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BY THE COMPTROLLER GENERAL

Report To The Congress OF THE UNITED STATES

Improved Management Of Fleet Supplies And Spare Parts Can Save Millions Without Affecting Readiness

Prior GAO reviews have disclosed that the Navy needs to improve its shipboard supply management policies and practices. Actions taken to adopt some of the GAO recommendations have resulted in achieving measurable savings of at least \$89 million. This is a good start, but further action should be taken. Additional opportunities are available for the Navy to save as much as \$94 million over a 5-year period on the procurement of repair parts and supplies. This can be accomplished by improving and exercising tighter controls over shipboard supply management policies and practices on surface force ships, submarine tenders, and aircraft carriers.



116305



PLRD-91-59
SEPTEMBER 11, 1981

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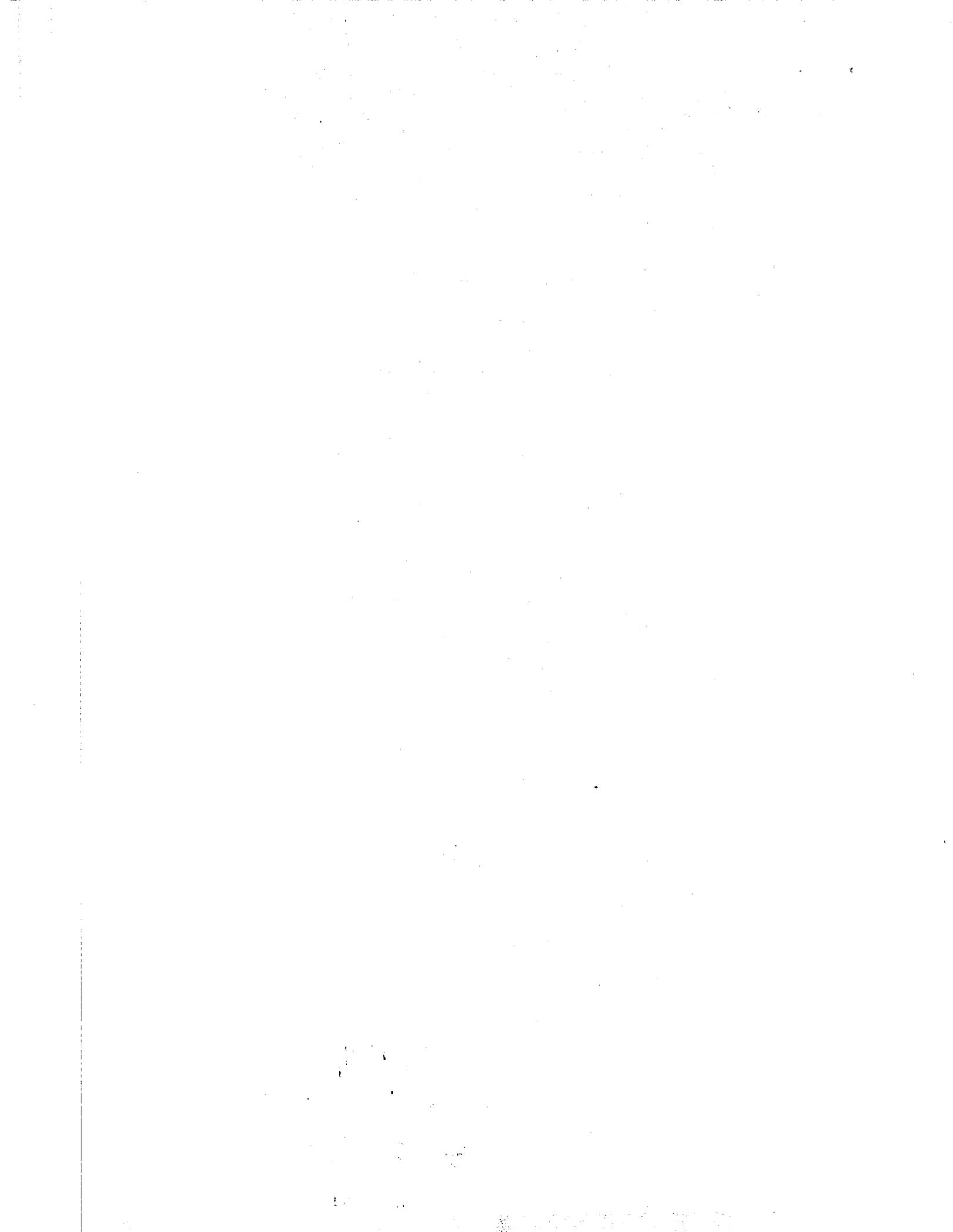
To the President of the Senate and the
Speaker of the House of Representatives

