, or at both depot and the intermediate level, as directed by the national level materiel management activity. Maintenance float items are held for the purpose of issuing them to a unit which owns an identical, but "unserviceable-reparable," item requiring a long maintenance repair period. (Maintenance float items are specifically authorized to be procured and held for the float; they will be issued for no other purpose.)

The maintenance shop officer will decide when to issue maintenance float assets, but the stock records officer is responsible for issuing a maintenance float item. The SSA will normally process the customer's turn-in and issue documents for maintenance float assets simultaneously. (The turn-in document normally uses the same form on which items are requisitioned.) The issue point must give the equipment records to the person signing for the maintenance float item.

c. Direct Exchange (DX): DX items are specifically selected reparable items which are supplied to customer units on a one-for-one direct exchange basis. The customer takes an unserviceable item to the SSA (usually an intermediate level organization) direct exchange activity (DXA) where it is exchanged for a serviceable one. The DXA is normally located with the maintenance facility so as to expedite the repair and return of the items received to stock. DX items are listed as a part of the SSA's authorized stockage list (ASL).

(1) DX Stockage Criteria: The stock records officer and the maintenance shop officer jointly select items for DX; not all reparable items must be included. DX items usually will not be stocked elsewhere in the SSA. To be included on the DX list, items must be: Authorized to be repaired at the SSA's maintenance facility (i.e., if a piece of equipment is so complex that it must be repaired at the depot, the intermediate level maintenance shop could not fix it; thus, it could not be added to the DX list at the intermediate level); authorized to be removed and replaced at the support

maintenance, or lower maintenance, level; demand supported--normally, a DX item must have at least six pieces presented for repair in a year to be added to the DX list and at least three pieces presented for repair annually to be retained on the list. The SSA will publish the approved DX list, update it quarterly, and distribute it to all customer units. The list should show item name, stock number, end item applications, and the authorized stock level.

(2) DX Procedures: Items selected for DX stockage will be moved to the DXA. The stock record activity will maintain a stock record, but it will be annotated to show that the item is classified DX and will show a zero balance. The DXA will maintain a DX accounting record on all DX items.

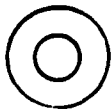
(a) Customer Actions: Customers using the DXA will complete a "DX Tag" and attach it to the item being exchanged. Using unit personnel will make sure that the unserviceable item to be turned in is clean and all component parts are included when preparing it for turn in. The DX Tag can take many forms, but it has to contain certain basic information elements which the customer must provide. These are: Identification of the DXA supporting the customer unit; date prepared for exchange; customer unit identification; item stock number; priority of need designator; nomenclature (name) of item; name and manufacturer, if needed, of the end item from which the DX item was removed; end item model number, if applicable; end item serial number; date submitted for exchange; and a brief description of the deficiencies or symptoms. With the DX Tag completed and attached to the unserviceable item, the customer representative

will take the part to the DXA to be exchanged. If everything is correct, the DXA will give the customer a serviceable item for the unserviceable one. If the DXA does not have the item in stock, the customer will take a receipt back to the unit--normally a part of the DX Tag--and will check back periodically with the DXA for the item.

(b) DXA Actions: DXA personnel will inspect unserviceable items to make sure that they are clean, complete, and that there is no evidence of obvious abuse. When acceptable, the DXA personnel will give the customer a serviceable item for the unserviceable one. If a serviceable item is not available for the exchange, the customer unit will be given a receipt for the item. (Usually, the DX Tag is formed so that up to three sections can be removed and used as receipts. All sections are not always used; part 4 is usually the unit receipt, part 3 is the battalion level receipt, part 2 a support activity receipt. Part 1 remains with the item until it is repaired and used; it identifies the item as "serviceable" after repair. Figure II-17 depicts a sample DX Tag. The receipt will be dated and signed by the DXA representative. Upon availability of a serviceable like item, the receipt is exchanged for the serviceable item. The receipt is then destroyed.

1. Unserviceable items received by the DXA should be sent to the maintenance shop for repair within one working day of receipt; a standard maintenance request is normally used. Items which maintenance cannot repair will be returned to the DXA; a common term for these items is "washout." The DXA will turn in washouts

DIRECT EXCHANGE TAG



PART 1

| | | | |
|--|-----------|----------------|----------|
| TO | | DATE | |
| FROM | | | |
| STOCK NUMBER/PRIORITY | | | |
| ITEM NAME | | | |
| <input type="checkbox"/> WARRANTY ITEM | REPAIRED | | INITIALS |
| | DATE | | |
| END ITEM IDENT | ITEM NAME | | |
| | MODEL | SERIAL/LOT No. | |

PART 2

| | | | |
|-----------------------|-------------------|----------------|--|
| UNIT | | ITEM | |
| STOCK NUMBER/PRIORITY | | DATE SUBMITTED | |
| END ITEM IDENT | ITEM NAME | | |
| | SERIAL/LOT NUMBER | | |

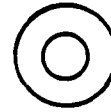
PART 3

| | | | |
|-----------------------|-------------------|----------------|--|
| UNIT | | ITEM | |
| STOCK NUMBER/PRIORITY | | DATE SUBMITTED | |
| END ITEM IDENT | ITEM NAME | | |
| | SERIAL/LOT NUMBER | | |

PART 4

| | | | |
|-----------------------|-------------------|----------------|--|
| ITEM NAME | | | |
| STOCK NUMBER/PRIORITY | | DATE SUBMITTED | |
| END ITEM IDENT | NAME/MANUFACTURER | | |
| | SERIAL/LOT NUMBER | | |

FRONT SIDE



| | | |
|--|--|--------------------------------|
| DATE MFR'D/OVERHAUL | MANUFACTURER/OVERHAUL ACTIVITY | |
| FAILURE DETECTED DURING: | | |
| <input type="checkbox"/> MAINTENANCE | <input type="checkbox"/> NORMAL OPERATIONS | |
| <input type="checkbox"/> INSPECTION | <input type="checkbox"/> HANDLING | |
| FIRST INDICATION OF TROUBLE: | | |
| <input type="checkbox"/> INOPERATIVE | <input type="checkbox"/> LOW PERFORM | <input type="checkbox"/> NOISY |
| <input type="checkbox"/> OUT OF ADJUST | <input type="checkbox"/> OVERHEATING | <input type="checkbox"/> OTHER |
| DESCRIBE DEFICIENCY OR SYMPTOMS | | |
| JOB ORDER NUMBER | INITIALS | |

| | |
|------------------|------|
| JOB ORDER NUMBER | DATE |
| SIGNATURE | |

| |
|-----------|
| DATE |
| SIGNATURE |

| |
|-----------|
| DATE |
| SIGNATURE |

REVERSE SIDE

FIGURE II-17

to the SSA's receiving section for final disposition. When enough items have been "washed out" to drop the DX asset position to, or below, the reorder point, the DXA must requisition replacements through the SSA.

2. If no stock is available for exchange and the item is a high priority requirement, DXA personnel must check the dues-in from requisitions and from repair. High priority requirements must be satisfied within prescribed time periods. If the expected dues-in will not arrive in time to meet the time standards, then the DXA should immediately submit a requisition for the item to the SSA using the customer's priority designator; identify the request as non-recurring. If stock becomes available before this requisition is filled, satisfy the unit's due-out and cancel the requisition.

3. DXA personnel should accept items turned in for DX that are unserviceable for reasons other than fair wear and tear if a written statement is provided by the customer unit commander. The statement should indicate that an investigation has been initiated to determine if individual responsibility for the unserviceable item condition can be fixed and whether further action is deemed necessary.

4. The SSA will process requests for issue from customers who have no unserviceable turn-in, not the DXA. This requisition will be annotated to indicate that it is a non-recurring request. (The SSA will not use these requests to establish stockage in the ASL; items will be picked up on accountable records and issued.) Stock received for DX replenishments will be sent directly to the DXA.

5. Disposition (Figure II-18): Disposition refers to the establishment of criteria and subsequent distribution instructions provided for various categories of materiel; the largest category to be encountered is excess--that is, items held by a unit or SSA which are in excess of the number of authorized, or are not authorized to the unit. Other categories of materiel which may require disposition instructions are items held by an SSA which are beyond their established shelf life, obsolete items, unserviceable condemned materiel and reparable items. The Army's senior logistician is responsible to establish the rules for identifying, reporting, and disposing of such items at the various echelons, i.e., the using unit, the intermediate SSA, and the depot level. Some rules regarding disposition of materiel will be standard operating procedure, requiring no report and subsequent disposition instructions. For instance, a unit finding a piece of military equipment should automatically turn it in to the SSA as "found on post." Other situations may require disposition instructions also. The objectives of a disposition program are to use existing materiel to the fullest extent possible, prevent the concurrent procurement and disposal of like items, and prevent the unnecessary repair or overhaul of unserviceable items.

a. Reportability Criteria: Generally, excess items and the like will be turned in to the supporting supply activity. However, the disposition instructions may direct the holding organization to ship the item(s) to any of several different locations; e.g., a using unit, another SSA, a maintenance activity, or a property

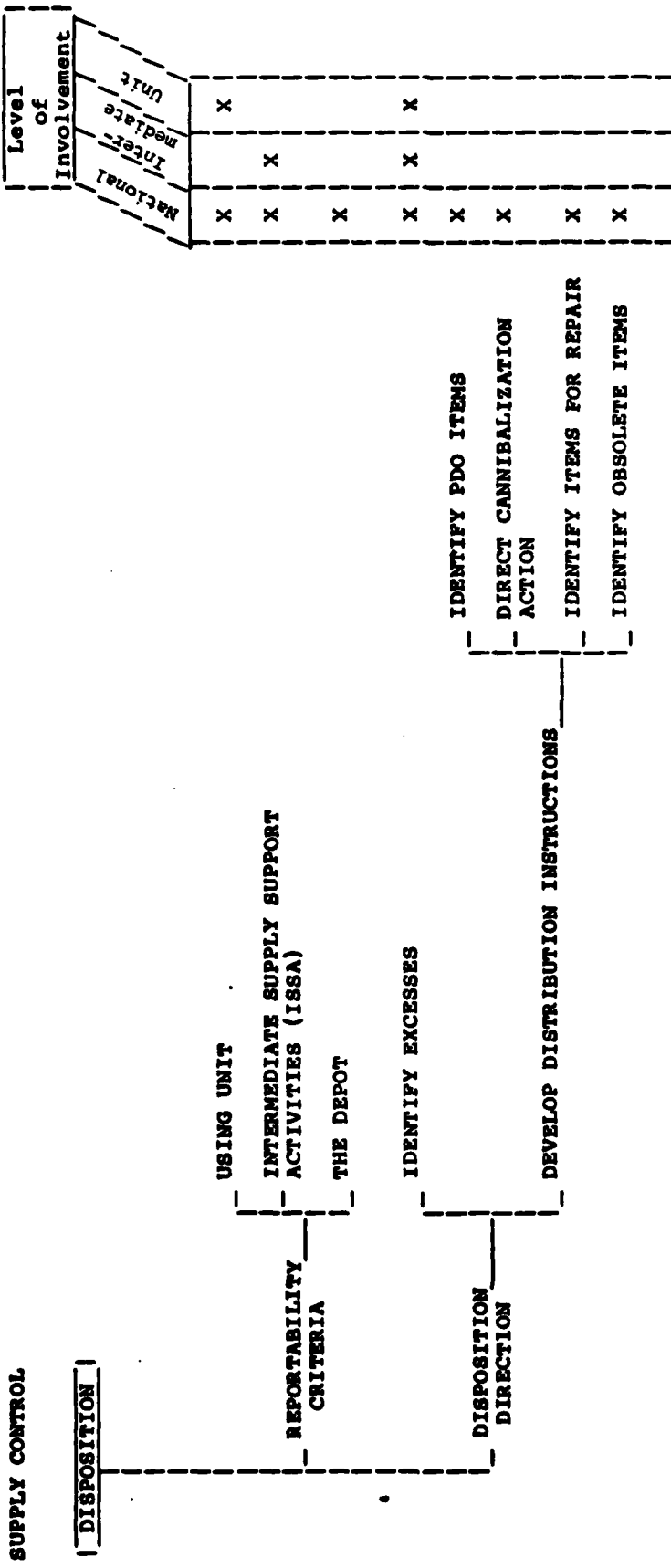


FIGURE II-18

disposal activity. Items will be reported as excess when they exceed the number authorized (in a using unit) or the retention limit (in an SSA). The retention limit will vary with the organization; it is the maximum amount of stock authorized to be on hand. The retention limit will be an amount equal to or greater than the requisitioning objective (RO). The amount of stock which can be retained above the RO is called the retention quantity; and when it plus the RO quantity exceed the retention limit, disposition action must be taken to reduce the quantity kept at least to the retention limit. To keep stock above the RO, but within the retention limit, the Stock Record Officer must expect that the retained stock will be needed, adequate storage capability must be available, and retention must not cause the stock to become unserviceable. On hand quantities greater than the RO that are caused solely by the unit pack are not treated as excess. Figure II-19 shows the relationship, the RO, the retention quantity and the retention limit.

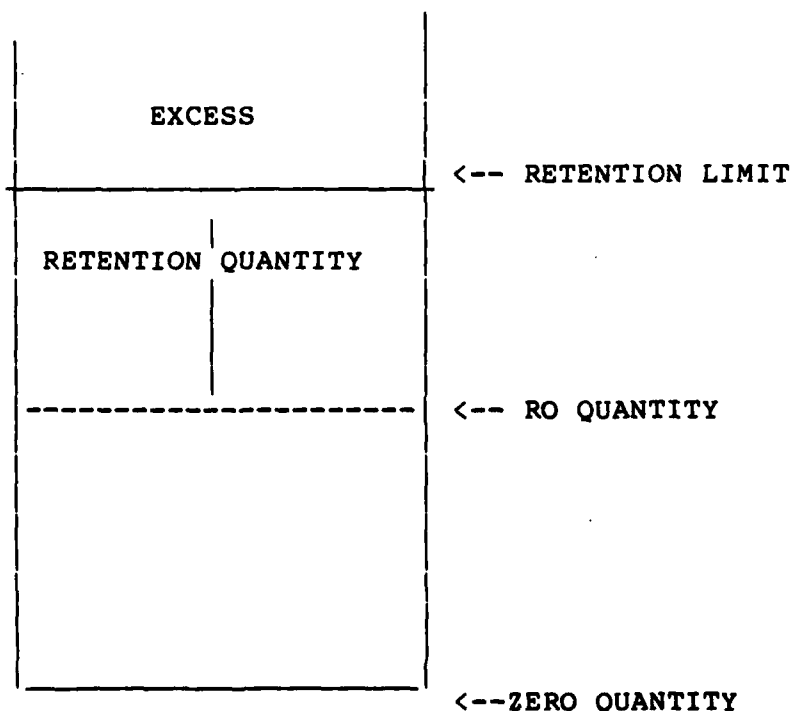


FIGURE II-19.
THE RETENTION LIMIT

Regardless of the retention limit established, do not take action to acquire stock if doing so would cause the quantity on hand, plus the quantity due in, minus the quantity due out, to be greater than the RO. Excess due-in stock should be cancelled, and excess on-hand stock disposed of when the retention limit is exceeded. The following criteria are suggested for the echelons listed.

(1) Using Unit: Excess property at this level would be any item not specifically authorized for use by the organization; e.g., if a tank company is authorized to have 10 tanks and has 11, one is excess and must be turned in. If the using unit is authorized to hold stocks in unit supply, or in a prescribed load list, the RO will equal the retention limit. Using units do not report excess items; they will turn excess item in to the SSA or to the Property Disposal Office (PDO). Items are turned in to PDO if they are clearly unserviceable and nonreparable, all others go to the SSA. In addition to excess property, the unit will turn in items when they are not needed and the authorization is not mandatory, when they become unserviceable or are not economically reparable, or when they are "Found on Post." Finally, a unit may laterally transfer excess property when a shortage exists in another organization with the approval or direction of the commander involved (e.g., from one company to another within a battalion, the battalion commander may approve; between brigades (or regiments) within a division, the division commander approves).

(2) Intermediate Supply Support Activities (ISSA): The ISSA normally will deal directly with the depots in a small military

force. The ISSA do not report excess stock; they dispose of excess items by shipping them to the PDO or to the depot as is appropriate. The ISSA usually have an ASL retention limit that is a quantity equal to two times the RO quantity. Figure II-20 illustrates this.

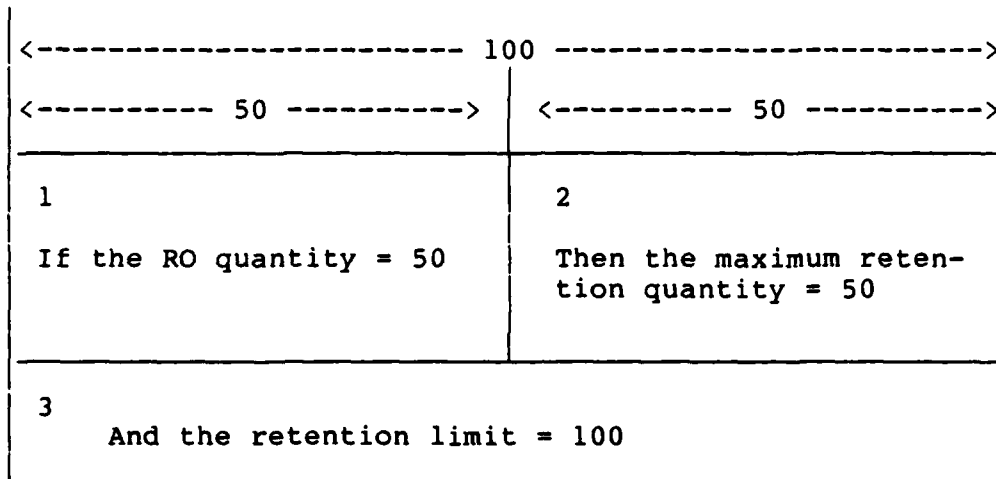


FIGURE II-20. ISSA RETENTION LIMIT

Principal items to be shipped to a PDO will have basic issue items withdrawn and taken into accountability before shipment; principal items sent to another SSA will be accompanied by all component parts. Shortage lists normally are signed by the commander and will accompany shipments with shortages.

(3) The Depot: Depots report excess stock to the materiel management activity and will receive disposition instructions. Normally, depot stock retention limit is the sum of the RO and the annual demand rate quantities. The annual demand rate quantity is the sum of all valid demands, both recurring and nonrecurring, received for an item during the most recent 12 whole months. The depot retention limit computation is illustrated at Figure II-21.

