M-444

Department of Transportation
Office of the Secretary
Washington, D.C.

ORDER

DOT 4420.5

6-13-78

SUBJECT: MANAGEMENT OF MATERIEL INVENTORIES

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1. PURPOSE. This order prescribes policy and uniform procedural requirements for the management of materiel inventories within the Department of Transportation (DOT).

2. REFERENCES.

   a. Federal Property and Administrative Services Act of 1949 (40 U.S.C. 483(b)), which directs each executive agency to maintain adequate controls and accountability systems for property under its control.

   b. Federal Property Management Regulations Subpart 101-27 which provides policies and guidelines for the management of Government inventories.

   c. General Accounting Office Policy and Procedures Manual, 2 GAO 12, which provides guidance to Federal agencies in the establishment of a system of accounting for property.

   d. DOT 2700.8A, Accounting Principles and Standards, of 6-13-78, which establishes uniform accounting principles and standards for DOT.

   e. DOT 4000.4, Department of Transportation Utilization of Department of Defense Sources of Supply, of 12-3-74, which prescribes DOT policy and procedural information for utilization of DOD sources of supply.

   f. DOT 4420.2, Preparation and Submission of Supply Activity Report (GSA Form 1473) and Supplemental Supply Management Information, of 6-13-75, which prescribes procedures for preparing and submitting the Supply Activity Report.

   g. DOT 4420.3, Department of Transportation Participation in the Federal Catalog System, of 10-15-75, which prescribes policies, procedures, and responsibilities for DOT participation in the Federal Catalog System.

3. POLICY. It is the policy of this Department that materiel inventories will be established and maintained only when supply support can be provided more economically through such inventories rather than through acquisition upon demand for direct use, and/or where timely support is of

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essence and such support can be effectively provided only from on-hand inventories. Materiel inventories within the Department are valuable assets which are utilized to provide continuing supply support for ongoing Departmental programs. As such, these inventories must be managed in an effective manner to assure that timely and adequate support is rendered, that optimum levels are maintained, that proper control and protection are provided, and that appropriate data are available to permit the maintenance of valid related financial records and accounts where required.

4. DEFINITIONS.

a. Materiel. A collective term which includes supplies, materials, repair parts, components, assemblies, and equipment.

b. Inventory. Means a quantity of materiel acquired in advance of actual need or use and held in storage by a DOT inventory holding activity for issue or release to using activities upon demand. However, for the purpose of this order, the term "inventory" does not include (1) user stocks as described in Paragraph 6 of this order, and (2) materiel held in other control accounts such as in-use property and property pending disposal.

c. DOT Inventory Holding Activity. Means any DOT organizational unit which maintains an inventory of materiel, either wholesale or retail, as defined in this order.

d. Expendable Operating Materiel. Materiel required for day-to-day operations that is expensed upon issue from inventory and (1) is considered to be consumed in use, or (2) is reparable but is not managed as Exchange & Repair Materiel.

e. Exchange & Repair (E&R) Materiel. Reparable materiel which, when unserviceable, is to be returned to the DOT issuing activity for serviceable replacements.

f. Project Materiel. Materiel, other than reserve stock, which has been obligated or set aside, and is being held in inventory, for projects involving the installation or modification of existing facilities/equipment or construction or outfitting of new facilities/equipment. The term Project Materiel is synonomous with the term Program Materiel.

g. Recurring Items. Items for which repetitive demands are expected based on past usage, or for which sufficient knowledge is available to reasonably predict repetitive demands.

h. Insurance Items. Items for which requirements are not recurring, their need usually being caused by unpredictable events, the items are essential, and the leadtime required to obtain the items when needed would create an unacceptable situation.

i. Economic Order Quantity (EOQ) Principle. A mathematically proven method for arriving at the lowest total cost for ordering and holding inventory to meet expected supply requirements.

j. Safety Stock. That quantity of inventory required to be on hand to permit continued issue in the event of minor interruptions of normal stock replenishment actions or unpredictable fluctuations in issues during replenishment leadtime.

k. Leadtime Stock. That quantity of inventory expected to be issued during the interval of time required to replenish stock through repair, procurement or production actions.

l. Reserve Stock. That quantity of recurring Expendable Operating Materiel and Exchange & Repair Materiel inventory which has been reserved to satisfy specific one-time, non-recurring requirements.

m. Operating Stock. The quantity of inventory expected to be issued during the interval of time between one replenishment of stock and the next.

n. Stockage Objective. The maximum quantity of inventory that should normally be on-hand to meet initial and recurring demands. Stockage objective includes safety stock, reserve stock, and operating stock.