This report points out that, acting on prior General Accounting Office recommendations, the Navy has improved its management of shipboard supplies, but further improvements are needed. Further improvements can be made without adversely affecting readiness of the fleet.

We are sending copies of this report to the Director, Office of Management and Budget; the Secretary of Defense; and the Secretary of the Navy.

Milton J. Fowler

Acting Comptroller General
of the United States



D I G E S T

Prior GAO reviews on the Navy's supply support for submarines, aircraft carriers, and non-automated combat surface ships disclosed large excesses of spare parts and supplies on some ships which were not available when needed to fill shortages of other ships. Also, substantial investments were made for unneeded parts and supplies, while other critically needed items were in short supply. GAO concluded that future investments in stocks for those ships could be reduced substantially and recommended specific actions to achieve the reductions. GAO made this review to assess actions taken by the Navy in response to GAO's earlier reports on shipboard supply management and to evaluate the effectiveness of supply support provided by the Navy's automated surface ships.

In its current review, GAO found that the Navy has acted on some of the earlier recommendations and has achieved savings of at least \$89 million. (See p. 27.) But, the Navy has taken little or no action on other recommendations. (See pp. 15 to 19 and 26 to 28.)

GAO believes additional opportunities are available for the Navy to save as much as \$94 million over a 5-year period on the procurement of repair parts and supplies. As much as \$73 million of this can be realized by adopting more stringent criteria for submarines and tenders. The remaining \$21 million applies to automated surface ships, not previously reported on. (See p. 20.)

GAO believes that these savings can be accomplished by improving:

- Shipboard supply management policies and controls to ensure that (1) excess inventories are not retained aboard ship after supply overhauls and (2) the Navy adopts a stockage criterion which is standard among the Atlantic and Pacific Fleets and one that will produce the best results in terms of trade-offs among investment, timely filling of requisitions, and stock excessing actions. (See pp. 12, 19, and 28.)

--Visibility over shipboard supply by insisting that authorized allowances be adhered to. (See pp. 12, 19, and 28.)

--The process for identifying, redistributing, and offloading excess materials on a timely basis. (See pp. 12, 19, and 28.)

--The accuracy rate of physical inventories. (See p. 12.)

GAO recommends that the Secretary of Defense direct the Navy to:

--Direct fleet commanders to consider any item exceeding the authorized allowance to be excess, whether it is on hand or on order. (See p. 12.)

--Direct fleet commanders to monitor excesses and assure that they are redistributed or made available to the supply system in a timely manner. (See p. 12.)

--Direct fleet commanders to assure that inventory accuracy rates are improved to the acceptable level of 90 percent. (See p. 12.)

--Adopt a more stringent criterion to add and retain items for demand-based stock levels on submarines and tenders. (See p. 20.)

--Change its policy so that submarine tenders will limit demand-based increases in stock levels to quantities needed to sustain current operations after considering initial allowance stocks in excess of the 90-day requirement when reevaluated based on current demand experience. (See p. 20.)

--Direct the Pacific Fleet to more vigorously emphasize the offloading of unauthorized material and more closely observe current standards. (See p. 20.)