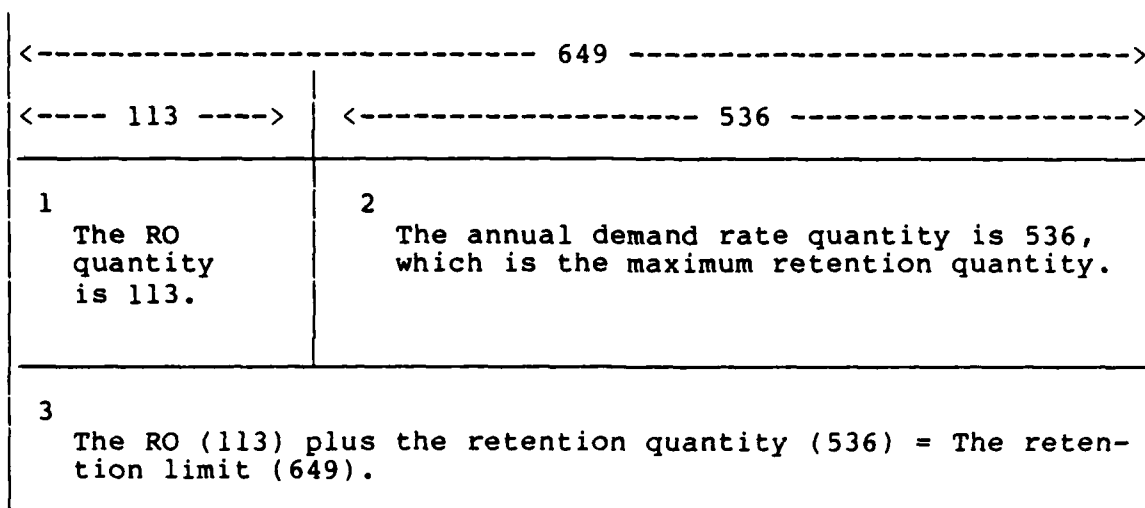


FIGURE II-21. THE DEPOT RETENTION LIMIT

Non-stockage list items will not have an RO established, but they may have a retention limit; the retention quantity for these items will equal the annual demand rate quantity and will also equal the retention limit.

b. Disposition Direction: The materiel management activity will issue disposition directives, both in the form of policy and procedures and in response to requests for instructions. The directions must be clear, unambiguous, and in compliance with disposal policy.

(1) Identify Excesses: Organizations, both users and SSAs, at all levels may find they have excess on hand. The user and the intermediate SSA, upon identifying the excess, will prepare the equipment for turn in, prepare the necessary documentation, and turn the items in. Normally, excess will be turned back to the supporting SSA; units also may be able to laterally transfer excess items to other using units within their parent organizations through the S4 or

G4 (organizational supply officer) channels. Depots will report excesses to the item manager and will comply with the resulting disposition instructions.

(2) Develop Distribution Instructions: Upon receipt of a report of excess, the item manager must determine what should be done with the items. His decision will depend upon his known requirements, the condition of the stock, and the type of stock being reported. Disposition instructions will direct the depot to take one of the following actions.

(a) Identify PDO Items: Items reported as excess will often be directed to property disposal for removal from the military system. Generally, the item manager will make the decision to rid the system of the items when he believes the Army will have no further use for them, or he believes it would be more expensive to hold the items until they are needed than it would be to procure new ones at that time. PDO should make every effort to sell the equipment it receives and return the money to the Army or the government. At least, items will be sold for their scrap value. Purely military items (e.g., weapons, tanks, self-propelled artillery) must have the military characteristics removed before they can be released from military control. Some items, such as electronic circuit boards and photographic film, contain significant amounts of precious metals which should be recovered.

(b) Direct Cannibalization Action: Many times, when a principal item such as a truck or a tank is to be removed from the inventory through PDO, component parts can be found which are

needed and usable. As equipment grows older and repair parts become more difficult to acquire (because they are no longer produced), recovery of these component parts can represent a valuable and economically viable source of repair parts. Even when they must be rebuilt, it is often cheaper to place such parts back into stock than it is to buy new parts; this is especially true when the manufacturer will have to reassemble and restart a manufacturing line. The PDO will designate and establish a cannibalization point upon the direction of the materiel management activity. Items to be passed through the cannibalization point will be designated by the materiel management activity and the components to be removed also must be specified by the item manager. That individual will be interested in recovering those parts which are or soon may be in short supply. (In cases where repair parts are no longer being made, cannibalization may represent the only source of replenishment available.)

(c) Identify Items for Repair: Equipment reported as excess can represent important assets to the item manager who will know when future requirements exist. For example, the item manager would not get rid of excess assets if he knew they would be needed in the near future because of reorganization. Likewise, unserviceable but reparable items can represent valuable assets to the item manager. If a piece can be overhauled and returned to stock more cheaply than replacing it with a new one, then repair must be considered as an alternative to procurement. The materiel management activity normally will establish maintenance expenditure

limits (MEL) for reparable items. The limit describes how much money can be spent to repair a piece of equipment at each stage of its service life; when the item is new, the MEL will allow much more money to be spent returning it to service than can be expended at the end of its service life. Generally, MEL are established as a percentage of current replacement cost which is reduced each year as the item ages. (It must be noted that when the possibility of buying a replacement does not exist, then the concept of a MEL will have no meaning.) By using the MEL, or a similar concept, the item manager most efficiently can select for overhaul those items which are economically reparable. The item manager would then arrange for overhaul of the item at depot maintenance through the materiel management activity (MMA); the depot would schedule the maintenance, determine needs in terms of resources (e.g., personnel, time, facilities, and repair parts), and develop and report costs to the MMA.

(d) Identify Obsolete Items: Most items will be classified obsolete when they are replaced by an updated version of the same item (e.g., replacement of a bolt action rifle with a semi-automatic rifle) or by another essentially different item which performs the same function (e.g., replacement of horse drawn wagons with motorized vehicles). In any event, when items will no longer be used, they are obsolete and will be withdrawn from use and phased out of the inventory. Normally, the materiel management activity will provide disposition instructions withdrawing obsolete items from use as replacement items are issued. Supply and maintenance activities

will have to provide support to the obsolete item as long as it is in the hands of troops. This will mean a transitional period during which the SSA will process requests for items to support both the old and the new equipment, and maintenance activities will also be supporting both items.

6. Shipping (Figure II-22): This is the act of packaging, packing, documenting, and transporting supplies. Shipments move items between ISSAs, depots, and to property disposal. (The release of an item to a customer unit is normally not a shipment; it is an issue transaction.)

a. Planning: The storage and shipping sections must jointly plan each shipment. Planning is necessary to assure that the most economical transportation mode available that will do the job on time is used, that the supplies are appropriately and adequately safeguarded, that the materiel is properly packaged and packed, that the carrier is notified in a timely fashion, that high priority shipments are identified and processed expeditiously, and that pertinent laws and regulations are followed.

(1) Survey Workload: The shipping section will continuously survey both their current and expected workload to determine the level of effort required to perform the job within the time standards established and to avoid a backlog of shipments. The advanced shipping plans enable the shipping section to identify peak periods and react in time to schedule needed personnel (or additional work shifts) and needed additional transportation capacity.

(2) Review Priorities: The Materiel Release Order (MRO) will indicate the priority of need assigned to each shipment.

SUPPLY CONTROL

| | Level of Involvement | | |
|--|----------------------|---------------|------|
| | National | Inter-mediate | Unit |
| SHIPPING | | | |
| PLANNING | | | |
| SURVEY WORKLOAD | X | X | |
| REVIEW PRIORITIES | X | X | |
| ANALYSIS OF AVAILABLE TRANSPORTATION | X | X | |
| PROCESSING | | | |
| CONSOLIDATE SHIPMENTS BY TYPE, DESTINATION | X | | |
| DETERMINE PACKING AND CRATING REQUIREMENTS | X | X | X |
| DOCUMENTATION | | | |
| PREPARE SHIPPING DOCUMENTS | X | X | |
| PREPARE HAZARDOUS CARGO SHIPPING DOCUMENTS | X | X | |
| PREPARE SPECIAL HANDLING DOCUMENTS | X | X | |
| TURN SHIPPING DOCUMENTS OVER TO TRANSPORTATION PERSONNEL | X | X | |
| SHIPMENT CONFIRMATION | X | X | |
| MOVEMENT | | | |
| ADMINISTRATION | X | X | |
| LOAD THE ITEM FOR SHIPMENT | X | X | X |

Normally, regardless of the format and titles used, shipments will indicate either an emergency priority, a high priority, or a routine priority of need. The shipping section must ensure that the shipments are processed in sequence according to the indicated priority, and that emergency priority shipments are identified and given the special handling required. As a rule of thumb, emergency priority shipments should be available to the carrier not more than 24 hours after receipt by the storage activity (based on a 24-hour workday and a 7-day workweek). High priority shipments should be available to the carrier within two regular working days after their receipt by the storage activity, and routine shipment should be available within four regular working days.

(3) Analysis of Available Transportation: Usually, a variety of transportation modes will be available for use to an SSA (e.g., military trucks, rail, and aircraft; commercial trucks, rail, and aircraft; water craft). In selecting a mode, the storage activity will consider how quickly the shipment must be at the destination, the cost of moving the shipment by the modes which can do the job, and the availability of the transportation modes for the shipment in question. Based on analysis of these factors, a mode will be selected for the movement of each shipment. (Note, this does not mean that the shipments will be moved separately. Shipping section personnel will consolidate shipments by destination emergency priority shipments will be clearly identified. Every effort will be made to move supplies in the most economical manner which will still accomplish delivery on time.)

b. Processing: Processing describes the performance of steps necessary to locate and prepare the items to be shipped for movement.

(1) Consolidate Shipments by Type Destination: Storage personnel will locate, pick, and deliver the materiel for a shipment. Shipping personnel will pack and prepare the items for movement. Shipments which are ready to go will be placed in a designated area to be held for pick up by the transporter; they will be consolidated according to priority, equipment type (i.e., large bulky items versus small items) and destination. Consolidation of shipments allows the most economical transportation of the materiel to be arranged; it should be standard procedure and used except where the mixing of specified items is prohibited by law or regulation. To ensure that the supplies and the documentation are efficiently and effectively processed through both the supply and transportation cycles, procedures to control and monitor shipments must be established. The procedures will set forth the step by step flow of actions, from receipt of the request for shipment until the item is shipped (e.g., posting of item storage location, picking stock, notations required on the MRO, movement of stock to shipping, inspections, packing, notifying the shipper).

(2) Determine Packing and Crating Requirements: Materiel must be packed, marked, and documented to make items capable of being transported without damage and readily identifiable. Packing section personnel must select the appropriate level of pack depending on the expected rigors of movement, handling, and weather and

assemble packages into exterior shipping containers; their objective must be to provide the degree of protection necessary to ensure that the items arrive in a serviceable condition and at the same time to save resources by using shipping containers of a minimum weight and cube consistent with the anticipated shipping hazards. The packing section should also try to establish uniformity in packing like items and marking the crates for identification; it will assist the recipients if items consistently arrive packed and marked in the same manner.

c. Documentation: In normal circumstances, many shipments will be handled daily. The systematic use of shipping documents enables the supply activity to maintain effective control over the shipping process from beginning to end. In some cases, shipments will require special documentation because they are dangerous, fragile, or for other reasons.

(1) Prepare Shipping Documents: The storage section will send to the shipping section copies of the MRO, or Disposal Release Order (DRO), and a shipping document with the items to be shipped. The shipping document normally has an original plus five carbon copies and a format similar to the example depicted at Figure II-23. Usually, the packer will place two carbon copies of the shipping document (copies 2 and 3) inside the pack containing the items. After packing the items, the packer should enter the following on the shipping document: His last name and the date (normally the Julian date); the type of container; the number of containers; total shipment weight; and total shipment cube. Another copy of

| | | | | | |
|--|---------------------------|--------------------|-------------------------------------|-----------------------|--------------------|
| Shipped From: | | Ship To: | | Project: | |
| Type Document | Stock Number | Unit of Issue | Quantity | Document Number | Priority |
| | | | | Requisitioner | Date |
| | | | | Serial | Date |
| Warehouse Location | Type of Cargo | Unit Pack | Unit Weight | Freight Rate | Document Date |
| | | | | | Avail |
| Item Nomenclature | Item Originally Requested | | Freight Classification Nomenclature | | |
| | (if substitute) | | | | |
| Selected By and Date | | Packed By and Date | | Received By & Date | |
| | | | | Inspected By and Date | |
| Type of Container | Number of Containers | Total Weight | Total Cube | Warehoused By & Date | Warehouse Location |
| | | | | | |
| First Destination Address | Date Shipped | | Receiver's Document Number | | |
| | | | Remarks | | |
| B/Lading, Airway Bill, or Receiver's Signature, and Date | | | | | |

FIGURE II-23. SHIPPING/RECEIVING DOCUMENT

the shipping document (copy 4) will be placed into an envelope and fixed to the outside of the container in which the items were packed; the original of the shipping document, with copies 5 and 6, will be given to the shipping clerk. The shipping clerk will enter the date shipped onto the shipping document (when the materiel leaves control of the storage activity), and will either enter the bill of lading (or airway bill) number, or require the receiver to sign the document.

(2) Prepare Hazardous Cargo Shipping Documents: Some items are, by their nature, dangerous to store, handle, and transport. Common examples of such items are ammunition; explosives; corrosive toxic or explosive chemicals; flammable substances; and compressed gases. The shipping document must reflect the fact that the shipment is hazardous and a manifest of cargo must accompany the shipment. Hazardous materiel should be signed for by a receiving official and the signed document should be returned to and retained by the shipping activity. Hazardous cargo must be clearly marked and the carrier vehicle also must be clearly marked. (The shipper must also consider cargo compatibility, i.e., that some hazardous items must be kept separate from certain other--often innocuous--materials. Failure to observe this precaution can create a dangerous situation.) Civil law concerning the shipment of hazardous materials--such things as special routing and reports required--must be obeyed.

(3) Prepare Special Handling Documents: Shipments can require special handling for a variety of reasons; these include items that are dangerous to handle, items that are classified or are otherwise sensitive (such as small arms) and items that could

be easily damaged. Special handling requirements will be individually developed for each item requiring them and will be distributed to all storage and transportation activities. The special handling requirements will vary greatly depending on the reason for the requirement. Some items will require special cargo manifests, others will require special packaging and packing. Items requiring special handling should be identified on the shipping document as a minimum, and the materiel itself should be prominently marked also.

(4) Turn Shipping Documents Over to Transportation Personnel: The final step in the processing of documentation is for the shipping clerk to turn the shipping documents over to the representative of the transportation activity moving the items. When the items are picked up, the representative will sign for them on the shipping receipt and date the document. When the items are sent commercially, if a signature is not practicable, the shipping clerk will annotate the shipping document with the identification number from the bill of lading or use any other identification number available and date the document.

(5) Shipment Confirmation: The shipping clerk will confirm the shipment by separating the next to last copy of the shipping document (copy 5) and mailing it to the unit to which the shipment is addressed. The original of the shipping document (copy 1) is sent to the stock control section.

d. Movement: The shipping section will arrange for either organic transportation or for transportation support.

(1) Administration: When organic transportation is used, the shipping clerk will not prepare transportation documents. Rather, the clerk will separate the last copy of the shipping document (copy 6) and give it to the driver to be used as a cargo manifest. When transportation support is used, the shipping clerk will prepare transportation documents per instructions which the transportation officer will provide; the last copy of the shipping document (copy 6) will be separated and used as the transportation officer instructs. After releasing the shipment to the carrier, the shipping clerk will complete the shipping document by entering on copies 1 and 5 the date shipped and the transportation control number--or the bill of lading number, airway bill number, mail number, aircraft tail number, truck bumper number, or any other shipment number specifying who moved the materiel.

(2) Load the Item for Shipment: A final act of the SSA is to load the items to be moved onto the transportation means. A last check must be made to ensure that the shipment is complete. Any loss or theft will be reported to the stock records officer; if a shortage of weapons or ammunition is discovered, report that to the Provost Marshal also. If special loading requirements exist, make sure they are known and adhered to.

7. Recovery (Figure II-24): Secondary items, once issued, are no longer under supply control but often secondary items will be returned from a unit to an SSA. Recovery is the act of returning the item still in a useful state to the supply system. Generally, there are two routes by which an item will be recovered.

SUPPLY CONTROL

RECOVERY

EVACUATION OF REPARABLE ITEMS

RECOVERY OF SERVICEABLE ITEMS

| | Level of Involvement | | |
|---|----------------------|---------------|------|
| | National | Inter-mediate | Unit |
| IDENTIFY RECOVERABLE ITEMS | X | X | X |
| IDENTIFY CONSIGNEE | X | | |
| DETERMINE SPECIAL HANDLING REQUIREMENTS | X | X | X |
| ESTABLISH CRITERIA AND PRIORITIES | X | X | |
| PREPARE MRO | X | X | X |

FIGURE II-24

a. Evacuation of Repairable Items: Repairable items are unserviceable equipment pieces which are deemed worth repairing. (Sometimes it is cheaper to buy a new item than to fix the old one. Or if no new one can be had, the old one may be fixed regardless of cost, if it is needed.) Normally, unserviceable secondary items will be discarded. However, on occasion an item will be deemed critical--because of the cost or difficulty of acquisition, or because of the importance of the item to an organization's mission--and such items will be considered for recovery. To evacuate recoverable items:

(1) Identify Recoverable Items: These items will be identified by the materiel management activity and all SSA and using units will be notified. Additionally, if the item is identified for intensive management--because of criticality--that too must be made known. Finally, DX items to be recovered should also be identified.

(2) Identify Consignee: Depending on what the item is and what its condition is, the item manager will decide where the recovered piece should be sent. If it is economically repairable, it will go to a depot or intermediate level maintenance activity to be repaired and returned to the supply system. If not, the item will be sent to property disposal.

(3) Determine Special Handling Requirements: The receiving SSA must determine if any special handling instructions have been established for the recoverable item. If so, the required controls and procedures will be followed in processing the item.

(4) Establish Criteria and Priorities: It may happen that several recoverable items will be received for processing simultaneously. In such a case, critical, intensively managed items should be handled first. Following that, if the materiel management activity does not establish a priority for processing recoverables, the SSA commander must do so.

(5) Prepare MRO: When the recoverable item is identified, the special handling requirements and destination are known, and the order of processing is established, the stock control office will prepare MROs for the items.

b. Recovery of Serviceable Items: Serviceable items will also be recovered periodically. This can result from the turn-in of excess equipment; deactivation of units; changes in authorization documents (which result in the turn-in of equipment); items recovered from cannibalization points; and maintenance program returns to mention some common examples. The receiving SSA must request disposition instructions from the materiel management activity for items received directly from user units. Serviceable items may be transferred to another SSA, or they may be retained by the receiving SSA; that decision will be made by the item manager.

H. Stock Control

1. Stock Accounting (Figure II-25): The basic stock accounting tool is the stock record accounting system; it has three basic parts. They are stock records, demand data, and selective stockage. The stock record is used to account for stock and to collect demand data; it is the core of the stock control system. The key to an effective stock accounting operation is an accurately posted and efficiently kept stock record. The demand data posted to the stock record provides the means of computing the demand rates accurately, and the demand rate is the primary factor to which military supply support is sensitive. Selective stockage determines what to stock, how much to stock, and where to stock.

a. Stock Records Accounts: All items enter the Army inventory through a stock record account (SRA), and a stock record is kept for every item held by a supply support activity.