5. TYPES OF INVENTORIES. Two types of inventories are authorized to be maintained by DOT elements, i.e., wholesale and retail.

a. Wholesale Inventories. These are inventories of materiel maintained by a single inventory holding activity within a DOT administration primarily for issue to other activities throughout the same administration. Generally, these inventories include materiel peculiar to the needs of an administration which are obtainable normally only from commercial sources. Wholesale inventories are authorized only when administration-wide support is essential as opposed to localized support. Wholesale stocks may be physically positioned at different locations as required; however, management of any particular item on a wholesale basis must be centralized (i.e., managed by a single inventory manager) within the administration. Wholesale inventories may include any of the classifications of materiel inventory, i.e., Expendable Operating Materiel,

Exchange & Repair Materiel or Project Materiel. These inventories may include both recurring and insurance items. Formal property and financial records are required for all wholesale inventories. Organizational elements within DOT that now maintain and manage wholesale inventories are the FAA Depot and the three USCG Inventory Control Points. The establishment of any other wholesale inventories within the Department requires the specific approval of the Office of the Secretary (M-64).

b. Retail Inventories. These are inventories of materiel maintained by a particular organizational element within an administration primarily for support of the internal operating needs of that organizational element. However, user stocks as discussed in Paragraph 6 of this order are not considered to be retail inventories. Formal property and financial records are required for all retail inventories. Materiel for retail inventories may be obtained from administration wholesale inventories, from other Government sources, or from commercial sources. Retail inventories may include any of the classifications of materiel inventory, i.e., Expendable Operating Materiel, Exchange & Repair Materiel, or Project Materiel. These inventories may include both recurring and insurance items. All inventories within this Department are considered retail inventories except those specifically identified as wholesale in Paragraph 5.a. of this order.

USER STOCKS. User stocks are holdings of materiel that have been procured for direct charge to end-use or that have been expended upon issue from materiel inventory, and are being held at point of use. User stocks are commonly referred to by several names such as Allowance List Stocks, Bench Stocks, Shop Stocks, Unit Stocks, Site Stocks, etc. User stocks are not considered inventory for purposes of this order; therefore, they are not required to be managed in accordance with the uniform procedural requirements provided herein. Controls should be established, however, to assure that user stock materiel is used in a prudent manner, is physically protected, and that on-hand quantities are maintained at reasonable levels.

7. INVENTORY CLASSIFICATIONS.

a. Within the two broad types of inventory, i.e., Wholesale and Retail, each item in DOT materiel inventories will be further classified in one or more of the categories reflected below, as appropriate:

(1) Expendable Operating Materiel,

(2) Exchange & Repair Materiel,

(3) Project Materiel.

b. Within the Expendable Operating Materiel and Exchange and Repair Materiel classifications, items will be further identified as either Recurring or Insurance. Further, for purposes of improved management visibility, all wholesale inventories and all major retail inventories (i.e., retail inventories with 5,000 or more line items or $1 million or more on-hand value) within these classifications shall be subdivided into major commodities where such subdivisions are identifiable. Normally, the subdivision will be by specific commodity or groupings of homogeneous commodities; however, other subdivisions may be used where appropriate. Retail inventories excluded from mandatory subdivision by the 5,000 item or $1 million criteria may be subdivided if desired.

8. ITEM ENTRY. Administrations shall require each of their inventory holding activities to utilize established item entry criteria for the purpose of determining whether an item should be added to inventory. At the discretion of the administration, such criteria can be developed either by the administration's Headquarters element or by the individual inventory holding activities.

a. Expendable Operating and E&R Materiel. Criteria developed for recurring and insurance items must take the following requirements into consideration.

(1) Recurring Items.

(a) To be considered for addition to recurring inventory an item must meet the following qualifications:

1 The item must be physically adaptable to storage and issue.

2 Usage of the item must be recurring in nature.

3 The item must have a rate of deterioration or obsolescence that is sufficiently low to avoid unnecessary loss.

(b) An item meeting the above qualifications should be stocked if it meets any one of the following conditions:

1 Advance purchase and storage is necessary because of long procurement leadtime.

2 The item is of special manufacture or design and is not readily available from commercial sources.

3 An adequate industry distribution system does not exist to insure availability when needed.

4 Volume purchases are necessary to secure timely delivery and advantageous prices.

(c) If an item qualifies under 8.a.(1)(a) above but does not require stocking because of any one of the specific elements listed in 8.a.(1)(b), then the item should be considered for stockage based on cost effectiveness.