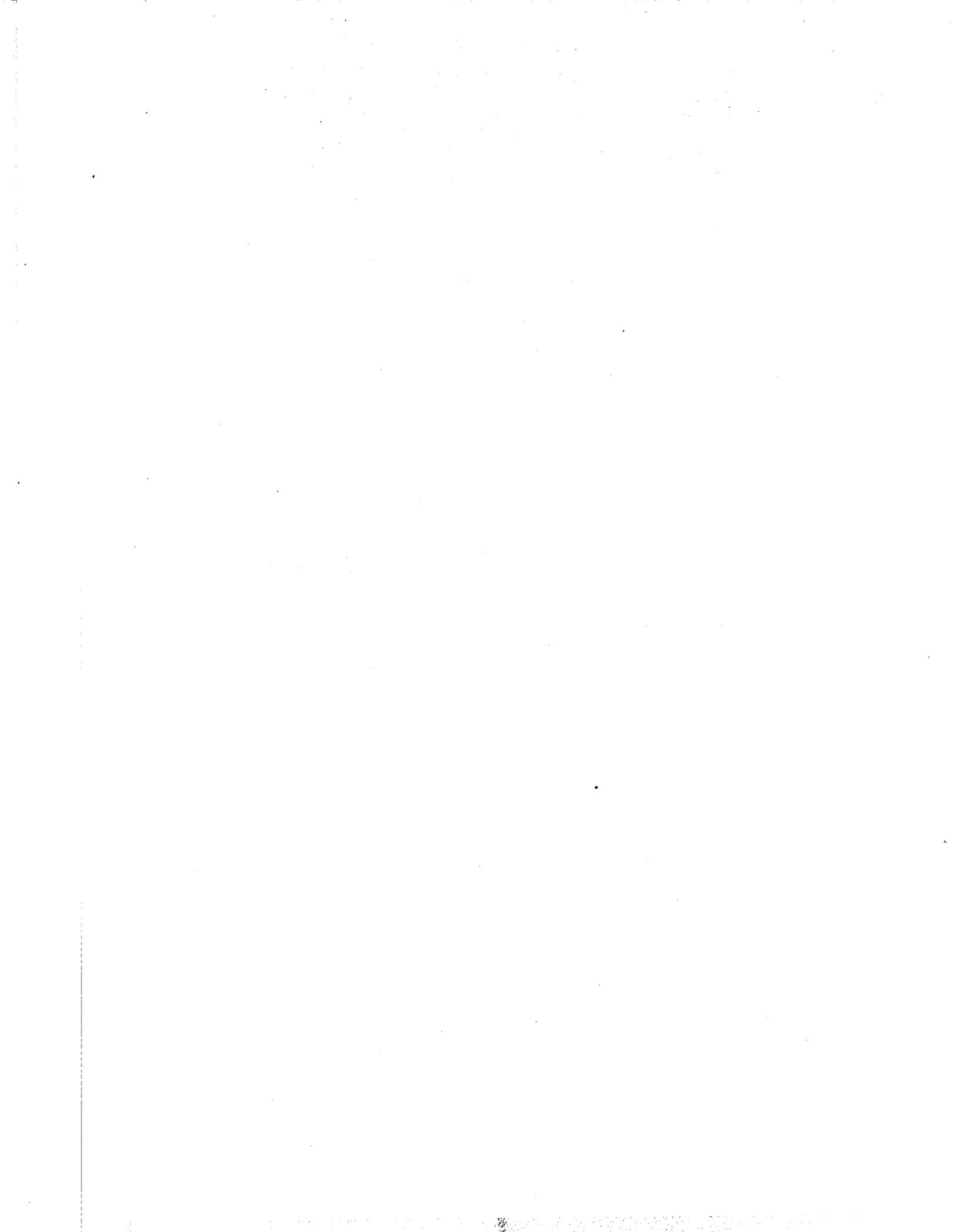
--Direct aircraft carriers to exercise controls to prevent ordering certain items that are excess to allowances and to promptly turn in all such excess items. (See p. 29.)

In commenting on this report (see app. I), the Navy said it agreed with prior GAO findings

that improvements to shipboard supply management policies and practices will result in savings. However, it did not agree with the extent of savings projected by GAO. GAO's initial savings estimate, applicable to submarines and tenders, was arrived at by using data included in a Navy study which showed that the more stringent criteria would reduce excess stocks by about 67 percent. Since its current review showed excesses being generated at about the same level as the prior review, GAO believes the estimate is still valid. Savings expected to result from use of excess stocks aboard automated ships were estimated on the basis on the percentage of those excess stocks needed to satisfy current requirements of other Navy activities. Although not intended to be a precise measurement of savings, GAO believes these approaches are reasonable and demonstrate that significant savings can be achieved. (See p. 20.)