(1) Purpose of a Stock Record Account: The SRA is a holding account for stocks in the pipeline; items being stored for issue are recorded in an SRA. All items must be returned to an SRA before disposal from the Army inventory. The SRA is used by any organization with a supply support mission and customer units; it is the supply support activity's accounting record. The stock records officer will keep the SRAs on prescribed forms to perform three major functions of supply. These are:

(a) Make Inventory Decisions: The SRA is used to make decisions that control the inventory. The data in the account are the basis for the inventory control functions (i.e., determination

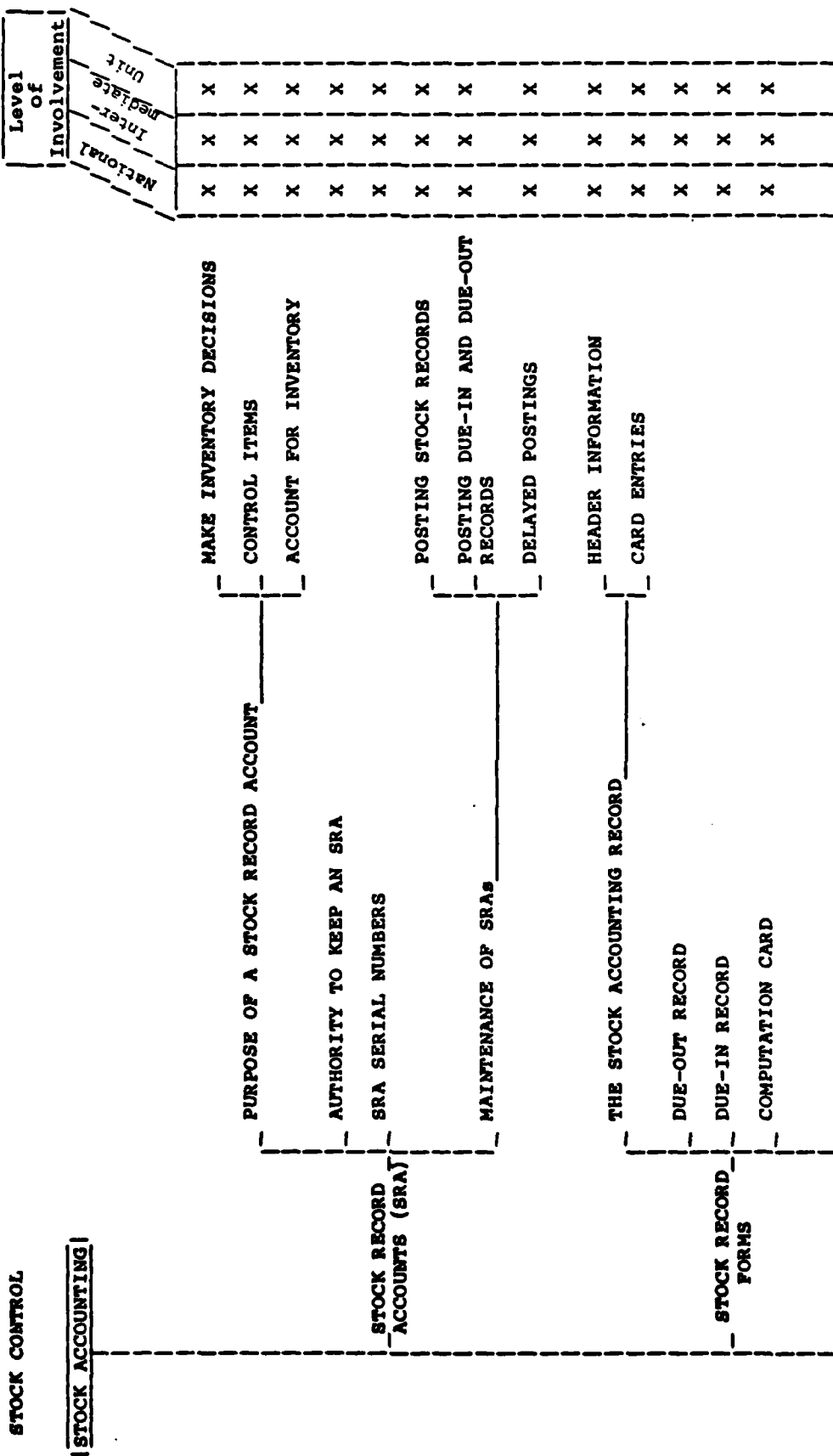


FIGURE II-25

CONTINUATION CONTINUATION

| | | | | | | | |
|--|--|--|--|--|---|---|---|
| REGISTER OF VOUCHERS TO A STOCK RECORD ACCOUNT | | | | | X | X | X |
| USING THE REGISTER FORM | | | | | | | X |
| TYPES OF VOUCHERS | | | | | X | X | X |
| CANCELLED OR REJECTED VOUCHERS | | | | | X | | |
| INCOMPLETE VOUCHERS | | | | | X | X | X |
| MISSING OR LOST VOUCHERS | | | | | X | X | X |
| VOUCHER NUMBERING | | | | | X | X | X |
| DEMAND SUPPORTED ITEMS | | | | | X | X | |
| PROJECTED NEED ITEMS | | | | | X | X | |
| TYPES OF ASLS | | | | | X | X | |
| ASL DEVELOPED BY COMPARISON | | | | | X | X | |
| ASL DEVELOPED BY COMPUTATION | | | | | X | X | |

THE AUTHORIZED STOCKAGE LIST (ASL)

SELECTIVE STOCKAGE

NEWLY ACTIVATED ASLs

of need, acquisition, and disposal) and decisions on when to repair stock.

(b) Control Items: The vouchers posted to the account are the basis for the supply control functions of receiving, issuing, recovering, shipping, and storing.

(c) Account for Inventory: The SRA is the accountable record. The records and files of the account are the basis for the stock control functions of stock accounting and asset reporting.

(2) Authority to Keep an SRA: The document authorizing and organizing a military organization will also authorize an SRA as part of the mission; this must be a specific statement in the authorization document mission statement.

(3) SRA Serial Numbers: Each authorized SRA should be assigned a serial number to provide a means of identification and to prevent the establishment of unauthorized SRAs. The serial number must be assigned by a single and central activity. If the supply system is Army wide only, the Army-level materiel management activity should be responsible for assigning the serial numbers; if the supply system encompasses the navy and air force also, serial numbers should be assigned by one single agency for all of the services. The SSA commander will request a serial number when a new account is established, and he or the stock records officer (SRO) must request cancellation of the serial number when the account is closed. Depending on the size of the force supported, the serial number should be a series of numerals, or letters and numerals, and large enough to be unique; it is usually from four to six digits in length.

(4) Maintenance of SRAs: Always keep stock records up to date; make current and accurate postings so that the records always show the true balance of stock. Transactions showing gains or losses will be posted to the records within one working day after receipt in the stock control office. (Records which are not kept up to date are misleading when used for managerial purposes.) Pre-posting and post-posting are equally acceptable. The commander should select the posting system that allows stock records to be current and accurate using the least number of personnel. Follow these rules for all postings:

(a) Posting Stock Records: Make all postings in permanent ink. Post receipts from any document on which the receiving section in-checker has acknowledged receipt of the supplies--e.g., release document, shipping document, turn-in document, materiel inspection and receiving report, packing list. Post an issue as a loss to the stock accounting record.

(b) Posting Due-in and Due-out Records: Post requisition or acquisition actions as due-in pending receipt. If valid requisitions exist for items at a zero balance, post due-out records for the amount requested. (One item can be due in and due out simultaneously.) On receipt of due-in supplies, post the gain to the SRA and make a clearing entry on the due-in record; check the due-out record to see if stock is due out. If so, issue the stock by the highest priority designator, oldest date first, and post the issue as a loss to the SRA.

(c) Delayed Postings: If for any reason posting has been delayed, and several postings to a stock record are necessary, make them in the following sequence:

1. Inventory adjustments. First post losses, then post gains.
2. Receipts due-in from supply sources.
3. Receipts not due-in from supply sources and customer turn-ins.
4. Cancellation of dues-in from supply sources.
5. Cancellation of unit requisitions which are due out to the unit.
6. Release denials; first MRDs, then disposal release denials.
7. Customer high priority requisitions, including dues-out.
8. Customer dues-out.
9. Customer low priority requisitions.
10. Shipments to other SSA and the PDO.

b. Stock Record Forms: A stock record set for a single item consists of one or more of the following forms:

(1) The Stock Accounting Record: This form is the accounting ledger, commonly called the stock record card. It is used to record all transactions for a single item. The sample form depicted at Figure II-26, has two identical parts set side by side; entries for serviceable stock normally are started at the top of the left half. When the left half of the record is filled, entries are continued on the right half of the card. To account for suspended and unserviceable stock, one can either use a single record and

| | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------|------|----------------|------|---------------------|------|-------------|------|------------------|------|---------------|------|---------------|------|---------|------|-----------|------|------------|------|-----------|------|----------|------|-----------|--|
| ZERO | | DUE IN | | I & S DATA: | | RECOVERABLE | | STOCK NUMBER: | | UNIT OF ISSUE | | MAINT LEVEL | | DUE OUT | | EX-CESS | | | | | | | | | |
| SHELF LIFE ITEM: | | | | SECURITY/PILFERAGE: | | | | REPORTABLE ITEM: | | | | NOMENCLATURE: | | | | | | | | | | | | | |
| REMARKS: | | | | | | | | | | | | | | | | | | | | | | | | | |
| STOCK NUMBER: | | | | | | CONDITION: | | | | | | STOCK NUMBER: | | | | | | CONDITION: | | | | | | | |
| DATE | | VOUCHER NUMBER | | DEMAND | | BAL-ANCE | | LOSS | | GAIN | | BAL-ANCE | | RECUR | | NON-RECUR | | GAIN | | LOSS | | BAL-ANCE | | | |
| UNIT ID | DATE | SERIAL | DATE | SERIAL | DATE | UNIT ID | DATE | SERIAL | DATE | SERIAL | DATE | UNIT ID | DATE | SERIAL | DATE | UNIT ID | DATE | SERIAL | DATE | SERIAL | DATE | UNIT ID | DATE | SERIAL | |
| BALANCE BROUGHT FORWARD | | | | | | | | | | | | | | | | | | | | | | | | | |
| BALANCE CARRIED FORWARD | | | | | | | | | | | | | | | | | | | | | | | | | |
| SUMMARY OF DEMANDS | | | | | | | | | | | | | | | | | | | | | | | | | |
| MONTH | | RECUR | | NON-RECUR | | RECUR | | NON-RECUR | | RECUR | | NON-RECUR | | RECUR | | NON-RECUR | | RECUR | | NON-RECUR | | RECUR | | NON-RECUR | |
| STOCK ACCOUNTING RECORD | | | | | | | | | | | | | | | | | | | | | | | | | |
| STOCK ACCOUNTING RECORD | | | | | | | | | | | | | | | | | | | | | | | | | |

FIGURE II-26

identify one half as "suspended" and the other half as "unserviceable," or cut the record in half and use a part for each supply condition. Keep all forms for a single stock number in the same location. (If a visible file is used, keep all the forms for a single stock number in the same pocket.) Entries would be made on the form as follows:

(a) Header Information: The heading for the stock record card records identification and supply management data for a single item. (Note: If a visible file system is used, this information can be kept on a separate "Title Insert" rather than on the SRA card as depicted here.) The header information and data displayed are:

1. Mandatory Data Elements: These data, if available, are required; when possible, complete each block in the header for the following:

a. Interchangeability and Substitutability (I&S) Date: This block lists interchangeable or authorized substitute items that are stocked by the SSA. If I&S items do not exist, or exist but are not stocked, leave this space blank.

b. Stock Number: Enter the stock number; if no stock number has been assigned, enter the manufacturer's part number, the management control number, or any other identifying number available.

c. Unit of Issue: This is an important element of information. The most common unit of issue (UI) will be "each"--or one-- however, some items may be issued in units other than one each. For instance, paper clips may be issued in cartons of 100 and

pencils in boxes of twelve. (Therefore, when ordering these pencils, a requested quantity of two would bring two boxes of twelve each for a total of 24 pencils.) Supplies like lumber may be issued by the linear foot (or meter). The unit of issue must be known and used by the requisitioner and the supplier.

d. Recoverability Code: Once secondary items are issued, visibility becomes lost. That is, when the SSA issues an item like a carburetor, the material is dropped from the stock record card; the receiving unit will install the article on a vehicle but will not pick it up on a property book. Some secondary items may be of a nature that the item manager wants to closely monitor and manage the equipment in use. This may be because the item is very expensive, or difficult to replace, or any of several other reasons. Such items should be identified and the stock record card "flagged" for easy identification. These items are to be "recovered" by the supply system when removed from use in the unit. (Subsequent action can be repair, overhaul, cannibalization, or perhaps recovery of precious metals. Recovered items can represent a significant portion of the replenishment items in the supply system.)

e. Nomenclature: Enter the item name.

f. Maintenance Level Code: Enter the lowest level--i.e., depot (D), intermediate (I), or unit (U) maintenance authorized to remove, replace, and use the item.

2. Optional Data Elements: Enter these data as needed or directed by the stock record officer:

a. Shelf Lift Item: If the item has a shelf life, identify it here; and if a specific shelf life period is specified, it will be entered in this block.

b. Security/Pilferage Code: If the item is classified, sensitive (e.g., as arms, ammunition, explosives, or items otherwise requiring physical security), or pilferable, identify it in this block.

c. Reportable Item Code: If the item is identified by the materiel management activity for intense management control, identify it in this block.

d. Remarks: For use as required.

3. Conditions to be "Flagged": A "flag" is a colored file signal which is designed to get the attention of the stock records clerk and enable him to rapidly and easily identify conditions meriting close management. There are three circumstances deserving a flag:

a. Recoverable Item: This element has already been listed as a mandatory entry. When an item is identified as recoverable, in addition to an entry on the stock record card, a flag should be employed. The color blue or green can be used for this flag; it should be placed on the Recoverable Item block.

b. Zero Balance: When the stock record card balance column shows a zero or a negative balance, place an orange colored flag on the stock record card over the zero block.

c. Excess Items: When the stock record card shows a balance greater than the authorized retention level, place a red colored flag on the Excess block of the stock record card.

NOTE: The suggested colors for the flags have no particular significance and can be altered in any way desired. They should be easily distinguished one from the other.

(b) Card Entries: The body of the card will contain the following:

1. Stock Number Block: This block will be used if the card is divided and removed from the header information (to record suspended and unserviceable item balances).

2. Supply Condition Block: Enter item condition as "Serviceable, Unserviceable, or Suspended."

3. Date Column: Enter the Julian date of each posting.

4. Balance Brought Forward: Enter the date and balance found in the "Balance Carried Forward" entry on the previous card.

5. Unit Identification, Date, and Serial Columns: Enter the document number from the customer's request.

6. Demand Column: The total quantity requested is posted as a demand when the request is first processed, regardless of the supply action taken. Demands that are satisfied by substitution, or interchange, are posted to the requested stock number, not the issued stock number. When a request for the cancellation of a previously recorded demand is processed, post it as a negative value.

a. Recur Column: Most requests are recurring; post the total quantity requested or cancelled in this column when the action is recurring.

b. Nonrecur Column: Post the total quantity requested or cancelled when the action is nonrecurring.

7. Gain Column: Post receipts, turn-ins, adjustments, and any other transactions that increase the balance as a gain.

8. Loss Column: Post issues, shipments, adjustments, and any other transactions that decrease the balance as a loss.

9. Balance Column: Enter the balance of stock after the previous balance has been increased or decreased by the posting.

10. Balance Carried Forward: Enter the date and balance to be entered in the Balance Brought Forward entry on the next form.

11. Summary of Demands Section: This section provides a means to summarize demand data by month so that it can be used to compute requisitioning objectives (RO). Post this section in pencil just before making each RO computation.

a. Month Line: Enter the month.

b. Recur Line: Count the number of times during the month that a demand was posted in the Recur column. Enter this count in the upper half of the block. Add the total quantity requested by each of these recurring demands; subtract cancellations. Enter the result in the lower half of the block.

c. Nonrecur Line: Count the number of times during the month that a demand was posted in the Nonrecur column. Enter this count in the upper half of the block. Add the total quantity requested by each of these nonrecurring demands; subtract cancellations. Enter the result in the lower half of the block.

(2) Due-Out Record: This form is the stockage list back-order record. It records demands on the stockage list that have not been totally satisfied. Data entered on the due-out record are extracted from the stock record card. A sample due-out record is at Figure II-27. Entries on the form are made as follows:

(a) Stock Number Block: Enter the stock number, manufacturer's part number, management control number, or any other identifying number available.

(b) Date Column: Enter the Julian date of each posting.

(c) Priority Block: Enter the priority designator found on the customer's request.

(d) Unit Identification, Date, and Serial Columns: Enter the customer unit document number.

(e) Quantity Column: Enter the initial due-out quantity.

(f) Issued/Balance Columns: Enter the quantity issued in the upper half of the block. Subtract this quantity from the previous balance due-out quantity. Enter the result in the lower half of the block as the balance due-out quantity. Three columns are provided to take care of partial issues; when more than three partial issues must be made to totally satisfy the demand, repeat the due-out posting process for the balance still due out.

(3) Due-In Record: This form records stockage list acquisition actions that have not been totally received. Enter the data from the stock record card. A sample due-in record is shown at Figure II-28. Detailed entries are made on the due-in record as follows:

STOCK NUMBER: _____

| DATE | PRIOR- ITY | UNIT ID | DATE | SERIAL | QUAN- TITY | ISSUE BAL | ISSUE BAL | ISSUE BAL |
|------|---------------|---------|------|--------|---------------|--------------|--------------|--------------|
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DUE - OUT RECORD

FIGURE II-27

STOCK NUMBER: _____

| DATE | UNIT ID | DATE | SERIAL | QUAN- TITY | REC BAL | REC BAL | REC BAL | REC BAL |
|------|---------|------|--------|---------------|------------|------------|------------|------------|
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DUE - IN RECORD

FIGURE II-28

(a) Stock Number Block: Enter the stock number, manufacturer's part number, management control number, or any other identifying number available.

(b) Date Column: Enter the Julian date of each posting.

(c) Unit Identification, Date, and Serial Columns: Enter the customer unit document number.

(d) Quantity Column: Enter the initial due-in quantity.

(e) Received/Balance Column: Enter the quantity received in the upper half of the block. Subtract this quantity from the previous balance due-in quantity. Enter the result in the lower half of the block as the new balance due-in quantity. As with the due-out record, three columns are provided for partial receipts; procedures to record more than three partial receipts to satisfy the initial due-in quantity are the same as those described for the due-out record.

(4) Computation Card: This form provides a guide for computing the requisitioning objective (RO), the reorder point (ROP), and the new asset position for each item. It also serves as a record of the computations. The basic data used on this card are extracted from the stock record card, the due-out card, and the due-in card. A sample computation card is at Figure II-29. Entries are made on the card as follows:

(a) Stock Number Block: Enter the number recorded in the stock number block on the stock record card.