1 Cost effectiveness item entry criteria should be based on a comparison of the cost to procure (or repair), store, and issue versus the cost to obtain upon demand for direct use or consumption. When this comparison reflects that it is more economical to stock than to obtain upon demand for direct use or consumption, items should be added to inventory.

2 Where recurring use items are potentially reparable, such items shall not be designated as reparable unless it has been ascertained that repair is essential or that it is more economical to repair than to replace with new units.

(d) Item entry criteria which are based on cost effectiveness should be reviewed periodically to reverify cost of stocking versus acquiring for direct use or consumption. Such reverification should be made at least every three years.

(2) Insurance Items. Insurance items shall be added to inventory only when such items meet the definition set forth in Paragraph 4.h. of this order. Items shall not be removed from recurring inventory and added to insurance inventory when recurring demand has ceased, unless such items definitely qualify as insurance. When items identified as insurance have recurring demand, they shall be reclassified as recurring items.

b. Project Materiel. Items shall be added to Project Materiel inventory when determined necessary by the responsible project manager. Whenever feasible and economical, project materiel should be shipped from the source direct to the project site rather than placing the materiel in inventory.

9. STOCK LEVELS.

a. Expendable Operating Materiel.

(1) Recurring Items. Establishment and maintenance of stock levels shall be based on procedures which, as a minimum, include the elements set forth below.

(a) Computed Demand. Demand data shall be used in the calculation of stock levels. Demand may be computed on the basis of average-demand (average of actual past demand history) or forecasted-demand (past demand modified by a trend factor). Non-recurring demands shall not be included in the computation of demand. When an item has been in inventory for 12 months or longer, at least 12 months of history shall be used in computing demand.

(b) Acquisition Review Point. An acquisition review point shall be established for each recurring item. The review point consists of safety stock, leadtime stock, and reserve stock when applicable. When the stock status (on-hand plus due-in minus due-out) of an item reaches the review point, the item shall be reviewed to determine if replenishment action is required. The review point should be adjusted periodically based on changes in demand and/or leadtime.

1 Safety Stock. Safety stock shall be maintained for each recurring item. Safety stock can be either a static level, i.e., 1 month, 2 months, or 3 months of supply, or it can be variable. Static safety stock shall not exceed 3 months. The variable safety stock concept takes into consideration fluctuations in demand so that each item is measured separately according to its own behavior pattern. With a variable safety stock concept it is possible to attain a pre-established specified level of effectiveness. The variable safety stock concept is the preferred method to be used in the management of all Departmental wholesale inventories and in the management of major retail inventories where inventory management is accomplished with use of computers. Except when a different level of effectiveness is determined to be more appropriate for specific items or groups of items, 90% shall be used as the level of effectiveness (as described in Paragraph 16 of this order).

2 Leadtime Stock. Leadtime stock shall, under normal market conditions, be based on an average of past leadtime experiences. Where abnormal market conditions exist, such conditions should be taken into consideration and leadtime levels calculated accordingly. Generally, separate leadtimes should be established for acquisitions from Government sources and for acquisitions from commercial sources.

3 Reserve Stock. Reserve stock may be established (1) only on an item-by-item basis; (2) only when a known nonrecurring requirement exists; and (3) only in that quantity needed to satisfy the requirement.

(c) Stock Acquisition.

1 DOT inventory holding activities shall ordinarily utilize the Economic Order Quantity (EOQ) principle in determining the proper quantity of materiel to acquire for inventory. The computed EOQ level may be adjusted when such action will result in a more economical purchase quantity. Items may be exempted from EOQ application (1) on an item-by-item basis under such circumstances as seasonal requirements, lack of storage space, budgetary limitations, or limited shelf life; or (2) when an item is being added to inventory, or has been in inventory for less than 12 months. When EOQ is not used, stock acquisition should not exceed 12 months of supply unless the application of specific decision factors results in a more cost-effective acquisition quantity.

2 When computers are being used for inventory management, inventory activities may, at their option, apply the basic EOQ formula or use EOQ tables. All other activities shall use EOQ tables. In either case, inventory activities are required to perform studies to determine the cost to order and the cost to hold stocks. Such cost studies shall be made every two years so that EOQ cost ratios can be adjusted if required. Separate cost ratios should be established for acquiring from different sources of supply (i.e., Government vs. commercial), and/or where different procurement methods are used (i.e., formal contracting vs. small purchasing), provided the cost to order varies appreciably. Each DOT inventory activity shall establish upper and lower limits, in terms of months of supply, for EOQ acquisitions. As a general rule, such acquisitions shall not exceed a three years supply or be less than one month of supply.