The Navy also said it generally concurred with the findings and recommendations in the current report, except for the recommendations concerning adopting the more stringent stockage criteria and limiting demand-based increases in stock levels aboard tenders to quantities needed to sustain current operations. (See pp. 21 and 22.)

GAO continues to believe that these changes would bring about more economical operations, without adversely affecting supply effectiveness. (See pp. 21 and 22.)



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ABBREVIATIONS

BRFs	best replacement factors
COSAL	Coordinated Shipboard Allowance List
FILL	Fleet Issued Load List
FMSO	Fleet Material Support Office
GAO	General Accounting Office
MSC	Military Sealift Command
SPCC	Ship Parts Control Center
TARSLL	Tender and Repair Ship Allowance List

CHAPTER 1

INTRODUCTION

In prior reports on the Navy's supply support for submarines 1/ and aircraft carriers, 2/ we reported that the Navy could save over \$200 million in future procurements and repair costs by improving its policies and procedures for establishing and maintaining optimum stock levels. The Navy could achieve these savings without adversely affecting supply effectiveness.

As a result of a previous review of supply support for combat surface ships (cruisers, destroyers, and frigates), we reported 3/ that the Navy could save an estimated \$101 million over a 5-year period on procurements and repair costs. As with the submarines and carriers, the Navy could do this and, at the same time, improve its fleet supply effectiveness.

Those three reports addressed supply support for most of the Navy fleet, except for automated surface ships. This report addresses the support provided by automated surface ships, plus actions taken by the Navy in response to our reports on supply support for submarines and carriers.

NATURE AND SOURCE OF SHIPBOARD INVENTORIES

The types and quantities of supplies and spare parts to be stocked aboard ships are determined based on allowance lists. These lists are tailored to meet the needs of particular ships according to estimated maintenance requirements, supply usage, maintenance history, and supply personnel experience. Additional items may be included on the lists as new requirements are identified or as the demand for items indicates a need to increase the quantities. The Navy uses five different allowance lists for the ships included in this review. These are the

- Coordinated Shipboard Allowance List (COSAL),
- Fleet Issue Load List (FILL),
- Tender and Repair Ship Allowance List (TARSLI),

1/"Submarine Supply Support Costs Can Be Greatly Reduced Without Impairing Readiness" (LCD-76-237, June 7, 1977).

2/"Millions of Dollars Can Be Saved by Improved Management of Aircraft Carrier Inventories" (LCD-78-221, Dec. 22, 1978).

3/"Supply Support Costs of Combat Ships Can Be Reduced by Millions and Readiness Enhanced" (LCD-81-9, Jan. 15, 1981).

--Tender Load List, and

--Aviation Consolidated Allowance List.

COSAL is a listing of supplies and parts representing the inventory each ship is authorized to stock to sustain its own operations for 90 days. It is prepared by the Navy's Ship Parts Control Center (SPCC), Mechanicsburg, Pennsylvania. Items and quantities to be stocked are determined on the basis of best replacement factors, fleet-wide usage rates, and other available information. The fleet-wide usage rate represents the expected annual failure for each item and is supposed to be updated annually. As items are used or requirements for new items are identified, inventories are systematically replenished through the supply system. The type and quantity of spare parts and equipment included in COSAL vary by type of ship being stocked; that is, the allowance list for a submarine differs from that of an aircraft carrier, and so on with the various ship types.

The other four allowance lists also vary by ship type but are developed to satisfy the ship's mission rather than its operation. These are discussed below by ship type.

Automated surface force ships

Automated ships are those equipped with a computer system for processing supply and accounting documents and records. The Navy has 20 of these ships which include supply ships, tenders, and repair ships. These are assigned to both the Atlantic and Pacific Fleets, as follows.