(b) OLD: Operating Level Days are the number of days of supplies which the SSA will stock. The operating level will vary

| | | | |
|---|--|-----|--|
| STOCK NUMBER: | | SLD | |
| ROQ/ROPQ COMPUTATION: Formula on backside of form | | | |
| MONTH AND YEAR OF COMPUTATION | | | |
| QUANTITY DEMANDED IN CONTROL PERIOD | | | |
| OSTD | | | |
| ROQ | | | |
| ROPQ | | | |
| NET ASSETS: Compute each time ROQ and ROPQ are calculated. Net assets = on hand stocks, plus dues-in, minus dues-out. | | | |
| ON HAND | | | |
| + DUE-IN | | | |
| - DUE-OUT | | | |
| = NET ASSETS | | | |
| OVER | | | |
| SHORT | | | |
| ACTION TAKEN: List voucher date and serial number if acquisition of turn-in is undertaken. Record partial receipts or shipments if appropriate. | | | |
| REQUISITION NUMBER OR EXCESS CONTROL NR. | | | |
| DATE | | | |
| QUANTITY | | | |
| BALANCE | | | |
| DATE | | | |
| QUANTITY | | | |
| BALANCE | | | |
| DATE | | | |
| QUANTITY | | | |
| BALANCE | | | |
| DATE | | | |
| QUANTITY | | | |
| BALANCE | | | |
| PARTIAL RECEIPTS | | | |
| THIRD SHIPMENT | | | |
| SECOND SHIPMENT | | | |
| FIRST SHIPMENT | | | |

COMPUTATION CARD

FRONT SIDE

ACRONYMS:

- OLD = Operating Level Days
- OSTD = Order Ship Time Days
- QDCP = Quantity Demanded in the Control Period
- ROPQ = Reorder Point Quantity
- ROQ = Requisitioning Objective Quantity
- SLD = Safety Level Days

TO COMPUTE ROQ:

$$\left(\frac{\text{OLD} + \text{SLD} + \text{OSTD}}{360} \right) \times \text{QDCP} = \text{ROQ}$$

TO COMPUTE ROPQ:

$$\left(\frac{\text{SLD} + \text{OSTD}}{\text{OLD} + \text{SLD} + \text{OSTD}} \right) \times \text{ROQ} = \text{ROPQ}$$

REVERSE SIDE

FIGURE II-29

at the different levels of supply support. The materiel management activity usually will direct operating levels for the SSAs.

(c) SLD: Safety Level Days are the number of days of supplies which the SSA will stock to provide a buffer in the event the demand rate increases unusually, or order-ship-time increases unexpectedly. Safety levels also vary with the supply echelon and are directed by the materiel management activity.

(d) Month and Year of Computation Block: Enter the month and year the computation is being made.

(e) Quantity Demanded in Control Period Block: The control period will normally be one year, but depending on the volume of transactions, it can vary. Extract this figure from the Summary of Demands section on the stock control card. To do this, just before the Requisitioning Objective (RO) computation is made, summarize all demands posted to the stock record card in the Summary of Demands section. Compute the quantity demanded during the control period by adding the entries in the bottom half of the Recur line for the most recent 12 whole months. Enter this sum in the Quantity Demanded in Control Period block.

(f) Compute the Requisitioning Objective Quantity (ROQ): The requisitioning objective quantity is the maximum quantity of an item that may be on hand and on order at any one time. The ROQ for demand supported items are computed using recurring demands; these ROQs are variable. (A "fixed ROQ" can be established. It does not vary depending on demands. Since most demand supported items do have busy and quiet periods, the variable ROQ usually

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CONCEPT FOR A SIMPLE SUPPLY SYSTEM FOR SECURITY
ASSISTANCE CUSTOMERS(U) LOGISTICS STUDIES OFFICE (ARMY)
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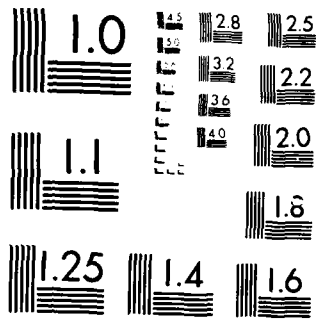
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END

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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A

is more appropriate.) The ROQ consists of an operating level, a safety level, and an order ship time level. (The ROQ may also include a repair cycle level if the item is locally repaired and returned to stock.) To compute ROQ:

1. Determine the Operating Level: The operating level is the quantity of stock needed to sustain operations in the interval between receipt of a replenishment shipment and submission of another replenishment requisition. It is measured in Days of Supply (DOS); that is, the number of items required in stock to let the SSA honor expected requisitions for a specified number of days. The operating level can vary as conditions dictate; but as a rule of thumb, 15 days of supply is an acceptable operating level for an intermediate SSA (with its requirement for mobility), and 30 days of supply is acceptable at the depot. The operating level is directed and is posted in the "OLD" block of the computation card.

2. The Order Ship Time Days (OSTD): This is the quantity of stock needed to sustain operations between the time a replenishment operation is submitted and the resulting materiel receipt is posted to the account. To develop OSTD, use the six most recent replenishment receipts for an item and compute the average OST. To do this, subtract the requisition document date from the date the receipt is posted for each of the six receipts. Add the results together and divide by six; round up any fraction to the next higher whole number. Enter the result in the OSTD column.

3. The Safety Level Days (SLD): This is the quantity of stock on hand to sustain operations in the event the demand rate

changes unusually or the OST becomes longer than expected. It is a safety factor intended to be used while replenishment requisitions are still due in. An acceptable SL for intermediate SSAs is five days. The depot SL will normally be greater; for a reliable supply source, 15 days of supply is an acceptable safety level. The safety level is directed and is posted in the "SLD" block of the computation card.

4. The Requisitioning Objective Formula: To compute the Requisitioning Objective Quantity (ROQ), the following listed values are used in the formula depicted:

a. Values and Formula:

OLD = Operating Level Days
 OSTD = Order Ship Time Days
 QDCP = Quantity Demanded in the Control Period
 ROQ = Requisitioning Objective Quantity
 SLD = Safety Level Days

$$\frac{(OLD + SLD + OSTD)}{360} \times QDCP = ROQ$$

b. Example: If the quantity demanded in the last twelve whole months equals 200 items, and the order ship time averaged 25 days for the last six replenishment actions, compute the ROQ for an operating level of 15 days and a safety level of five days as follows:

OLD = 15
 OSTD = 25
 QDCP = 200
 SLD = 5

$$\frac{(15 + 5 + 25)}{360} \times 200 = ROQ$$

$$\frac{45}{360} \times 200 = ROQ$$

$$0.125 \times 200 = ROQ$$

$$25 = ROQ$$

(Note: The ROQ computation will usually result in a decimal. When this occurs, round to the nearest whole number--i.e., from .01 to .49 round down, and from .50 to .99 round up. In the preceding example, if the QDCP had been 225, then the ROQ would equal 28.125 (0.125 X 225) and would be rounded down to 28; a QDCP of 215 would produce a result of 26.875 which would be rounded up to an ROQ of 27.)

(e) Compute the Reorder Point Quantity (ROPQ): To compute the reorder point quantity (ROPQ), use the following listed formula; the values used are the same as those in the formula to compute ROQ:

1. Formula:

$$\left(\frac{\text{SLD} + \text{OSTD}}{\text{OLD} + \text{SLD} + \text{OSTD}} \right) \times \text{ROQ} = \text{ROPQ}$$

2. Example: Using the same numerical values established for the preceding ROQ example (i.e., OLD = 15, OSTD = 25, QDCP = 200, SLD = 5, and ROQ = 25), ROPQ will equal:

$$\left(\frac{5 + 25}{15 + 5 + 25} \right) \times 25 = \text{ROPQ}$$

$$\left(\frac{30}{45} \right) \times 25 = \text{ROPQ}$$

$$0.66 \times 25 = \text{ROPQ}$$

$$16.66 = \text{ROPQ} \text{ (round up, therefore)}$$

$$17 = \text{ROPQ}$$

(f) ROQ and ROPQ Blocks: Enter the ROQ value calculated in the ROQ block and the computed ROPQ value in the ROPQ block.

(g) Net Asset Computation: The net asset computation tells the SSA when to acquire stock and when to review for excess. When net assets (on-hand, plus due-in, minus due-out) become equal to or less than the ROQ; action must be taken to replenish stocks. When the net assets become greater than the ROQ, a review should be undertaken to decide whether the excess should be turned in. Do a net asset computation immediately after each RO computation. Do the computation as follows:

1. On Hand Block: Enter the balance of stock on hand shown in the Balance column of the stock record card.

2. Due-In Block: Enter the quantity due in; compute this by adding the balance due in shown on each line of the Due-In Record. Enter the result in the due-in block.

3. Due-Out Block: Enter the quantity due out. Compute the quantity due out by adding the balance due out shown on each line of the Due-Out Record; enter the result in the due-out block.

4. Net Assets Block: Compute the net assets. Add the figures in the On-Hand and the Due-In blocks; subtract from the total the figure in the Due-Out block. Enter the result in the Net Asset block.

5. Compute Overage or Shortage: If net assets are greater than the ROQ, there is an overage. Enter the difference between net assets and the ROQ in the "Over" block. If the net assets are smaller than the ROQ, there is a shortage. Enter the difference in the "Short" block. (Note: If the Over block is used, the Short block will be left blank and vice versa.)

(h) Action Taken: If a shortage or overage exist, a further step is undertaken:

1. Shortage: If a shortage is indicated, compare the net asset quantity with the ROPQ; if the net asset quantity is equal to or less than the ROPQ, start a replenishment action. Enter the voucher number (document date and serial number only) assigned to the acquisition action in the Requisition Number or Excess Control Number block.

2. Overage: If excess stocks are indicated, the stock records officer must decide whether the items should be turned in. If action is taken, enter the voucher number (document date and serial number only) assigned to the Report of Excess in the Requisition Number or Excess Control Number block.

3. Partial Receipts/Shipment Block: Entries are provided to take care of three partial receipts or shipments. Enter the receipt or shipment date and quantity and the balance due in or due out in the proper block.

(5) Register of Vouchers to a Stock Record Account: A single voucher register is kept by each stock record account for a calendar or fiscal year. This register is the document recording all vouchers initiated by the stock record account. (Vouchers that result from a customer's request for issue or turn-in are not recorded in the voucher register; such vouchers will have a customer unit document number. This number is used to process, post, and file these vouchers in the stock record account; it becomes the voucher number.) The voucher register is normally kept by the editing section. A sample voucher register is at Figure II-30.

| UNIT ID | | PAGE NUMBER | SUPPLY SUP ACTV | | REGISTER OF VOUCHERS TO A STOCK RECORD ACCOUNT | | |
|---------|--------|-------------|------------------|---------|---|-----------|---------|
| Date | Serial | Priority | Date Complete | To/From | Stock Number | Item Noun | Remarks |
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FIGURE II-30

(a) Using the Register Form: Record each voucher immediately after initiation so that the register is current. Entries should be made in unerasable ink; they should be made on the form as follows:

1. Unit Identification Block: Use the unit identification serial number assigned to the stock record account.

2. Page Number Block: Number each page consecutively starting with 1 each year.

3. Supply Support Activity Block: Enter the official designation of the SSA keeping the voucher register.

4. Date Column: Enter the 4-position Julian date.

5. Serial Column: Enter the voucher serial number. Start with _001 each day.

6. Priority Column: Enter the priority for requisitions only.

7. Date Completed Column: Enter the date that the voucher was placed in the completed voucher file.

8. To/From Column: Enter the unit identification number of the activity where the voucher was sent or from which the voucher was received (if a credit or debit voucher). Leave blank if it is an adjustment voucher.

9. Stock Number Column: Enter the stock number of the first item appearing on the voucher (to identify the document in future reviews).

10. Item Name Column: Enter the item name of the first item appearing on the voucher.

11. Remarks Column: Enter any further identification of the document being registered.

(b) Types of Vouchers: The voucher is the evidence of a transaction in a stock record account. Documents processed as adjustments, issues, shipments, turn-ins or receipts--whether posted to the stock accounting record or not--are vouchers. There are four types.

1. Adjustment Voucher: This voucher is used to bring the recorded condition or quantity into agreement with the actual condition or quantity. Adjustment vouchers must be posted to the stock accounting record.

2. Credit Voucher: This voucher lists items deducted from the account. Credit vouchers decrease assets and are posted as losses. Issues and shipments are credit vouchers. Credit vouchers must be posted to the stock accounting record.

3. Debit Voucher: Items added to the account are listed on debit vouchers; they increase assets and are posted as gains. Receipts are debit vouchers. They too must be posted to the stock accounting record.

4. Wash Voucher: This voucher lists items simultaneously added to (debited) and deducted from (credited) the account. Non-stockage list transactions to and from a source of supply that are later issued to the requesting customer unit are wash transactions. Wash vouchers have no effect on assets. They are not posted to the stock accounting record.

(c) Cancelled or Rejected Vouchers: Vouchers that are cancelled or rejected for any reason should be prominently marked

"CANCELLED" or "REJECTED." The reason for cancellation or rejection should be noted on the voucher, and it should be signed by the stock record officer. If the voucher has been posted to the stock accounting record, the posting must be reversed. Make a second posting notation on the voucher and file it in the completed voucher file to support both notations.

(d) Incomplete Vouchers: Hold incomplete vouchers in the suspense file until completed. Vouchers may be incomplete because they have a wrong or missing signature, statement, or backup document. Take immediate action to complete these vouchers. Control vouchers to make sure that only completed vouchers are placed in the completed voucher file.

(e) Missing or Lost Vouchers: When a voucher is missing or lost, make a thorough search for it. If it is not found, a certificate should be put in the voucher file in place of the missing voucher. Reference this action in the Remarks column of the voucher register by the entry, "LOST." The certificate must include all data in the voucher register and any posting data. Also, statements will be made concerning the loss. Further, explain the actions taken to locate the voucher or a copy thereof. Support these by correspondence or other documents showing proof that all possible sources of the missing voucher were checked. The stock records officer will sign the certificate and then have it placed in the voucher file.

(f) Voucher Numbering: All vouchers recorded in an SRA must have a unique voucher number. Documents initiated by customer

units and sent to the account are vouchered under the customer unit document number. Documents initiated by the SRA are vouchered under the accounts voucher number.

1. Number Format: The voucher numbering system illustrated in this booklet is a multi-digit figure divided into three distinct segments:

a. Unit Identification Number: For ease of documenting long lists of units, unit identification numbers of four to six digits should be assigned to each individual organization. The number will be composed of numbers, letters, or combinations of numbers and letters (e.g., 1234, A739, 5739IN). The unit identification number will form the first, and unchanging, segment of the voucher number.

b. Date: The second segment of the voucher number will be the Julian date; it will change daily.

c. Serial Number: The final segment of the voucher number would be a 4-digit serial number of the document. It lists in numerical sequence each day's transactions. Start each day with 0001; never duplicate serial numbers on the same day.

2. Example: The First Battalion, First Infantry Regiment, is assigned the identification number A110A. On 1 December 1983 (Julian date 3335) it requisitions a battery; this is the fourth supply transaction of the day. The voucher number will be A110A-3335-0004. This numbering system enables any SSA to identify the unit which prepared the voucher and the date on which it was prepared.

3. Cancelled Vouchers: Vouchers cancelled for any reason are identified in the Remarks column of the voucher register. Cancelled voucher numbers are never reused.

c. Selective Stockage: Another basic element of the stock control system is selective stockage. This concept is based on the use of customer demands to keep the inventory closely matched to the customer's needs. It also, insofar as possible, balances the customer's needs with the SSA's capabilities. A basic principle of selective stockage is to "select and stock fast moving items forward and slower moving items to the rear."

(1) The Authorized Stockage List (ASL): This list must be flexible, but controlled. It contains the items which the intermediate level SSA needs to effectively support its customer units. Composition of the list is derived from two sources:

(a) Demand Supported Items: The ASL will contain those items that demand experience has shown to be sufficiently active to warrant stockage. Generally, six demands within one year provides the basis to add an item to the authorized stockage list. Thereafter, the item must register at least three demands each year to remain a part of the ASL. The ASL is the supply support activity's authority to stock the item. (Items not on the ASL are referred to as Non-stockage List (NSL) items. Demands for items not stocked are retained in the "NSL Demand File"; each month the file should be purged of requests over a year old. Each time an NSL demand is added the clerk should check to see if six demands for that item have been received within the last year.)

(b) Projected Need Items: Demand will not forecast all of an Army's requirements. Some items must be stocked, based on projected known needs, regardless of demand. These are items that will be needed:

1. For war.
2. For the repair of newly introduced items.
3. For items on which the OST is unacceptably long.
4. For emergencies or special operations.

(c) Types of ASLs: There will be at least two types of ASLs. These are:

(1) Customer Support ASLs: These are kept by SSAs in direct support of units or other SSA. They stock items to provide supply support to customer units. These ASL are primarily based on demand.

(2) Mission Support ASLs: These are kept by maintenance support organizations or other activities having a development, manufacturing, production, maintenance, testing, or other support type mission. The mission support ASLs are kept by an organization for internal mission support; they are not normally used for customer support. These ASLs stock the items needed to support the mission, regardless of demand.

(d) Newly Activated ASLs: The brand new customer support ASL will have no demand data on which it can create a stockage list. Any combination of the following methods can be used to develop the initial ASL:

(a) ASL Developed By Comparison: If a similar SSA is supporting like customer units, an initial ASL can be created by using demand data obtained for any class of supply, from the established SSA. Where a comparison is not possible, it may still be possible to develop an estimated demand rate based on the demand history of another item which resembles the new item in significant characteristics.

(b) ASL Developed By Computation: An initial ASL may be created for any class of supply, except repair parts, by using the units authorization documents and the supported troop density. By knowing what equipment is to be used, the number of troop units which will be using the item, and the failure rates of the equipment, the expected demand rate may be estimated. (As demand data are collected on the new item, the estimated demand rate will evolve into the actual demand rate. After six months of data are gathered, more reliance should be placed on the actual data than on the estimate.) An initial ASL for repair parts may be created by using equipment density lists and technical manuals. The techniques to use these data and compute estimated demand for a repair part are similar to those just discussed for the other classes of supply. That is, estimated demand can be calculated when the planner knows what equipment is to be supported, how many of the items are to be supported, and how often the part is expected to fail.

2. Asset Reporting (Figure II-31): The reporting of assets-- that is, the quantities recorded on stock record accounts and in property books--is an important tool in the management of supplies. Without periodic reports, item managers and supply managers at all levels can not effectively manage stocks. These reports will tell where items are, which units have excess and which are short items, and which items are in a condition other than that recorded by the manager. Reports however, although necessary for good management, are time consuming and often difficult to prepare. Only reports which are really needed should be asked for. A good way to limit reports is to centrally control their establishment; make anyone asking for a new one--other than a one-time report--to justify its need to the approving authority. (Typically, this would be the Army level logistician or a member of his staff).

Reports: The reports required, and the frequency of the reports, will vary from army to army. The following reports should be the minimum requirements. Depending on the volume of supply transactions the depots and SSAs normally experience, the reports should be submitted quarterly (for heavy volume of supply transactions) or semiannually (for light to normal volume of transactions):

(1) Asset Condition and Demand/Return History Report: Periodically, depots and SSA will report through supply channels, to the materiel management activity, the condition and current balance of all stocks held and the history of requisitions and returns over the last reporting period. Nonsupply units will

STOCK CONTROL

ASSET REPORTING

REPORTS

| | Level of Involvement | | |
|--|----------------------|---------------|------|
| | National | Inter-mediate | Unit |
| ASSET CONDITION AND DEMAND/ RETURN HISTORY REPORT | X | X | X |
| TRANSACTION REPORTING FOR SELECTED ITEMS | X | X | X |
| AUDIT TRAIL REPORTS | X | X | X |
| SHIPPING AND RECEIVING REPORTS | X | X | X |

FIGURE II-31

also be required to report periodically the condition and numbers of specified items assigned. These data are used for several different purposes at all supply levels. Intermediate level SSAs can identify units with shortages, overages, and unserviceable equipment. The item manager will use the reports to verify total asset balance and to control the item. Serial numbered items will be checked at all levels to be sure that equipment is where it is said to be. Demand and return historical data are used to arrive at net demand data for requirements computations.