3 If the stock status of an item is below acquisition review point at the time replenishment action is initiated, the quantity acquired shall include the additional amount necessary to compensate for the deficiency in review point stock.

4 Additional stock exceeding normal replenishment quantity may be acquired when necessary to support a known increase in demand over and above computed demand.

(2) Insurance Items. Stock levels for insurance items shall not be greater than the minimum required to alleviate the critical condition on which the requirement for stockage is based. No safety stock will be maintained for insurance items. Replenishment shall be limited to that quantity required to maintain the established level. The EOQ principle shall not be used to replenish insurance items.

b. Exchange and Repair Materiel.

(1) Recurring Items.

(a) Wholesale Activities. Establishment and maintenance of stock levels shall be based on procedures which, as a minimum, include the elements set forth below.

1 Computed Demand. Stock levels shall be based on computed demand, using either average-demand or forecasted-demand, as discussed in Paragraph 9.a.(1)(a) of this order. Demand computation of E&R items shall include rotable issues and recurring non-rotable (outright) issues.

2 Safety Stock. Safety stocks shall be maintained in accordance with Paragraph 9.a.(1)(b)1 of this order.

3 Reserve Stock. Reserve stocks may be maintained in accordance with Paragraph 9.a.(1)(b)3 of this order.

4 Repair Leadtime. A repair leadtime shall be established for each E&R item, and should represent the average time required to effect repair and return to inventory. In establishing this level, consideration must be given to the source of repair, i.e., Agency, DOD, or Commercial, when repair time by these sources vary.

5 Acquisition Leadtime. An acquisition leadtime shall be established for each E&R item, and under normal market conditions should be based on an average of past procurement leadtime experiences.

6 Repair Review Point. A repair review point shall be established for each E&R item. The repair review point shall be the asset level at which repair action should be considered and shall consist of serviceable units only. When the number of serviceable units on-hand and due-in from repair minus due-outs is equal to or less than the established repair review point, then a decision must be made as to whether or not additional unserviceable units shall be repaired.

7 Acquisition Review Point. An acquisition review point shall be established for each E&R item. The acquisition review point is the asset level at which procurement action should be considered and shall consist of both serviceable and unserviceable units. When the number of serviceable and unserviceable units on-hand and due-in minus due-outs of serviceable units and projected condemnation of unserviceable units is equal to or less than the acquisition review point, then a decision must be made as to whether or not additional units are to be acquired.

8 Stock Acquisition. Stocks of E&R items shall be limited to the minimum level necessary to sustain a responsive and cost-effective E&R inventory operation. Replenishment of serviceable stock by repair should normally be based on economic repair quantity determinations. Additional units shall not be acquired when adequate reparable assets are available. Subject to economic buy quantity determinations, replenishment by acquisition should normally be limited to that quantity required to replace condemned units and recurring non-rotable issues. Replenishment quantities may be increased when necessary to support a known projected increase in demand over and above computed demand.

(b) Retail Activities. Stock levels of E&R items at retail inventory activities of the Coast Guard and FAA shall be maintained in accordance with Coast Guard and FAA internal regulations. Stock levels of E&R items at other DOT retail activities shall be maintained in accordance with 9.b.(1)(a) of this order.

(2) Insurance Items. Stock levels for insurance items shall be established and maintained in accordance with Paragraph 9.a(2) of this order.

c. Project Materiel. Quantitative requirements for project materiel inventory shall be as determined by the responsible project manager. Supply management personnel are responsible for the identification, recordkeeping, storing, staging and shipment of this materiel while in inventory. Levels of inventory for project materiel shall be limited to quantities required to support assigned projects. Supply management personnel shall make periodic reviews (at least annually) of project materiel inventory to identify any materiel on-hand for which a valid project requirement does not exist. If unassigned materiel is on-hand, supply personnel shall promptly request disposition instructions from the responsible project manager.

10. ITEM DELETION. Reviews shall be made at least annually of all items in Expendable Operating Materiel and E&R Materiel inventories which have not experienced one or more instances of demand during the preceding 12 months; provided, however, that such items have been in inventory for at least 12 months. These reviews shall be made for the purpose of determining whether such items should be retained in inventory. In making this determination, the same criteria used for item entry, as set forth in Paragraph 8 of this order, shall be applied. Recurring items which cease to have demand may be retained as insurance items if they meet the insurance item criteria, but such items must be reclassified in the records as insurance items. Prompt action shall be taken to dispose of on-hand quantities of items deleted from inventory, and such items shall also be promptly deleted from the inventory records.