	<u>Atlantic</u>	<u>Pacific</u>	<u>Total</u>
Supply ships	3	4	7
Repair ships	1	3	4
Tenders	<u>5</u>	<u>4</u>	<u>9</u>
Total	<u>9</u>	<u>11</u>	<u>20</u>

Supply ships usually operate on a 5- to 6-month deployment cycle, where they spend approximately 5 months "on station," supporting a task force, and 1 month in travel. Tenders and repair ships usually operate as shore-based activities during peacetime but have the capability to deploy as needed or required in an emergency.

The number of inventory items and quantities initially stocked on these ships are determined by SPCC. Under the latest allowance lists, automated ships are authorized to carry over \$50 million in inventories to support surface combat ships. The inventories are replenished periodically as supplies and parts are consumed in supporting combat ships.

Initial inventory stockage

The basic authority to stock supply ships is FILL. SPCC develops FILL on the basis that a supply ship must satisfy at least 85 percent of demands placed on it during a 90-day period. FILL represents the range of prepositioned war reserve stock material carried on board supply ships to support the projected requirements of deployed forces during mobilization. Currently, FILL is recomputed every 2 years with regular quarterly supplements.

The basic authority to stock tenders and repair ships is TARSSL. SPCC develops TARSSL to support a specific mix of ships assigned to the tender and normally updates or revises it every 3 years. Quantities of items included on TARSSL are determined on the premise that the ships satisfy 85 percent of demands for a 90-day period. TARSSL authorizes material stockage to meet anticipated wartime usage and is, therefore, designated as part of the prepositioned war reserve stock.

Data regarding the current FILL and TARSSL follow:

	<u>Atlantic</u>	<u>Pacific</u>
FILL:		
Number of line items in each load (1979)	16,198	17,636
Dollar value of load (1979)	\$4,199,324	\$5,338,260
TARSSL:		
Number of line items in each load (1980)	15,192	16,982
Dollar value of load (1980)	\$1,918,822	\$1,705,135

Periodic inventory replenishment

A supply ship on station has its FILL inventory restocked by another supply ship operated by the Military Sealift Command (MSC). The MSC vessel operates between a shore-base naval supply center and the deployment site. The MSC vessel is deployed so that it can be with a supply ship during the ship's first and last month on station. Its purpose is to support the fleet and to ensure continuity by overlapping the time that two supply ships--the incoming and the outgoing ships--are at the deployment site.

The Navy has a limited number of supply ships--three operating in the Atlantic and four in the Pacific. A complete overhaul of one of these ships could take as long as 12 to 18 months. To preclude a supply ship from being inoperable for a long period of time, the Navy has gone to a phased maintenance program. During the phased maintenance, supply ships are restocked with FILL inventories.

Tenders and repair ships, as noted earlier, usually operate as shore-based activities. TARSLL inventories aboard these vessels are usually replenished from the nearest naval supply center.

Submarines

Initial inventory stockage

The Navy provides newly constructed submarines with supplies to sustain uninterrupted operations for 90 days. As discussed earlier, the number of items and quantities stocked are based on COSAL. Data included in our 1977 report showed that the Navy's 106 nuclear submarines were authorized to carry \$271 million in inventories to sustain uninterrupted operations.

Submarines are supported by submarine tenders, each of which normally provides supply and maintenance support to a squadron consisting of about 10 submarines. Tenders carry inventories sufficient to perform their industrial and resupply missions to assigned submarines for 90 days. The basic authority to stock these inventories is the Tender Load List prepared by SPCC. The average inventory value of each Tender Load List and COSAL for attack submarine tenders is estimated to be \$5.2 million for the 8 attack tenders and \$20.9 million for the 4 fleet ballistic missile tenders, or over \$125 million for the total fleet of 12 submarine tenders.

Periodic inventory replenishment

To maintain their 90-day supplies, submarines restock from tenders when they return to port from sea patrols. This time in port--the refit period--occurs once each quarter and lasts for about a month. During this time, tenders also provide maintenance support. Tenders maintain their 90-day supplies by ordering from the nearest supply center.