(2) Transaction Reporting for Selected Items: Some items are deemed critical because of high cost, acquisition difficulties, scarcity, or combat importance. For such items, reporting each transaction is a valuable control measure. These reports will aid in the best allocation and stockage of critical materiel.

(3) Audit Trail Reports: Documentation is required for all materiel receipts, issues, shipments, adjustments, and disposal actions. Audit trail reports use such documentation and are valuable for tracking supplies, determining processing times, and similar transactions. This report should be submitted on specific request and is not recurring.

(4) Shipping and Receiving Reports: Visibility of supplies in transit is often lost to the supply manager. Bottlenecks will sometimes occur while supplies are in the pipeline, causing unwanted delays. The offending organization can be identified when all involved supply activities are required to provide a central control activity with reports of when shipments are received and when they

are shipped, by document number. These reports should be used when the need is indicated by shipping delays.

III. A SIMPLE SUPPLY SYSTEM

A. Supply Policies:

1. General: The supply function includes the determination of the kinds and quantity of supplies, and the acquisition, accountability, distribution, maintenance while in storage, and disposition of these supplies.

2. Item Management:

a. There should only be one national source of supply for each item used by the military services. When the army is the national source of supply, we suggest that it establish an inventory control point for each stocked item. For those items which are procured by another service or agency, the army should establish an item control center for each stocked item.

b. All levels of command must exercise supply discipline and conservation. Records will be maintained for each item of supply in such a way that composition of the inventory can be determined in terms of quantity, condition, and the purpose for which the supplies are held (e.g., peacetime operating stocks, mobilization stocks, excess stocks).

3. Requirements Determination and Acquisition:

a. Gross requirements determination for principal items of equipment and ammunition, including mobilization requirements, will be based on the current and planned force structures; i.e., the number and types of units in the force. Requirements determination will also consider equipment floats (if any) and any operational or strategic plans.

b. The computation for Gross requirements of secondary items which are components of end items will be based on the density of the end items to be supported and the average demand. Use troop strength and demand to compute gross requirements for secondary items which are for individuals. Secondary items include all materiel not specifically designated as principal items, such as minor end items, repair parts, reparable subassemblies, and expendable or consumable items.

c. To satisfy the calculated requirements objectives, priorities should be established in the following order:

- (1) From serviceable on-hand assets.
- (2) By using excess materiel available for reissue.
- (3) From those unserviceable on-hand assets that are economically repairable.
- (4) By acquisition to meet any short-fall remaining.

d. Unprogramed requirements: When users urgently need items not in the inventory--normally for special or unconventional operations--they must justify them to the command responsible for acquiring the items; at the same time, they must send an information copy of the request to the Army's senior operations officer. The senior operations officer should be the one to decide whether the item is to be bought and he will notify the acquiring command of his decision.

4. Cataloging: The Army must establish and maintain a cataloging system. If a national system already exists, the cataloging system will be developed using it as the basis. The system will apply to all items supplied, used or managed.

5. Classes of Supply: Each item of supply will be assigned to one--and only one--of the established classes of supply. The US Army uses ten classes which are offered as example. They are:

- I - Subsistence.
- II - Secondary items of equipment of items authorized in allowances tables and items of supply including expendables and consumables.
- III - Fuels and petroleum products.
- IV - Construction materials.
- V - Ammunition.
- VI - Personal demand items (non-military sales items).
- VII - Principal (major) items of equipment authorized in allowance tables.
- VIII - Medical materiel and repair parts.
- IX - Repair parts (less medical) including reparable and non-reparable.
- X - Non-military support materiel.

6. Materiel Distribution: The distribution of items must be made in accordance with the priorities established by the Army's senior operations (not logistics) officer. When new equipment is to be introduced, consider issuing it in unit lots, with the necessary spares and repair parts; this should insure efficient fielding and avoid degrading the receiving unit's readiness. Where possible, distribute items directly from the producer, or vendor, to the receiving unit to reduce transportation and handling costs. When direct delivery is not feasible, and depot placement offers a choice, temporarily stock the materiel as close to the user as possible. Also, consider establishing a direct support system to distribute the new materiel efficiently.

7. Disposing of Excess Supplies: Excess government owned property, including all unserviceable recoverable assemblies and materials, must be promptly reported and turned in to the supporting supply element for proper disposition.

8. Requisitioning: Standardize (if possible) the requisitioning and issue procedures within all using services. Establish and use an all-service system of priorities for requisitioners, which will enable the issuer to satisfy the most urgent needs first. When available, issue all classes of supply to elements authorized to requisition them. Users should requisition the least amount needed to sustain operations or readiness, considering economical order quantities when it is applicable.

9. Accounting for Government Property: Account for government property acquired by the armed forces, using standard documents and procedures, from the time it is acquired until it is consumed or transferred from service custody. This will provide an audit trail through each transfer of accountability as long as the item is retained, and will form the basis for asset reporting at each level of supply operations.

10. Storage of Materiel: It is necessary to store materiel items to keep them ready for use when needed. The army must plan, establish, and maintain storage sites or depots for this purpose. Materiel must be protected against pilferage or misuse at every accountable or custodial level. Store items systematically for efficient withdrawal or inventory. Determine the

type of storage and the amount of protection required for each materiel item--by supply class and characteristics--and provide it.

11. Issue: Issue materiel only to fill valid requisitions. Generally, the oldest items should be issued first.

12. Packaging: Establish standards to insure efficient packaging. Pack, package, mark, and document materiel so that the requisitioner receives supplies in usable condition and can identify the items.

B. Echelons of Supply:

1. The organizations which are described in this section were created to support a simple system of supply. No supply system can operate in isolation from the rest of the total logistics system; it is, therefore, necessary to describe also some of the other logistical activities which are envisioned in support of the Simple Supply System (S^3).

2. The S^3 is designed as a three-level system to support a small, conventional military force (50-250,000 men). The levels will be designated as "army," "intermediate," and "operating unit." At the army level a "logistics command" is envisioned. Supply elements within the logistics command include:

- a. A supply directorate at the command staff level.
- b. A depot, which is the highest army support level.
- c. A support command, with activities which provide intermediate level (DS or GS) support. The support command supply activities include:

- (1) An ammunition company.
 - (2) A petroleum, oils, and lubricants (POL) company.
 - (3) Intermediate support companies with an organic supply platoon.
- d. At the operating unit (battalion) level, a support platoon with an organic supply section.

3. Supply Organizations:

a. At the army or national level, there should be a logistics command to provide command and control for supply, maintenance, transportation, and other logistics services. The supply activities within this command would be a supply directorate within the staff, depot(s), and support command(s) which may support either an area or a tactical organization. The support command includes supply activities for ammunition, POL, and general supplies. Figure III-1 depicts the logistics command organization. Figures III-2 through III-7 depict suggested supply organizations within the logistics command; Figure III-8 depicts a battalion support platoon, with its supply section. Paragraphs 4 through 7 briefly describe organizational functions.

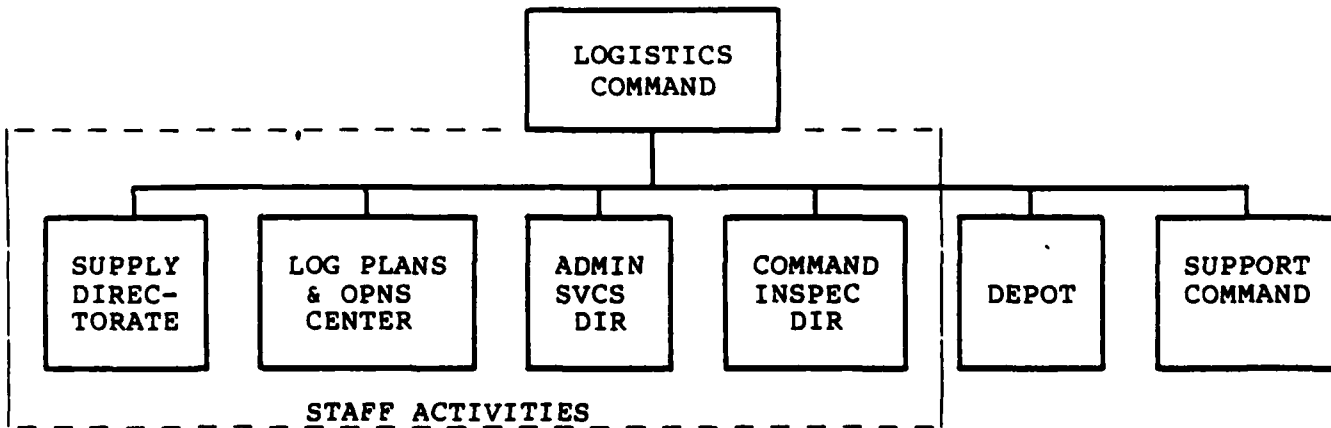


FIGURE III-1

b. Supply Directorate Organization:

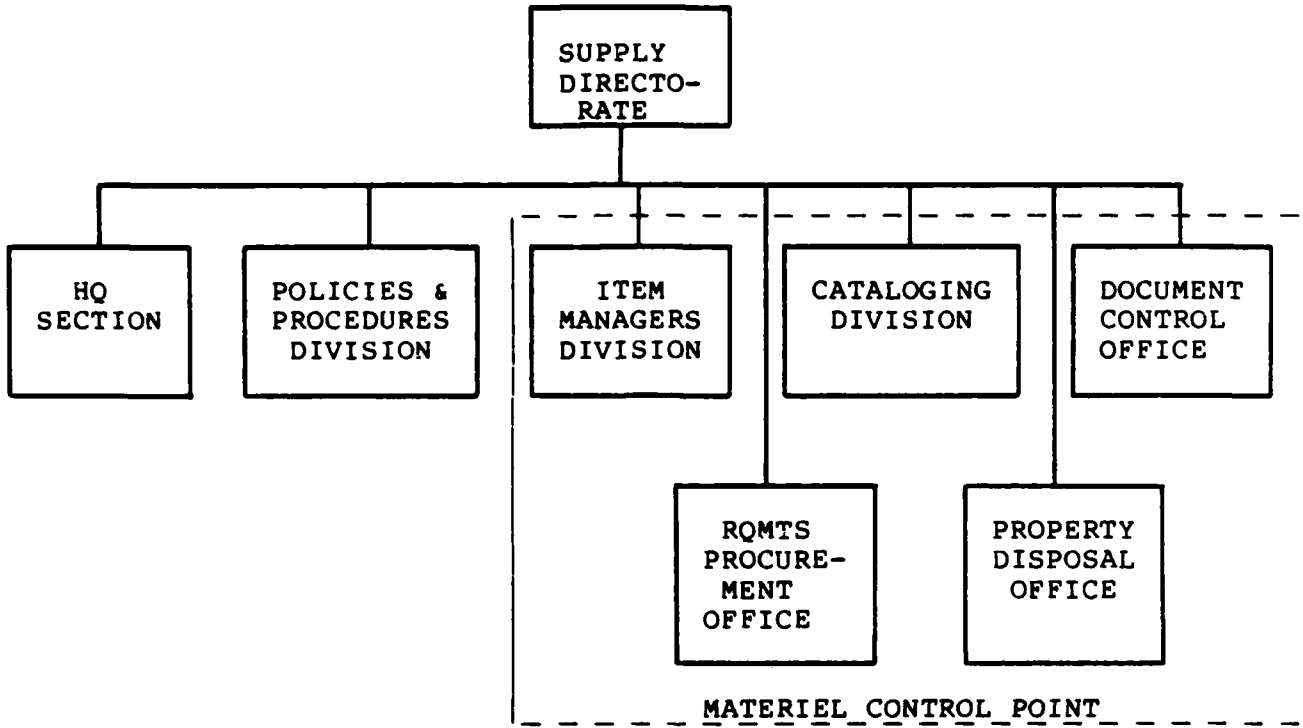


FIGURE III-2

c. Depot Organization:

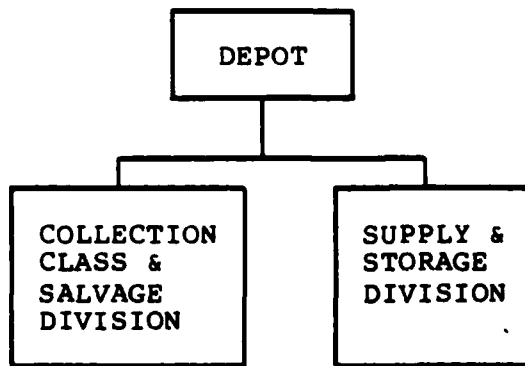


FIGURE III-3

(1) Supply and Storage Division Organization:

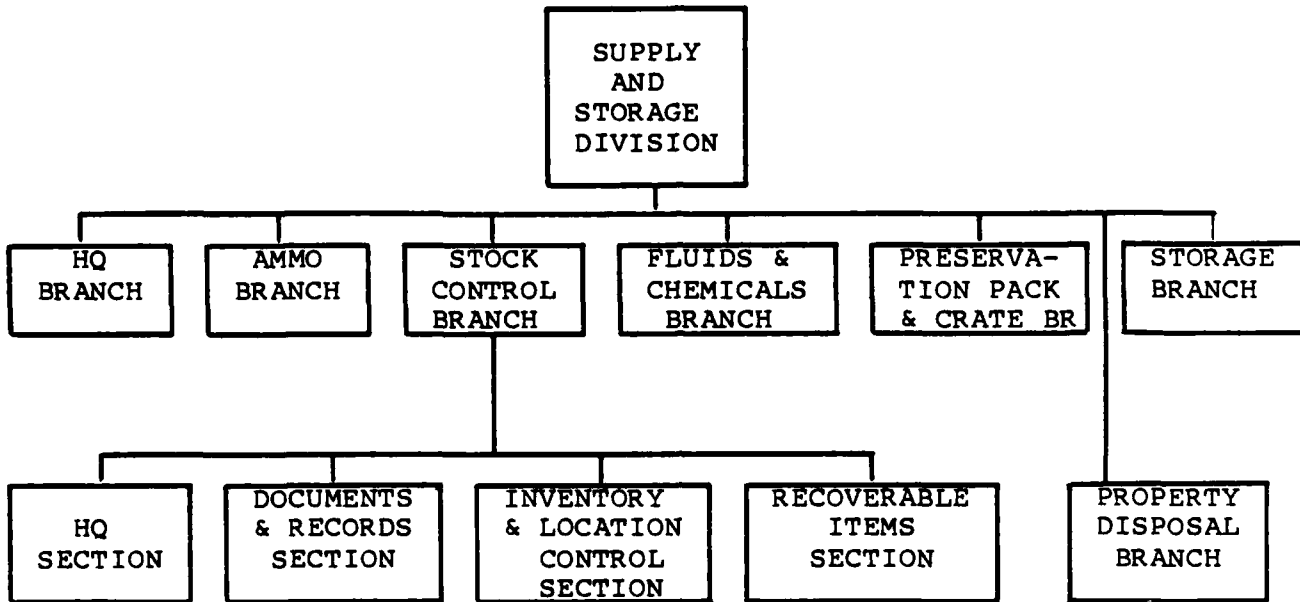


FIGURE III-4

(2) Collection, Classification, and Salvage Division

Organization:

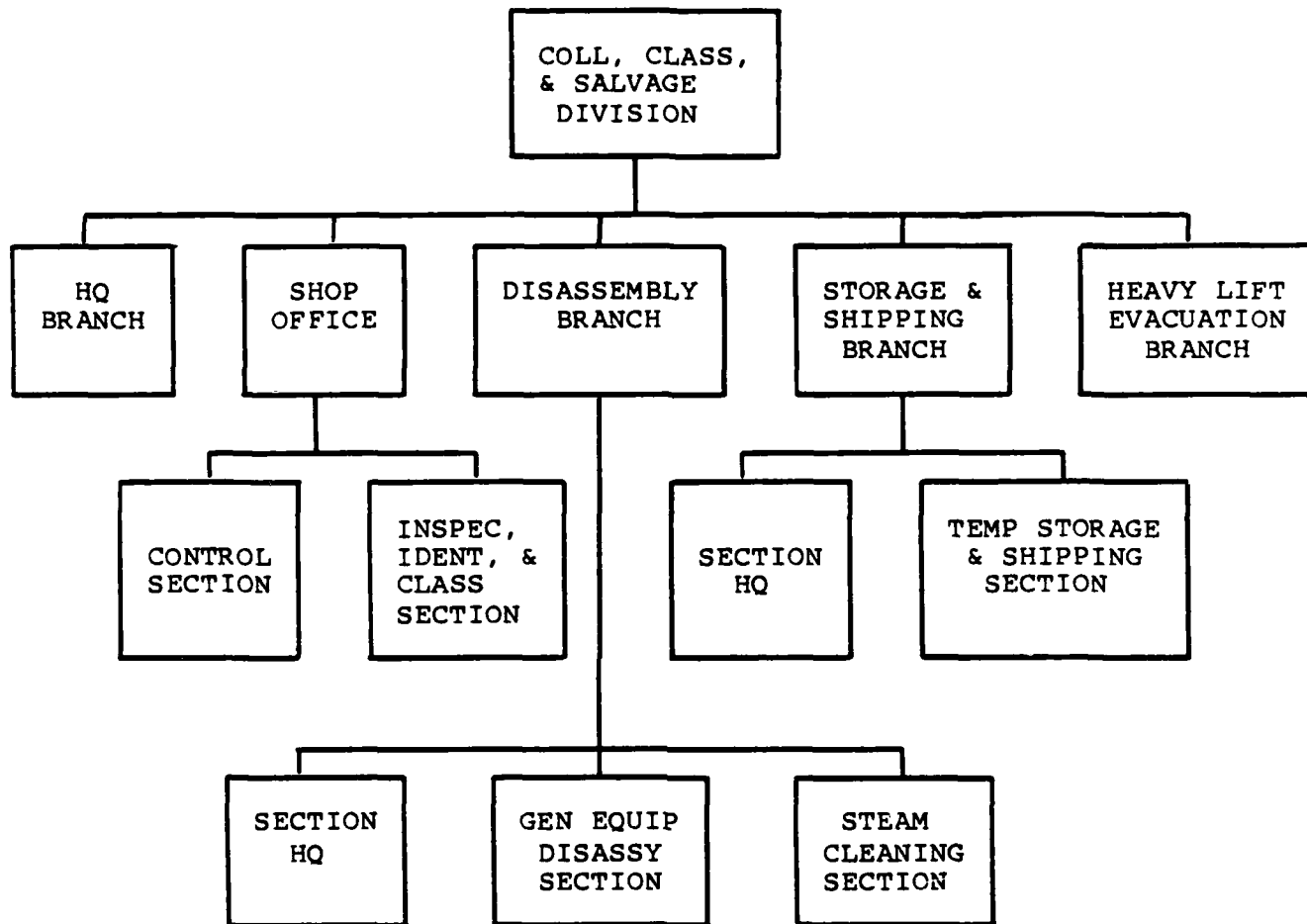


FIGURE III-5

d. Support Command Organization: The support command operates at the intermediate (DS or GS) level. Supply activities include an ammunition supply point (ASP), a POL point, and at least one Intermediate Support Company (ISC).