11. ECONOMIC RETENTION. Economic Retention Limits (ERL's) represent the maximum quantity of stock in excess of stockage objective which should be retained in inventory, considering the cost to hold such excess versus the cost to dispose of it and reprocure when needed. Reviews shall be made at least annually to identify recurring Expendable Operating Materiel and E&R Materiel items that have an on-hand quantity greater than ERL. However, items which are not readily procurable may be exempted from ERL review. When an ERL based on calculated costs has not been established, then (1) the ERL for wholesale inventories shall not exceed 5 years of supply, and (2) the ERL for retail inventories shall not exceed 3 years of supply. Prompt action shall be taken to dispose of on-hand quantities greater than ERL.

12. STOCK NUMBERING. All items in DOT materiel inventories shall be identified with national stock numbers or local stock numbers as prescribed in Order DOT 4420.3, "Department of Transportation Participation in the Federal Catalog System".

13. INVENTORY RECORDS.

a. Except as authorized in b. below, inventory records shall be maintained on a perpetual balance basis for all items in DOT materiel inventories. Such records must be current, complete, and accurate, and shall support the maintenance of related financial records and accounts. As a minimum, the inventory records must reflect the following data: stock number, basic noun, unit of issue, unit price, quantity on hand, due-in, due-out, receipts, issues, and adjustments. All transactions affecting the records shall be documented and shall be posted to the records in a timely manner. Either manual or mechanized records may be utilized by an inventory holding activity at the discretion of the responsible administration.

b. Administrations may authorize a retail activity to use a combination of perpetual and periodic balance inventory records provided that the activity is not using automated data processing for inventory record-keeping, and provided that (1) periodic records are utilized only for those items of recurring Expendable Operating Materiel for which the normal EOQ replenishment quantity is 12 months supply or more, and (2) individual issues of periodic record items are not costed to work orders, projects, or similar cost entities. Issue transactions will not be posted to periodic records, but annual physical inventories must be taken and the results of such inventories posted to the records.

14. INVENTORY ADJUSTMENTS. Inventory records shall be adjusted when the quantity or value on hand differs from the recorded balance, if after research the difference cannot be traced to incorrect preparation or processing of previous transaction documents. Record errors traced to previous transaction documents shall be processed as corrections. All adjustments shall be documented and shall be subject to reviews and approvals as required by administration regulations. Related financial records and accounts shall be adjusted based on approved adjustment documents. Reports of survey shall be prepared when required by Order DOT 4410.1, "Survey of Lost, Damaged, or Destroyed Government Personal Property".

15. PHYSICAL INVENTORIES. Physical inventories shall be taken periodically of all items in DOT materiel inventories. Any of several methods of inventorying are acceptable, such as wall-to-wall, cyclical, sampling, or a combination of such methods. As a general rule, physical inventories at retail activities should be conducted on an annual basis. The frequency and method of inventory should be determined on the basis of such factors as nature and value of materiel, inventory turnover, volume and value of record adjustments, and results of previous physical inventories. Each administration is responsible for providing guidelines to each of its inventory holding activities setting forth the frequency and methods to be used in performing physical inventories.

16. INVENTORY EFFECTIVENESS. A measure of inventory effectiveness is the number of issue requests (line-item stock requisitions) filled from inventory on-hand upon receipt of such requests, expressed as a percentage of the total number of requests received. Desired inventory effectiveness levels shall be established for each inventory holding activity based on the criticality of support requirements. At the discretion of each administration, these levels can be established either by the administration's Headquarters element or by the individual inventory holding activity. One level can be established for the entire inventory or different levels can be established for specific items or groups of items within the inventory. The effectiveness levels achieved shall be compared at least annually to the established desired levels. If the achieved levels fall below the desired levels, a review shall be made to determine why the desired levels were not achieved, and necessary corrective actions taken. If other desired effectiveness levels have not been established, then a level of 90% shall be used.

17. REPORTING OF INVENTORIES. Reports on materiel inventories shall be submitted annually as required by Order DOT 4420.2, "Preparation and Submission of Supply Activity Report (GSA Form 1473) and Supplemental Supply Management Information".

18. OPERATING ELEMENT IMPLEMENTATION. The policy and procedures set forth in this order are for uniform application throughout the Department. Each operating element shall prescribe such detailed procedures as are necessary to implement this order, taking into account the organizational structure and associated assignment of management responsibilities within the element.

FOR THE SECRETARY OF TRANSPORTATION:

Robert L. Fairman
For the Assistant Secretary
for Administration