Aircraft carriers

The Navy's aircraft carriers are authorized to stock inventories needed to sustain uninterrupted mission operations for 90 days under wartime conditions. Because of limited resupply capability at sea, deployed carriers must rely heavily on these inventories. As of March 1980, the value of COSAL inventories authorized for the Navy's 13 aircraft carriers was estimated at \$138 million. In addition to this inventory, each carrier must maintain an inventory for its aviation community.

Initial inventory stockage

The basic authority to stock inventories for aircraft is the Aviation Consolidated Allowance List, prepared by the Navy's Aviation Supply Office. In March 1980, the total value of inventory authorized by the aviation allowance list was about \$1.1 billion.

Periodic inventory replenishment

The aviation allowance list is supposed to be revised at the end of a carrier's deployment cycle, or about every 18 months. Aviation inventories are restocked at that time. Revision is necessary to make adjustments for changes in supply usage and planes aboard the carriers. The ship's COSAL inventory allowances are revised usually during major ship overhaul, or about every 5 years.

INVENTORY FUNDING

For funding purposes, supplies and repair parts are classified as either Navy stock account or appropriated purchase account items. Navy stock account items--usually consumables--are purchased from the wholesale stock with fleet funds. Appropriated purchase account items--mostly reparable--are managed on a fixed-allowance basis and are issued to customers free of charge by wholesale inventory managers. When requisitioning a reparable item from the wholesale system, the ship is usually required to return the unserviceable item to the supply system.

As noted earlier, inventories on board supply ships, tenders, and repair ships, stocked to support combat ships, are determined on the basis of prior demands or expected usage. However, until items are issued to the ultimate user, they are still part of the Navy's wholesale system.

OBJECTIVES, SCOPE, AND METHODOLOGY

Prior reviews of the Navy's supply support for submarines, aircraft carriers, and nonautomated combat surface ships disclosed large excesses of spare parts and supplies on some ships which were not available to fill shortages of other ships. Also, substantial investments were made for unneeded parts and supplies, while other critically needed items were in short supply.

We concluded that future investments in stocks for submarines, aircraft carriers, and combat surface ships could be reduced by over \$300 million and recommended specific actions to achieve this. Preliminary work indicated that similar opportunities exist as a result of the supply support being provided by the Navy's automated surface force ships (supply ships, tenders, and repair ships).

Our objectives in this review were to

- determine the magnitude of the Navy's current excess investments in inventories on board automated ships,
- demonstrate the extent to which excess inventories are needed elsewhere in the fleet,

--identify the primary causes for excess stocks and demonstrate the extent to which excesses are avoidable through improved management practices, and

--follow up on actions taken by the Navy on our earlier recommendations.

We reviewed regulations, instructions, reports, and supply records and interviewed supply personnel at SPCC, the Aviation Supply Office, and command elements of the Atlantic and Pacific Fleets and aboard ships.

To identify excesses on hand, the number of line items by type and code, and the dollar value by appropriation purchase account and Navy stock fund account, we obtained the master record file tape (stock records) of four ships. We also visited two automated surface force ships to observe their supply practices and, for selected items, to compare the quantities on hand with supply records.

To determine the actions taken on earlier recommendations and to identify excess inventory on hand, we interviewed supply personnel and obtained the master record file tape for three ships. We also visited two submarine tenders and two aircraft carriers to (1) observe their supply practices, (2) compare, for selected items, the quantity on hand with supply records, and (3) assess the results of changes made in response to our recommendations.

Our fieldwork, which was completed in December 1980, was conducted at the following locations.

--Naval operating commands:

Commander, Surface Force, Atlantic, Norfolk, Virginia.
Commander, Submarine Force, Atlantic, Norfolk, Virginia.
Commander, Naval Air Forces, Atlantic, Norfolk, Virginia.
Commander, Surface Force, Pacific; San Diego, California.
Commander, Submarine Force, Pacific, Pearl Harbor, Hawaii.
Commander, Naval Air Force, Pacific, San Diego, California.

--Inventory control activities:

SPCC, Mechanicsburg, Pennsylvania.
Aviation Supply Office, Philadelphia, Pennsylvania.