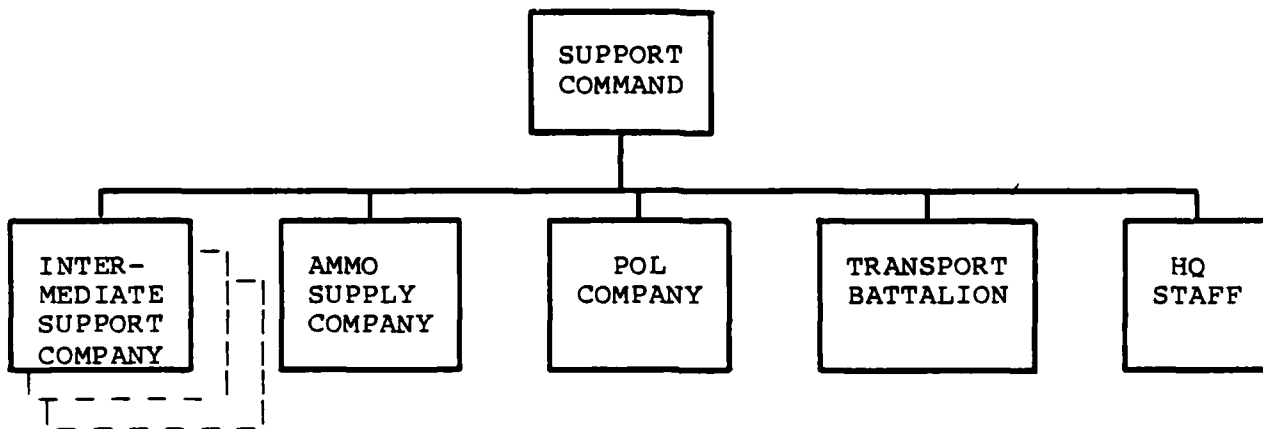


FIGURE III-6

e. Support Command Intermediate Support Company: The organizational chart shows the organization of the Supply Platoon.

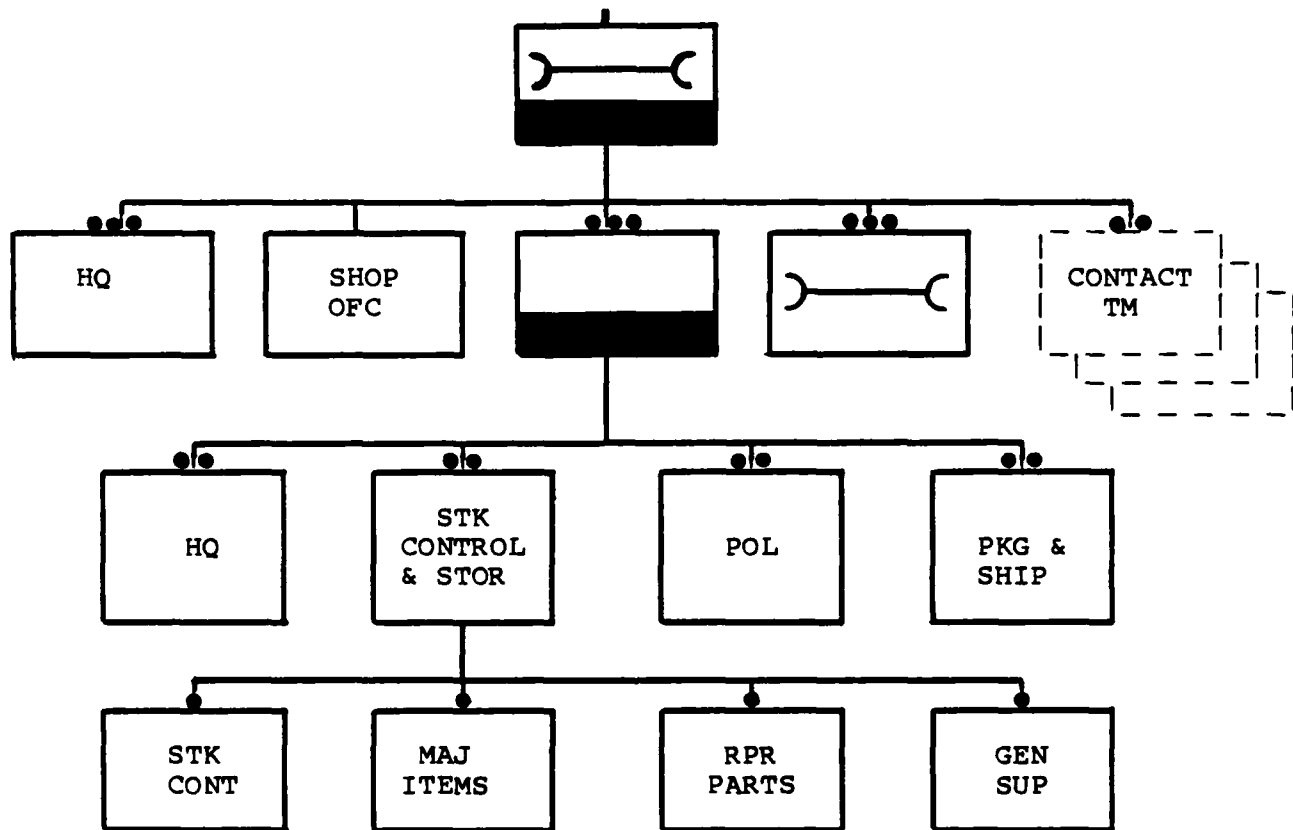


FIGURE III-7

NOTE: The ISC can be assigned to a division or to a support command to support a designated area.

f. At the operating battalion level there is a support platoon with a supply section. The platoon organization is:

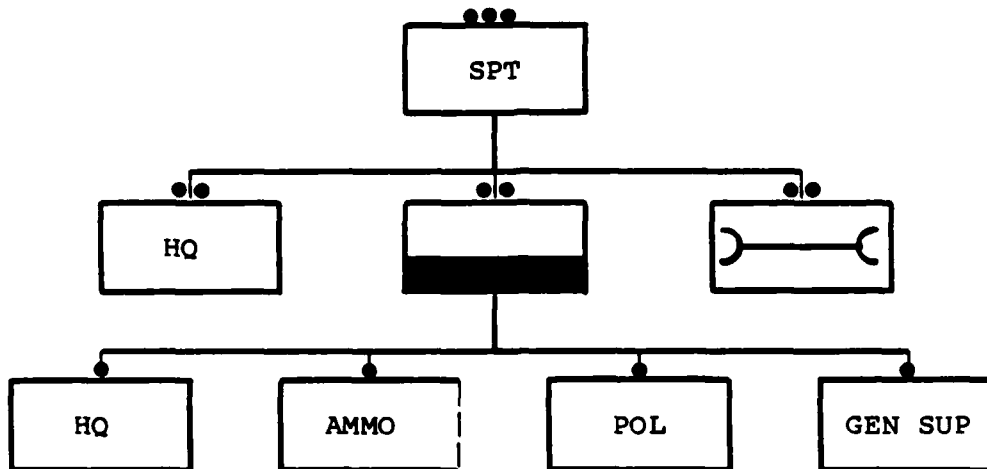


FIGURE III-8

4. The Supply Directorate (Figure III-2):

a. The Director of Supply is responsible for general staff management and coordination of the Logistics Command supply staff and all subordinate supply elements within the direct support units. He is responsible for developing, organizing, structuring, managing, supervising, evaluating, and refining the supply system.

b. The Policies and Procedures Division develops policies and procedures for operation of the supply system; it continuously reviews supply operations to detect potential problems so as to be able to develop policies and procedures to correct them; it advises the Director(s) of Personnel and Training in regard to the skills, time frame, and quantity of supply personnel required to effectively operate the supply system; and it develops policies concerning stockage levels, distribution, procurement, and disposal of materiel.

c. The Requirements and Procurement Office reviews approved operational and contingency plans in order to determine the quantity of materiel required to support the plans; it reviews the quantity of materiel on hand, and on order, in order to determine the additional quantities that must be procured; and it issues procurement directives for the acquisition of materiel.

d. The Item Manager's Division continuously monitors the level of supplies on hand, due out, and due-in; it determines the quantity and schedule for the acquisition of materiel, and whether supplies are to be provided from procurement, overhaul, fabrication, or any other source; and it issues the appropriate directives.

(1) Item Managers maintain the stock control records for materiel at all echelons. They revise stockage levels, ASLs, and PLLs, as required.

(2) Item Managers keep track of current and projected asset levels, and they are responsible for the asset and condition reporting system.

(3) Item Managers review requisitions on an "exception" basis and they are responsible for preparing materiel release orders (MRO) which are sent to the Supply and Storage Division of the General Depot.

(4) Item Managers direct the disposal of surplus materiel, obsolete materiel or unserviceable materiel when required.

e. The Cataloging Division is responsible for those functions, processes, and operations involved in item identification,

classification, assignment of stock numbers, and documentation. It also is responsible for the development, review, publication, and distribution of supply catalogs and publications.

f. The Property Disposal Office develops property disposal policies, supervises operation of the property disposal yard, and is responsible for updating asset records accordingly. Demilitarization policies are developed by this office, and it supervises demilitarization operations.

g. The Document Control Office receives and edits all supply transactions; e.g., requisitions, cancellations, tracer actions, requests for information, etc., which are received at the logistics command level for action by the item managers. If the army supply system is tied in with the US supply system, that connection will normally be through the use of an international communications network commonly referred to as Dataphone. The Document Control Office also receives and edits all transaction data cards prior to entry into the Dataphone system and reconciles rejected transactions. It would operate the Dataphone equipment also, batching and transmitting once daily any transactions which are directed to the US supply activities. (Dataphone is discussed at Paragraph III E).

5. The Depot (Figure III-3):

a. The depot handles all types and classes of supply. It is organized into two major divisions.

b. The Supply and Storage Division (Figure III-4) is the primary storage and distribution point for the supply system; its

missions include receipt, storage, in-storage maintenance, preservation, packing and crating, maintaining inventory records, and shipment of materiel as directed by the item managers. Organic elements are:

(1) The Headquarters Branch which controls all elements of the Supply and Storage Division.

(2) The Stock Control Branch which controls receipt and issue documents, shipping documents, payment vouchers, catalog research, and physical inventory of items in storage.

(a) The Documents and Records Section is responsible to process receipt, payment, condition, release or denial documents, and discrepancy reports.

(b) The Inventory and Location Control Section performs periodic physical inventories of items in storage and stock location surveys. Instances of loss, theft, and shortages of weapons or ammunition must be reported to the Logistics Command Supply Directorate.

(c) The Recoverable Items Section receives, stores, and job orders to the Maintenance Division those recoverable items which have been returned to the supply system as unserviceable. After these items have been repaired, they will be returned to depot stocks for issue. Because of its unique function, and to conserve resources, the Recoverable Items Section works with the Maintenance Division.

(3) The Storage Branch which works closely with the Stock Control Branch to insure that stock records are properly maintained.

The storage of materiel is an integral part of the process of receiving and inspecting supplies. The Storage Branch is responsible for the proper utilization of storage space and materials handling equipment (MHE), the logical grouping of materiel for efficient storage and issue operations, and the effective use of the warehouse personnel who physically handle the materiel within the depot. The Storage Branch is responsible for all materiel--less ammunition, fluids, and chemicals--stored in the warehouse, to include coordinating for organizational maintenance of vehicles in storage.

(4) The Ammunition Branch is located at the ammunition depot. This branch operates independently of the Storage Branch and is responsible for all aspects of ammunition storage and supply. The branch operates its own stock control, storage, maintenance, inventory, and inspection functions. Movements control, however, is still coordinated by the main Stock Control Branch. Ammunition is stored separately because of control and safety considerations.

(5) The Fluids and Chemicals Branch is also operated independently of the Stock Control Branch except for Movement Control. Fluids and chemicals are stored separately from other supplies due to safety considerations.

c. The Collection, Classification, and Salvage Division (Figure II-5) is responsible for the establishment and supervision of an efficient and uniform system to classify all army property (less medical) which is sent to the depot as reparable or eligible for disposal. The Chief of the Collection, Classification, and

Salvage Division, in cooperation with the Property Disposal Branch, advises the Chief of the Supply and Storage Division as to the availability of supply assets under his control. The Collection, Classification and Salvage Division receives unserviceable items, removes serviceable components for return to the supply system, and removes unserviceable components which are economically repairable for repair and return to the supply system. Items and components not economically repairable, and items or components not designated as recoverable, are sent to the Property Disposal Branch.

6. The Support Command (Figure III-6). The Support Command will provide logistical support either to a designated geographical area or to a designated tactical division or brigade. The area support commands will work directly for the Logistics Command commander; they are responsible for the management of supplies to all military elements operating within the boundaries of their respective areas. The POL Company, Transportation Battalion, the Ammunition Supply Company, and the Direct Support Companies report directly to the Support Command commander.

a. The Ammunition Supply Company operates the ammunition supply point(s) (ASP). The company receives, stores, maintains, and issues ammunition to all units within the supported organizational or geographical area. Approval for the issue of ammunition is coordinated through the Materiel Control Point (MCP) and the army (national) level Deputy for Operations.

b. The Petroleum, Oil, and Lubricants (POL) Company is responsible for receiving POL products from contractors, certifying

the quantity and quality of the product, and authorizing payment for products received. Bulk fuels are stored for subsequent distribution to the Direct Support Company; tank trucks of the Support Command's Transportation Battalion would distribute bulk fuels. Packaged POL products are supplied using normal supply procedures.

c. The Transportation Battalion is under the direction of the Support Command Movements Control Center (MCC). Its organization is variable, but it should have at least a company of tank trucks and a company of cargo trucks. Specific functions include delivery of bulk fuel to the Direct Support Company dispensing points and delivery of ammunition to the combat battalion from the ASP.

d. The Intermediate Support (IS) Company Supply Platoon (Figure III-7) is responsible for coordinating and providing materiel to support the DS Company maintenance shop, the maintenance contact teams, and the battalion Support Platoon. The Supply Platoon is responsible for direct supply of all materiel to the battalion. It requisitions, receives, stores, and issues supplies of all types with the exception of medical supplies, ammunition, and non-combat rations. (Note: The exception of medical supplies is based on the presumption that medical channels will handle their own equipment; this could change.)

7. Battalion Supply Section (Figure III-8):

a. The Battalion Supply Section functions as a part of the Battalion Support Platoon. Organizational strength and equipment may vary with the different types of battalions within the supported force, but the functions performed by the supply section should not.

b. The Battalion Supply Section obtains materiel from the Intermediate Support Company (ISC) and issues the supplies as required. When the reorder point for materiel is reached, the section must inform the ISC so as to cause resupply actions to be undertaken by the support company. The section also controls the dispensing of fuel from the battalion tank trucks (if appropriate).

C. Procedures:

1. Policies:

a. Supply Control: For the purpose of demonstrating the flow of materiel and documents or data, and of explaining common supply procedures, materiel is grouped as follows.

- (1) Principal (major) items.
- (2) General supplies, troop support materiel, repair parts, construction materiel, and tools.
- (3) Recoverable items (engines, carburetors, starters, etc.).
- (4) Petroleum, oils, and lubricants.
- (5) Ammunition.

b. Inventory and Stock Control. The following headings (categories) will be used to explain the procedures employed to perform the inventory and stock control functions.

- (1) Requirements and/or Acquisition Determination.
- (2) Procurement Direction.
- (3) Distribution.
- (4) Overhaul Direction.
- (5) Disposal.
- (6) Cataloging.

(7) Stock Accounting.

(8) Asset and Condition Reporting.

2. Principal (Major) Items. These items are intensively controlled due to their value or because of the sensitive nature of the materiel. The initial issue of principal items is directed by the logistic command's Materiel Control Point in accordance with force structure plans and organizational authorization documents (as a Table of Organization and Equipment). Normally, units will not have to requisition the initial issue of principal items.

a. Replacement Items: Regardless of the reason, the replacement of a principal item requires that a "Request for Replacement of a Principal Item" form be submitted through command channels to the Materiel Control Point (MCP); a suggested form format is presented at Figure III-9. The document must be certified correct by the battalion--or comparable--commander. Normal approval authority for replacement of principal items is vested in the Item Manager at the MCP. Information copies of the approval are provided to the Director of Supply and the Logistics Command Commander. The approved "Request for Replacement of a Principal Item" is converted into a requisition format by the Item Manager. A Materiel Release Order (MRO) is then sent to the site where the principal items are stored; this is normally the depot, but may be a Intermediate Support Unit. The MCP must adjust accountable records and issue disposition instructions for the item which is being replaced.

TO: Materiel Control Point

FROM:

REQUEST FOR REPLACEMENT OF A PRINCIPAL ITEM

1. Date _____ 2. Document Number _____
3. Unit Code _____ 4. Unit Location _____

ITEM DESCRIPTION

5. Stock Nr | 6. Nomenclature | 7. Quantity | 8. Unit Cost | 9. Total Cost

| 5. Stock Nr | 6. Nomenclature | 7. Quantity | 8. Unit Cost | 9. Total Cost |
|-------------|-----------------|-------------|--------------|---------------|
| | | | | |

10. REASON FOR REPORT:
- a. Item lost
(Explain in remarks)
 - During battle
 - Fault or Neglect
 - Other
 - b. Item damaged
 - During battle
 - Fault or neglect
 - Fair wear and tear
 - Other
 - c. Inventory adjustment
 - Item missing
 - Theft, pilferage
 - Other

11. REMARKS, DATE, AND CIRCUMSTANCES:

12. ACTIONS:

- Replacement requested.
- Disposition instructions requested.

ACCOUNTABILITY: This individual(s) is(are) to be charged for the above listed item(s).

13. Name _____ 14. Identification No. _____ 15. Charge to be Assessed _____

16. CERTIFYING AUTHORITY: The above statements are true in all respects.

NAME _____ SIGNATURE _____
RANK _____ POSITION _____ DATE _____

17. APPROVAL AUTHORITY:

NAME _____ SIGNATURE _____
RANK _____ POSITION _____ DATE _____

b. Receipt/Issue. When a replacement item is delivered to the unit, the commander acknowledges receipt by signing the accompanying "Requisition and Supply Form." One copy of the form is retained by the unit commander and the other copy(s) is returned to the Materiel Control Point--to the Item Manager--to complete the transaction file.

c. Asset/Condition Reporting. Discrepancies between numbers of items and their condition and what the MCP accountable records show are reconciled by the MCP on a routine basis. Units assigned principal items will report quarterly, on an "Asset/Condition Report" form, the number of principal items authorized, the number on hand, the number of the items on hand which are non-operational, and the reason the item is not available for use. The reason for non-availability normally will be listed either as "non-operational, supply" or "non-operational, maintenance." (The former category describes materiel which cannot be used because it lacks a part or component which is not available for issue; the latter describes an item for which the needed parts are available, but which the maintenance activity has not yet repaired.) Items in storage, either in the depot or at an intermediate unit, will be inventoried, usually on a semi-annual basis, by a depot based team which will report to the MCP. Assets held in storage are normally considered to be operational and ready for issue; the depot team, therefore, will focus on the availability of equipment rather than condition.

d. Principal Item Flowchart: Figure III-10 graphically depicts the logic followed in the replacement of a principal item.

REPLACEMENT OF PRINCIPAL ITEM

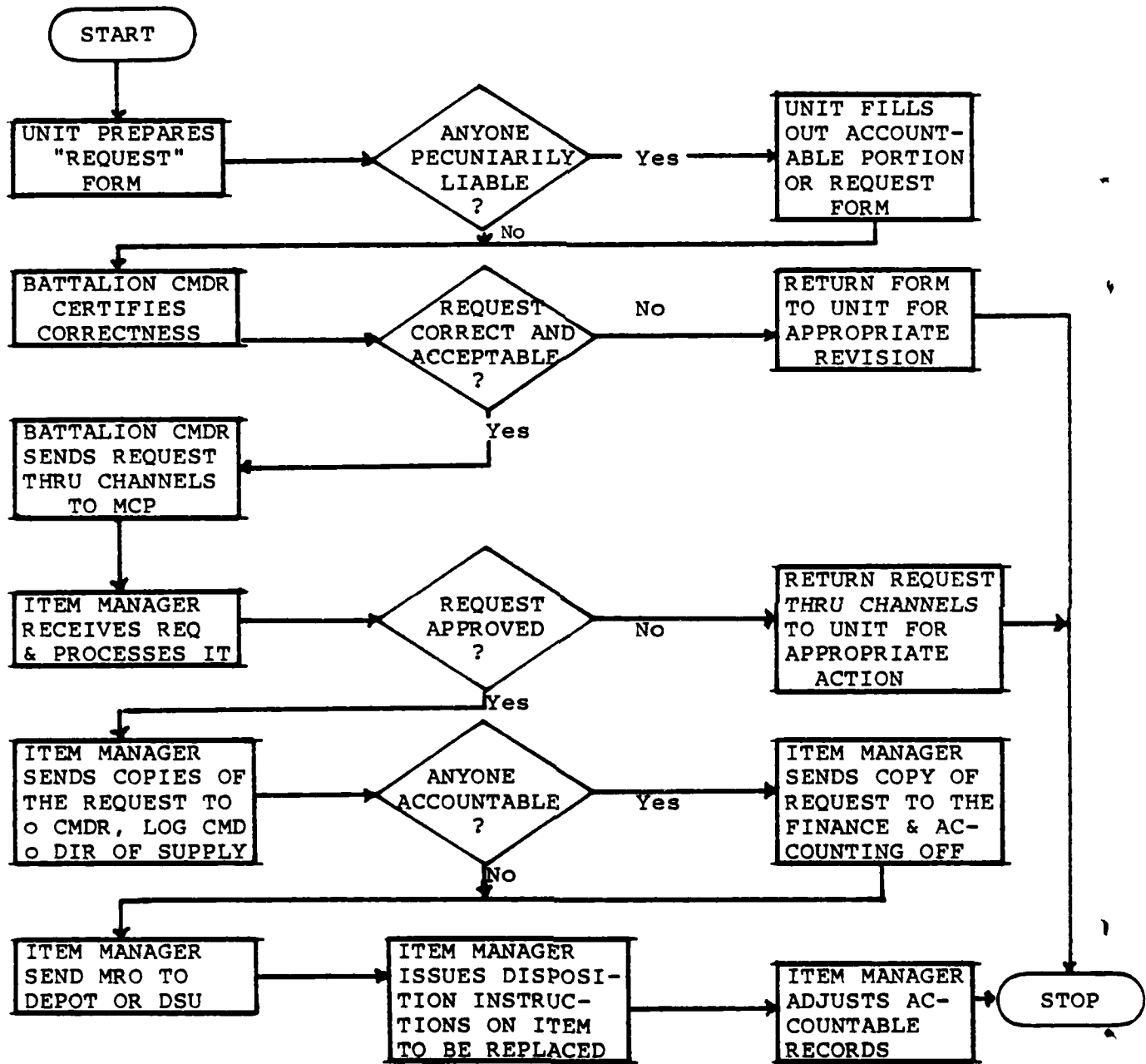


FIGURE III-10

D. Simple Supply Procedure (SSP):

1. The SSP is the system proposed for use by the Battalion Supply Section to receive, store, issue, and reorder the items to be stocked by the user battalions.

2. Principles: The SSP is based on two tenets; these are:

a. The concept of segregating in storage that quantity which constitutes the reorder point (ROP). Small items may have the ROP quantity placed in a bag or similar container; bulky items may simply have the ROP quantity wrapped in engineer tape. However the items are identified, when the ROP is reached, warehouse personnel must readily recognize the fact.

b. The use of a four part tag which will be prepared by the Intermediate Support Company personnel. The tag, a sample of which is depicted at Figure III-11, is sent with each order of items issued. (Note: No more than one line item will ever be issued on a single "Simplified Supply Procedure Tag;" however, any quantity of a line item may be issued.) The tag will have all elements of information filled out by the Intermediate Support Company personnel with the exception of:

- (1) "Stock location" information.
- (2) "Date reordered."
- (3) "Due out" information.

3. Procedures: The Simple Supply Procedure works as follows:

a. Upon receipt of materiel by the battalion supply section personnel, the ROP quantity is segregated and tagged.



SIMPLIFIED SUPPLY PROCEDURE (SSP) TAG

| | | | | |
|---|-------------------------------|------|--------------------|-----|
| PART 1 SERIAL # | STOCK NUMBER | | | |
| | NOMENCLATURE | | | |
| | REORDER POINT | | STOCK LOCATION | |
| | ----- | | | |
| PART 2 SERIAL # | R E O R D E R R E Q U E S T | | | |
| | UNIT CODE/LOCATION | | | |
| | STOCK NUMBER | | | |
| | REORDER POINT | | DATE REORDERED | |
| | OPERATING LEVEL | | | |
| PART 3 SERIAL # | ----- | | | |
| | D U E - I N F I L E | | | |
| | STOCK NUMBER | | | |
| | NOMENCLATURE | | | |
| PART 4 SERIAL # | REORDER POINT | | DATE REORDERED | |
| | ----- | | | |
| | L O C A T O R F I L E | | | |
| | STOCK NUMBER | | | |
| | NOMENCLATURE | | | |
| | UNIT OF ISSUE | | STOCK LOCATION | |
| | SUBSTITUTE STOCK NUMBERS | | | |
| | REORDER POINT | | MAX STOCKAGE LEVEL | |
| | DATE RECEIVED | | DATE REORDERED | |
| | DUE OUT | DATE | UNIT | QTY |
| | | | | |
| <input type="radio"/> OUT OF STOCK <input type="radio"/> DUE IN | | | | |

FIGURE III-11

b. The "locator file" card (part 4) is detached, and the stock location--i.e., the vehicle or section, and row, level and bin--is recorded. The card is placed in the locator file.

c. Materiel is issued as needed until the ROP is reached. When the warehouse personnel must open a sealed pouch or other container (or remove engineer tape, or however else the ROP quantity is segregated) to gain access to an item, they will know that the ROP has been reached. In addition to picking the stock, they must also bring Parts 2 and 3 of the SSP tag to the stock control office. Part 3 is then dated and placed into the "due-in file," and Part 2 is dated and forwarded to the Intermediate Support Company to initiate the resupply action.

d. Part 4 is pulled from the "location file" and the "reorder date" is entered into the proper section to indicate that replacement items are due in. When on-hand stock is all issued, due outs are recorded in the due-out block of Part 4 of the tag.

e. When the replenishment items are received, they will be accompanied by a new SSP tag. The supply specialist will reconcile the dues-out, remove and discard both the due-in and the old locator file cards, segregate and tag the new reorder point quantity, annotate the materiel location, and place Part 4 of the new card into the locator file. The storage location site for the stock will be transferred from the old Part 4 to the new one; if for any reason the new quantity will not fit into the storage site, then all of the stock should be relocated. The stock location section of the locator card must be annotated to show the new location.

An item will not be stored in more than one location unless it is absolutely necessary to do so.

f. Figure III-12 is a flowchart depicting the Simple Supply Procedure.

4. General Supplies, Troop Support Materiel, Repair Parts, Construction Materiel and Tools:

a. Battalion Supply Section: The Supply Section of the Battalion Support Platoon is responsible for requisitioning, receiving, storing, and issuing this group of supplies to the battalion Maintenance Section and to the individual soldier as appropriate.

(1) Stock Control: The section employs the Simplified Supply Procedure (SSP) to receive, issue, record, and reorder supply items.

(2) Distribution: Supplies are normally picked up from the Intermediate Support Company by the Battalion Supply Section. On occasion, the Intermediate Support Company may deliver.

(3) Storage: Where possible, stock held by the Battalion Supply Section will be stored in bins in supply vans or trailers. The bins are to be numbered to allow the use of an item locator system. Stock must be inspected and inventoried on a routine basis to control pilferage, rust, corrosion, etc.

b. Intermediate Support Company: The Intermediate Support Company Supply Platoon provides supplies to supported battalions and to the Intermediate Support Maintenance Unit. The Supply Platoon serves as a forward depot warehouse maintaining demand

SIMPLIFIED SUPPLY PROCEDURE (SSP)

ISC: INTERMEDIATE SUPPORT COMPANY
 ROP: REORDER POINT
 QTY: QUANTITY

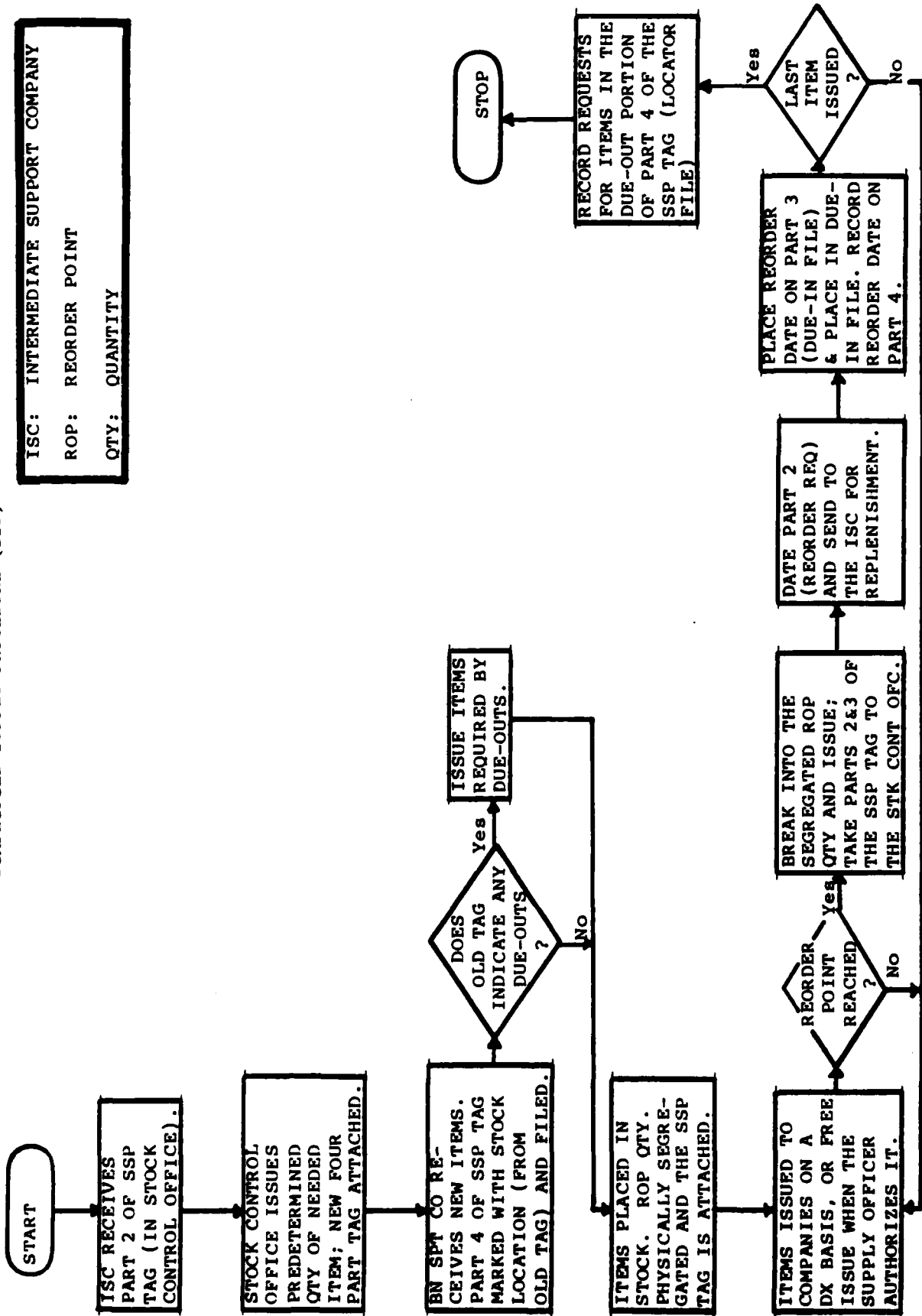


FIGURE III-12

supported items but only minimum essential records. All issues made by the Supply Platoon will be recorded at the MCP after the issue has been made and reported.

(1) Support of Battalions: When Part 2 of the SSP tag is received by the Intermediate Support Company, the predetermined operating level quantity is issued, along with a new SSP tag. The Intermediate Support Company will prepare a replenishment requisition when its own ROP is reached and will send the requisition form to the Materiel Control Point.

(2) Support of Intermediate Support Company Maintenance Platoon: The Maintenance Platoon normally will present a maintenance request form to the Supply Platoon Repair Parts Section to receive an issue of the required repair parts. The demand data are captured by the stock control personnel; replenishment is undertaken when the Supply Platoon stock reaches the ROP.

(3) Stock Control: Stock control consists of maintaining location files, due-in and due-out files, and preparation of SSP tags and requisition forms. In addition to replenishment requisitions, when the last item in stock is issued, an out of stock message is recorded on a requisition form and is sent to the Materiel Control Point.

(4) Distribution and Storage: Storage procedures are essentially the same as those described for the battalion Supply Section. That is, insofar as possible stock is stored in vans and trailers. Distribution of supplies is accomplished by the Transportation Battalion, under the direction of the Movements Control

Center, when necessary. The battalion Support Platoon normally picks up its supplies.

c. Materiel Control Point (Supply Directorate):

(1) The Document Control Office receives the requisition form from the Intermediate Support Company; it edits the requisition form to determine the purpose (i.e., requisition, cancellation, or request for status) and takes the required action (i.e., materiel release, rejection of the requisition, status report). Where appropriate, it prepares transactions for transmission to the US by Data-Phone. The Document Control Office adjusts records to reflect any action taken. Quarterly, the MCP should recompute stock levels--and with it the ROP and Requisitioning Objectives--for user battalions and Intermediate Support Companies.

(2) The Requisitioning Objective (RO) is composed of three stockage levels added together; and it is the maximum quantity of an item that may be on hand, or on order, at any one time. The RO is composed of:

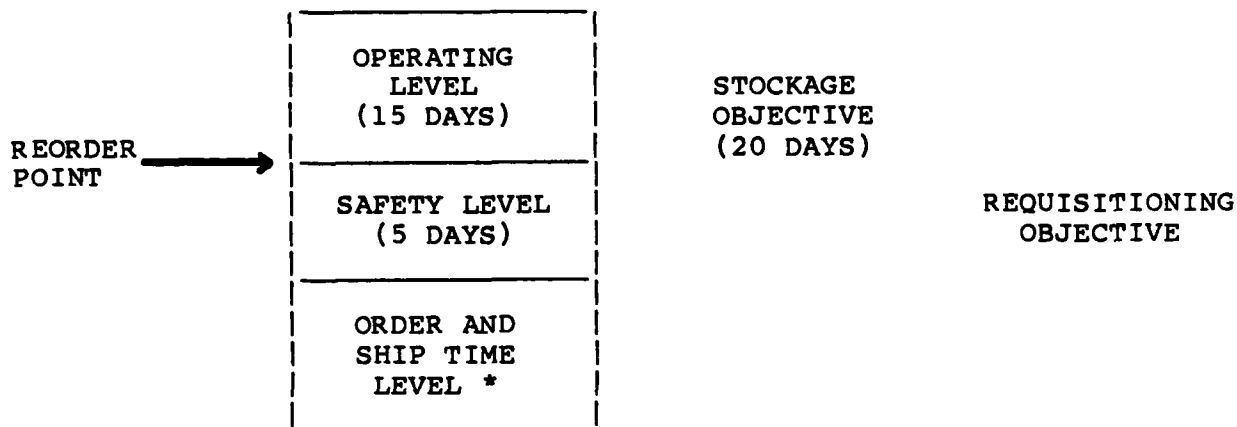
(a) An Operating Level: This is the quantity of stock needed to sustain operations in the interval between receipt of a replenishment shipment and submission of another replenishment requisition. The Operating Level normally will be 15 days of supply for the Intermediate Support Supply Platoon and the battalion Supply Section; the level may be adjusted as experience dictates.

(b) An Order Ship Time Level (OST): OST is the quantity of stock needed to sustain operations between the time a replenishment requisition is submitted and the resulting materiel receipt

is posted to the stock record account. To compute OST, use the six most recent replenishment receipts for an item and calculate the average number of days which transpired from the time the requisition went in until the items were received and logged. (Subtract the requisition document date from the date the receipt is posted for each of the six transactions. Add the results and divide by six. Any fraction should be rounded up to the next whole number.)

(c) A Safety Level: The quantity of stock on-hand to sustain operations in the event the demand rate increases suddenly and unusually or that the OST becomes longer than expected. The Safety Level normally will be five (5) days of supply for the Intermediate Support Supply Platoon and the battalion Supply Section.

(3) The Reorder Point (ROP) is that quantity of stock which, when reached, indicates that it is time to submit a requisition for replenishment. The ROP quantity is always less than the Requisitioning Objective quantity. Whenever the net quantity on-hand and due-in is equal to or less than the ROP, replenishment must be undertaken. (Note: When computing net quantity on-hand and due-in, the stock control personnel should also subtract any due-outs recorded.) The ROP, if heeded, will enable replenishment requisitions to be submitted in time to avoid zero balances of stock and the resulting due-outs. To compute the ROP, add the quantities calculated for the Order Ship Time Level and the Safety Level. Figure III-13 illustrates the relationship between ROQ and ROPQ.



* TIME NEEDED TO REPLENISH STOCKS

FIGURE III-13. RELATIONSHIP BETWEEN ROQ AND ROPQ

(4) The formula to compute Requisitioning Objective and the Reorder Point quantities are as follows:

(a) Requisitioning Objective Quantity (ROQ). The following values are used:

OLD = Operating Level Days (15 days)
 OSTD = Order Ship Time Days
 QDCP = Quantity Demanded in the Control Period
 SLD = Safety Level Days (5 days)

$$\left(\frac{OLD + SLD + OSTD}{360} \right) \times QDCP = ROQ$$

(b) Reorder Point Quantity (ROPQ):

$$\left(\frac{SLD + OSTD}{OLD + SLD + OSTD} \right) \times ROQ = ROPQ$$

Note: The Control Period equals one year. To calculate QDCP, count the number of items requisitioned during the last 12 months.

(5) The following table may also be used to compute ROQ and ROPQ. To use it, read across the QDCP quantities and find the

column which contains the quantity demanded during the last 12 months. Then read down the OSTD column until the row containing the OST days is found. The block at the intersection of the ODCP column and the OSTD row contains the ROP in its bottom half and the RO in the top half. For example, with a QDCP of 200 and an OSTD of 13, RO = 18 and ROP = 10.