--Ships:

U.S.S. Canopus (AS-34), Charleston, South Carolina.
U.S.S. Frank Cable (AS-40), Charleston, South Carolina.
U.S.S. Piedmont (AD-17), Norfolk, Virginia.
U.S.S. Nimitz (CVN-68), Norfolk, Virginia.
U.S.S. Prairie (AD-15), San Diego, California.
U.S.S. Ranger (CV-61), San Diego, California.

CHAPTER 2

IMPROVEMENTS NEEDED IN MANAGEMENT OF INVENTORIES ABOARD AUTOMATED SURFACE FORCE SHIPS

The Navy can save about \$21 million over a 4- to 5-year period on procurement and repair of equipment parts and supplies for surface force ships. This can be accomplished without adversely affecting supply effectiveness by (1) discontinuing policies which permit ships to retain equipment parts not used during the previous 5-year period, (2) requiring fleet commanders to adhere to the policy which states that items exceeding the authorized allowance are excess, whether on hand or on order, and (3) requiring commanders to promptly offload items that are excess and to cancel excesses on order.

IMPROVEMENTS NEEDED TO PREVENT STOCKING EXCESS INVENTORIES

Our review disclosed that the Navy needs to improve its supply management policies and practices aboard surface force ships to prevent stocking items in excess of allowances. Specifically, the Navy needs to emphasize that items which exceed authorized allowances are excess and that such items should be offloaded and returned to the supply system. Excesses on order should be cancelled as soon as they are identified as being excess. Additionally, the Navy needs to adopt a more stringent demand frequency criteria.

Excesses allowed to be retained after supply overhaul

In our earlier report on supply support for combat ships, we concluded that the Navy could save an estimated \$37 million over a 5-year period by discontinuing policies which permit ships, completing supply overhauls, to retain equipment parts not previously used during their 5-year intervals between supply overhauls. That savings pertained to 189 nonautomated combat surface ships. Our current review of supply support provided by the Navy's 20 automated surface ships disclosed that the Navy could save an additional \$1.7 million by removing items not used during the previous 5 years.

Surface force ships receive a maintenance and supply overhaul approximately every 5 years. As a part of this process, the ships receive an updated inventory allowance list of equipment repair parts, which reflects changes in installed equipment and predicted parts usage.

Generally, Navy policy requires that upon completion of overhaul, ships return previously stocked parts that are not

included in their updated allowance list, due to lack of usage during the past 5 years, to the wholesale supply centers. However, Atlantic and Pacific Fleet commanders have adopted a policy which permits ships to retain parts not included in the updated allowance list if the parts are applicable to installed equipment. These repair parts are identified on shipboard supply records as AT-5 (allowance type code 5) items.

To assess the reasonableness of this policy and the policy's impact on supply economy, we analyzed the records of 4 of the Navy's 20 automated ships. Our analysis showed that the four ships had on board AT-5 items totaling \$537,000, or \$134,000 a ship.

In our January 1981 report, we showed that 64 percent of AT-5 items retained aboard nonautomated ships were needed at the wholesale level to satisfy procurements and/or repair requirements. On that basis, we estimated that if the practice of retaining AT-5 items were discontinued on automated ships, the Navy could save \$1.7 million in procurement and/or repair costs ($\$134,000 \times 20 \times 0.64$). Since these items had shown no usage during the previous 5-year period, removal from the ships would not adversely affect supply effectiveness.

In reply to our January 1981 report, the Navy agreed with our recommendation to discontinue the policy which allows combat surface force ships completing overhauls to arbitrarily retain reparable items not included in their updated allowance list. The Navy stated that it is now Navy policy that excess reparable items be offloaded during supply overhauls if the wholesale system has projected requirements for the items.

IMPROVEMENTS NEEDED TO INCREASE VISIBILITY OVER SHIPBOARD SUPPLY

We estimate that the Navy can save \$19 million and increase supply effectiveness by more effectively managing its shipboard supplies. This can be done by establishing a zero goal for unauthorized material on hand and for unauthorized material on order. Additionally, desired inventory accuracy rates are not consistently achieved aboard ships.