REQUISITIONING OBJECTIVE AND REORDER POINT TABLE
15 Day Operating Level/ 5 Day Safety Level

| Order and Ship Time Days (OSTD) | | Quantity demanded during control period (360 days) (QDCP) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------|-----|---|-------|-------|-------|-------|-------|-------|-------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|--|--|--|
| | | 3-12 | 13-24 | 25-36 | 37-48 | 49-60 | 61-72 | 73-84 | 85-96 | 97-108 | 109-120 | 121-132 | 133-144 | 145-156 | 157-168 | 169-180 | 181-192 | 193-204 | 205-216 | 217-228 | 229-240 | 241-252 | 253-264 | 265-276 | 277-288 | 289-300 | | | |
| 1 THRU 5 | RO | 1 | 1 | 2 | 3 | 3 | 4 | 5 | 6 | 7 | 7 | 8 | 9 | 10 | 10 | 11 | 12 | 13 | 13 | 14 | 15 | 16 | 17 | 17 | 18 | 19 | | | |
| | ROP | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 6 | 6 | 6 | 7 | | | |
| 6 THRU 10 | RO | 1 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | | | |
| | ROP | 0 | 0 | 1 | 2 | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 5 | 5 | 6 | 6 | 7 | 7 | 8 | 8 | 8 | 9 | 9 | 10 | 10 | 11 | | | |
| 11 THRU 15 | RO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 23 | 24 | 25 | 26 | 27 | | | |
| | ROP | 0 | 1 | 2 | 2 | 3 | 3 | 4 | 5 | 5 | 6 | 6 | 7 | 8 | 8 | 9 | 9 | 10 | 11 | 11 | 12 | 12 | 13 | 14 | 14 | 15 | | | |
| 16 THRU 20 | RO | 1 | 2 | 3 | 4 | 5 | 7 | 8 | 10 | 11 | 12 | 13 | 15 | 16 | 17 | 18 | 20 | 21 | 22 | 23 | 25 | 26 | 27 | 29 | 30 | 31 | | | |
| | ROP | 0 | 1 | 2 | 3 | 3 | 4 | 5 | 6 | 7 | 7 | 8 | 9 | 10 | 10 | 11 | 12 | 13 | 13 | 14 | 15 | 16 | 17 | 17 | 18 | 19 | | | |
| 21 THRU 25 | RO | 1 | 2 | 4 | 5 | 7 | 8 | 9 | 11 | 12 | 14 | 15 | 17 | 18 | 19 | 21 | 22 | 24 | 25 | 27 | 28 | 29 | 31 | 32 | 34 | 35 | | | |
| | ROP | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | | | |
| 26 THRU 30 | RO | 1 | 2 | 4 | 6 | 7 | 9 | 10 | 12 | 14 | 15 | 17 | 18 | 20 | 22 | 23 | 25 | 26 | 28 | 30 | 31 | 33 | 34 | 36 | 38 | 39 | | | |
| | ROP | 0 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 23 | 24 | 25 | 26 | 27 | | | |
| 31 THRU 35 | RO | 1 | 3 | 4 | 6 | 8 | 10 | 12 | 13 | 15 | 17 | 19 | 20 | 22 | 24 | 26 | 27 | 29 | 31 | 33 | 35 | 36 | 38 | 40 | 42 | 43 | | | |
| | ROP | 0 | 2 | 3 | 4 | 6 | 7 | 8 | 10 | 11 | 12 | 13 | 15 | 16 | 17 | 18 | 20 | 21 | 22 | 23 | 25 | 26 | 27 | 29 | 30 | 31 | | | |
| 36 THRU 40 | RO | 1 | 3 | 5 | 7 | 9 | 11 | 13 | 15 | 17 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | 32 | 34 | 36 | 38 | 40 | 42 | 44 | 46 | 47 | | | |
| | ROP | 0 | 2 | 4 | 5 | 7 | 8 | 9 | 11 | 12 | 14 | 15 | 17 | 18 | 19 | 21 | 22 | 24 | 25 | 27 | 28 | 29 | 31 | 32 | 34 | 35 | | | |
| 41 THRU 45 | RO | 1 | 3 | 6 | 7 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | 31 | 33 | 35 | 37 | 39 | 41 | 43 | 45 | 47 | 49 | 52 | | | |
| | ROP | 0 | 2 | 4 | 6 | 7 | 9 | 10 | 12 | 14 | 15 | 17 | 18 | 20 | 22 | 23 | 25 | 26 | 28 | 30 | 31 | 33 | 34 | 36 | 38 | 39 | | | |

TABLE III-1

d. Supply Depot: The item manager will dispatch a Materiel Release Order (MRO) from the MCP; the MRO is received and processed by the Depot Stock Control Branch and materiel is released for movement to the Intermediate Support Company or to the user. The depot will transmit materiel release confirmations--or denials--to the MCP for appropriate action (e.g., adjusting stock records) and will notify the Movement Control Center of requirements to move materiel from the depot. The Transportation Battalion normally will move materiel to the Intermediate Support Company Supply Platoon and on occasion to the user battalion's Support Platoon. The Supply Section of the battalion Support Platoon will report the receipt of any item to the Intermediate Support Company's Supply Platoon by providing a copy of the shipping document. The Intermediate Support Company Supply Platoon prepares a receipt status notification--using a requisition form--and sends it to the MCP for reconciliation of records.

5. Recoverable Items:

a. A recoverable item is:


(1) A component of an end item or subassembly which has been specifically designated for recovery. This action can be directed for critical items or for those which are more economical to repair and reuse than to discard and replace. Examples of common recoverable items are: engines, carburetors, starters, generators.

(2) Replaced, when defective, at the Intermediate Support Company level and returned through supply channels to a depot level maintenance facility.

(3) Repaired at depot level and returned to stock, or placed into salvage for disposal.

b. Intermediate Support Company: The Intermediate Support Company is the lowest echelon at which recoverable items are authorized to be replaced. The Intermediate Support Company Maintenance Platoon will obtain the component from the Supply Platoon. To turn in the defective component, the Maintenance Platoon fills out Part 2 of the Recoverable Item Tag (Figure III-14 depicts a sample tag), attaches it to the component, and turns the recoverable item in to the Supply Platoon. The Supply Platoon fills out a requisition form (using "Equipment Turn In" in the Purpose block, and noting "Recoverable Item" in the Remarks Section) and attaches it to the Recoverable Item Tag. Copy 1 of the requisition form is sent to the MCP to indicate that the unserviceable item is on hand at the Intermediate Support Company. The item will be evacuated to the depot using the same vehicle which delivers supplies to the Intermediate Support Company Supply Platoon. (The driver signs the remaining copies of the Requisition Form to acknowledge receipt of the recoverable item.) The Supply Platoon retains Copy 2 of the Requisition Form until MCP and Supply Platoon records are reconciled.

c. Depot: The recoverable item is received at depot maintenance with Copies 3 and 4 of the requisition form. Copy 3 is sent to the item manager so he can credit the Intermediate Support Company account and also to furnish him with information about the availability of the unserviceable recoverable item. Recoverable



RECOVERABLE ITEM TAG

| | | |
|---|---|--------------------|
| PART 1: To be completed by Depot Maintenance | | |
| MAINTENANCE JOB ORDER NUMBER: | | |
| STATUS: | DATE | INITIALS |
| REPARABLE - JOB ORDER | _____ | _____ |
| IRREPARABLE - SALVAGE | _____ | _____ |
| REPAIRED - RETURNED TO STOCK | _____ | _____ |
| PART 2: To be completed by Intermediate Support Company Maintenance | | |
| UNIT CODE: | UNIT LOCATION: | DATE: |
| STOCK NUMBER: | | |
| NOMENCLATURE: | | |
| END ITEM | NOMENCLATURE: | MANUFACTURER: |
| | MODEL: | SERIAL/LOT NUMBER: |
| PART 3: To be completed by Intermediate Support Company Supply | | |
| ATTACH REQUISITION FORM HERE: | | |
| <u>COPY</u> | <u>USE</u> | |
| 1 | Send to Materiel Control Point (MCP). | |
| 2 | Backhaul driver signs; retain. | |
| 3 | Depot Maintenance sends to MCP when item is received. | |
| 4 | Depot Maintenance sends to MCP when item is released to stock or salvage. | |

FIGURE III-14

items are placed on job order at the direction of the MCP; the depot maintenance also can request that the job order be directed. Items which are uneconomical to repair usually are sent to salvage, although some may be repaired because they are critically needed. The repaired items are returned to supply to be placed into storage. Part 4 of the requisition form is appropriately annotated in the "Remarks Section"--to indicate repair or disposal--and sent to the MCP to adjust records. The Recoverable Item Tag will remain with the item until it is received at depot Supply and Storage Division or at the Property Disposal Yard.

6. Petroleum, Oil and Lubricants (POL): The requisitioning and distribution of bulk fuel, packaged POL, and bottled gasses is described below:

a. Bulk Fuel:

(1) Assumptions:

(a) Fuel tankers will be a part of the army inventory, and the tankers will approximate the standard 1200-gallon and 5000-gallon vehicles in use in the US Army.

(b) The army will operate at least one fuel tank farm.

(2) Bulk Fuel Operations:

(a) The fuel storage/dispensing capability at the battalion will consist of 1200-gallon tankers (1-3 normally) which will be operated by the battalion Support Platoon's POL Squad. Issues of fuel to the battalion organic vehicles will be recorded in the Bulk Fuel Log (Figure III-15). The driver will sign or make his mark on the Bulk Fuel Log when the fuel is issued. Battalion fuel

tankers will be refueled at the Intermediate Support Company's POL Section from 5000-gallon fuel tankers (1-3 normally). The battalion tank truck drivers will sign the Bulk Fuel Log maintained by the POL Section to acknowledge receipt of the fuel.

(b) The Intermediate Support Company (ISC) POL Section will submit a requisition to the Support Command POL Company when resupply is needed. The driver of the ISC tanker signs the POL Company's Bulk Fuel Log upon receipt of the fuel. The POL Company maintains records of receipts and issues, and requests resupply of fuel when the reorder point is reached. Resupply of the POL Company Tank Farm is coordinated with the Materiel Control Point (MCP).

(c) Bulk Fuel Logs at each level--battalion, ISC, and POL Company--are summarized once each month. A reconciliation of all logs and stock records is performed by the POL Company and the results are forwarded to the MCP for review.

(d) When the ISC requisitions fuel to refill the 5000-gallon tank trucks, supply accountability is maintained as follows:

1. Copy 1 of the requisition form is retained by the Support Command POL Company.
2. Copy 2 is retained at the Intermediate Support Company.
3. Copy 3 is signed by the commander of the Intermediate Support Company--to acknowledge receipt of the fuel--and is retained by the Intermediate Support Company.
4. Copy 4 is signed by the commander of the ISC and is returned to the Support Command POL Company.

b. Packaged POL and Bottled Gasses: Packaged products, to include bottled gasses, are to be requisitioned using normal supply procedures. The MCP will direct issue--through use of a materiel release order--from either the depot or the POL Company, as appropriate. Resupply of bottled gasses requires the direct exchange of empty cylinders for full ones. Replenishment of the POL Company's stock is coordinated by the MCP.

c. Local Purchase: The MCP can authorize local procurement of bulk fuel and bottled gasses. When this is the case, the Support Command will perform the purchasing function. When the contractor delivers the fuel to the tank farm, a receipt/payment document will be signed by the accountable officer after inspection for quantity and quality; the receipt/payment document will be executed in four (4) copies.

(1) Copy 1 will be sent to the Purchasing Office to prepare payment vouchers.

(2) Copy 2 will be sent to the MCP to adjust stock records.

(3) Copies 3 and 4 are given to the contractor; Copy 3 will be presented to the Purchasing Office for payment and Copy 4 is retained for the contractor's files.

7. Ammunition: The document and materiel flow for ammunition supply and the control and guidance for the use of the various forms peculiar to ammunition are presented below:

a. Battalion Supply from the Support Command: The battalion requiring ammunition will initiate a requisition using the standard requisition form; the ammunition request must be signed

by the commander or his designated representative. The requisition is sent to the Ammunition Officer at the Support Command headquarters for validation. In time of peace, the Ammunition Officer consolidates approved requisitions and sends them once daily to the Ammunition Company's Ammunition Supply Point (ASP). In wartime, ammunition requisitions are hand-carried to the Ammunition Officer and after validation are hand-carried to the ASP by battalion personnel. (The daily ammunition supply rate and issue priorities are established by commanders through operations channels; the Ammunition Officer assures that the requisitions conform with the established ammunition supply rates.) The ASP prepares the ammunition for issue and either notifies the battalion to pick it up (peacetime) or issues it to the waiting battalion personnel (wartime). The driver will sign the issue document upon loading the ammunition into the battalion vehicle(s); one copy of the issue document is sent to the MCP to adjust the ammunition records. Ammunition records are maintained by stock number and lot number.

b. Battalion Supply from the Depot: If the required ammunition is unavailable at the ASP, either the Ammunition Officer or the ASP will send the requisition to the MCP. The MCP can direct release of the ammunition from the depot or another ASP.

c. ASP Supply from the Depot: The ASP will establish a Requisitioning Objective (RO) and a Reorder Point (ROP) for ammunition items stocked. When the ROP is reached, a replenishment requisition will be submitted to the Logistics Command Ammunition Officer for validation and approval. Approved requisitions are

passed to the MCP which will issue a Materiel Release Order to the depot. Transportation to move the ammunition to the ASP will be provided by the Support Command's Transportation Battalion.

d. Ammunition Forms/Records:

(1) Basic Document. The requisition form is the basic document used. It serves as a request, a release order, a release confirmation or a release denial, a redistribution order or a receipt.

(2) Ammunition Control Card: (Figure III-16). This form is kept by the storage facility and is used when ammunition is received, issued or relocated within the boundaries of the ASP.

Examples of when the Control Card is used are:

- (a) Consolidation of storage locations.
- (b) Movement of stocks into storage from segregation areas.
- (c) Relocation of ammunition found to be unserviceable.
- (d) Change in condition coding.

(3) Ammunition Storage Card: (Figure III-17). This card is prepared for each lot of ammunition in storage. The cards are located in the ammunition storage facility and serve primarily as inventory type documents. The cards indicate how many rounds of each lot are in the ASP or depot. When ammunition is received or issued, the card is annotated to reflect the change.

AMMUNITION CONTROL CARD

| | | | | | |
|--|---------------------|--|------------------|--------------------------|----------------------|
| TYPE TRANSACTION: <input type="radio"/> RECEIPT <input type="radio"/> ISSUE <input type="radio"/> RELOCATION <input type="radio"/> CHANGE <input type="radio"/> CONDITION | | UNIT: | | DATE: | |
| AUTHORITY: | | | | | |
| FROM: | | NSA: | LOT NO.: | CONDITION: | STACK: |
| TO: | | NSN: | LOT NO.: | CONDITION: | STACK: |
| VEHICLE: | | | | | |
| NSN: | NOMENCLATURE | LOT NO. | CONDITION | NO. OF CONTAINERS | NO. OF ROUNDS |
| SIGNATURE OF ISSUING OFFICER: | | SIGNATURE OF RECEIVING OFFICER: | | DATE: | DATE: |

FIGURE III-16

E. International Logistics Communications System: The supply system herein described is a manual one. It envisions the manual performance of all management functions of supply. However, if the customer country has acquired equipment from the United States, any replenishment items, spare parts, or repair parts will probably have to be purchased from the United States. In such circumstances, it is normal that a support agreement will be negotiated with the US Army Security Assistance Command (USASAC); thereafter, the customer country can submit requisitions to the US supply system. Experience has shown that countries using manual systems to interface with the US system encounter problems. For example, supply requests and transactions submitted through the mail are very slow. Historical data reveals that it usually takes 60-90 days before the country requisitioner receive a return status on a manual request sent through the mails. As another example, US cataloging changes often cause customer requisitions to be cancelled. Stock number and catalog management data (CMD) changes from US supply organizations come in three forms: microfiche, magnetic tape, and punched cards. Unfortunately, neither these formats nor the sheer volume of changes are compatible with manual systems. The stock number and CMD changes from the US system usually cannot be made to country records in a timely fashion. Without these necessary changes, the affected country's requisition cancellation rates are much higher than normal. A solution to these problems is the International Logistics Communications System, or--as it is commonly known--Dataphone.

1. What Dataphone Is and Does: Dataphone is a communications system which uses the telephone to link a small computer in the customer country to the computers in the Defense Automatic Addressing System Office (DAASO) in Dayton, Ohio. Each day, at a pre-arranged and specified time, DAASO will call the country having the Dataphone system in place. After it is verified that a clear communication link has been established, the country's computer will transmit any supply transactions and messages (e.g., requisitions, cancellations, etc.) which have accrued since the last contact 24 hours earlier. Following that, the DAASO will transmit to the country any transactions or messages which have collected at DAASO for the country; the DAASO computer will automatically identify and hold traffic for the country until it is time to transmit it. The average time to receive status on a requisition submitted through Dataphone is 72 hours. Messages and data received from the country are automatically validated, entered into the US automated logistics system, and forwarded to the appropriate addressee. Other Dataphone system characteristics are:

- a. The system will accept, route, and send narrative messages to and from the country using a plain language address.
- b. Dataphone is capable of automatic interface with the international TELEX network.
- c. The DAASO computer, if interrupted during a transmission, will automatically mark where the break occurred. When reconnection takes place, only the message in progress when the interruption occurred will be repeated, and the rest of the file will be transmitted.

d. The DAASO computer can interface with many different computers; this gives the country a variety of choice in selecting a computer.

e. The country computer is planned to be a "mini-computer." This is because of its relative low cost and small physical size.

f. The country computer hardware and software are designed to be flexible and modular. The standard system consists of a tele-communications package which will allow the system to send and receive narrative and/or logistics data messages such as requisitions and status. The communications housekeeping is performed automatically and the logistics data are delivered in "case" sequence to the country supply personnel.

g. Many contractors and freight forwarders already are connected to the US supply system network. This allows countries using Dataphone to exchange information with these contractors and freight forwarders electronically.

h. Because of the modular design of the mini-computer, it can be expanded to automate the supply system--in a step by step manner--when that is desired.

2. How Dataphone is Installed: DAASO can provide to an interested country an "off the shelf" computer capable of connecting that supply system with the US logistics system. Or, DAASO will install any other computer selected by the country. In either case, DAASO tries to emplace a "turn-key" operation; that is, when installed the system is operational. If the country selects the standardized computer, the cost will be far below that of a system

designed around another machine. Software now designed for the standard computer will be updated by DAASO as changes, improvements, or modifications occur in the US logistics system. (Plus, the standard computer contains internal diagnostics which run each time the machine is turned on, thus the preventative maintenance on the system can be performed by the operations personnel.) The system can be configured many different ways to satisfy a country's requirements.

a. When a country procures the "turn-key" system, the complete system is first installed at DAASO for up to 60 days. During this period, it undergoes complete testing. During the testing period, country personnel will go to DAASO to receive orientation training and to be checked out on the operation of their equipment. The training consists of hardware familiarization, software training, and operations training. Following this, the equipment is packaged and shipped to the country for re-installation by both DAASO and country personnel. Depending on the configuration selected, and daily message volume, total costs for the first year will range from 100,000 to 120,000 US dollars. Subsequent year costs are substantially reduced. (The usage costs are based on "line costs" plus a "time used" basis; for most countries the use cost per minute is two US dollars or less.)

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