Unauthorized (excess) material on hand

During the 12-month period, August 1979 through July 1980, the Navy's 20 automated ships reported \$69 million of unauthorized material on hand. This amount equates to a quarterly average of \$17.3 million. Even though \$17.3 million was reported as unauthorized on hand, only \$7.2 million was actually considered by the Navy as excess. This was attributed to the fact that both the Atlantic and Pacific Fleet commanders have established levels higher than those authorized by the allowance lists. The Atlantic Fleet's goal is 10 percent of a ship's authorized level, while the Pacific Fleet's goal is 5 percent of a ship's authorized level.

In addition to the above-mentioned goals, both fleet commanders have established a goal of 2 percent of a ship's authorized level for unauthorized material on order. During the 12-month period, ships reported \$20.2 million as unauthorized material on order for a quarterly average of \$5 million. But, only \$1.9 million exceeded the goals and was recognized by the Navy as excess on order.

The Navy has a routine program which is run at least monthly, under which requisitioning units attempt to cancel requisitions for items which, for various reasons, are no longer needed. Under this program, attempts are made to cancel requisitions for items identified as excess. Data was not available on the success rate of cancellation attempts. If cancellation attempts are not successful, the items will be shipped and will become excess on hand, and the savings referred to above will be even greater.

We do not believe that there is a need to establish goals for excess material on hand and on order that are above the ships' authorized levels. In our opinion, a logical goal would be zero excess on hand and on order. Establishing a goal above authorizations encourages excesses because the authorized level automatically increases to the level of the goal.

Atlantic Command officials said that the goals were prescribed by the Commander in Chief, U.S. Atlantic Fleet. However, our review of Atlantic Fleet instructions did not support this statement. The instructions provide that

--long supply is onhand material above the ships' authorized levels, and

--unauthorized material will be returned to the supply system at the earliest practical opportunity.

Offloading stock excesses

As shown previously, for the 12-month period ended July 1980, the Navy's 20 automated ships reported a quarterly average of \$17.3 million of excess material and supplies on hand that should have been offloaded and made available to the supply system. Of this amount, \$9.8 million was reported by the 11 Pacific Fleet ships and \$7.5 million was reported by the 9 Atlantic Fleet ships.

Generally, both the Atlantic and Pacific Fleet Commands require that excesses be identified on a regular basis, usually monthly, and that they be offloaded and either redistributed or returned to the supply system.

To determine whether any of the stocks were excess and needed by the system, we reviewed 424 appropriation purchase account items, valued at \$831,000, and found that 31, valued at \$127,000, were excess. We also found that the supply system needed 6 of the 31 items. These six items were valued at \$35,000 or about

27.55 percent of the excess. If this would hold for all excess items, it means that at least \$19 million ($\$17.3 \times 0.2755 \times 4$ years) of the reported excesses was needed by the supply system.

This, we believe, shows that the Navy should monitor excesses more closely and should direct that they be offloaded and redistributed or made available to the system to meet current procurement or repair requirements.

Need to improve accuracy of physical inventories

A major feature in inventory control for identifying excesses, as well as deficiencies, is the physical inventory. Physical inventories provide management with information on the validity of its records and preclude management from buying unauthorized or unneeded material. The Navy Afloat Supply Procedures 485 state, in part, that an inventory record accuracy rate of 90 percent is acceptable.

We visited 2 surface force ships and made physical inventories of 185 line items and found that 45 had inaccurate records for a 75.7 percent accuracy rate. One of the ships, the U.S.S. Prairie, in complying with periodic inventory requirements, had made a wall-to-wall inventory of 357 mandatory turn-in reparable items. That inventory disclosed that 81 of the records were inaccurate for an accuracy rate of 78 percent. This resulted in the U.S.S. Prairie charging off by survey \$164,441, or 26.5 percent of the total amount inventoried. Ship personnel did not know the reason for the difference in inventory record balance and actual onhand quantities. However, they offered some opinions, such as no record of surveys in the past, the possibility of material being issued or transferred without the required documentation being prepared, and the possibility of some material being "lost" on board. This was also reported in our January 1981 report, and the Navy agreed with our recommendations for improvement. Therefore, we believe it should be applied to automated surface ships.

Need for more stringent stockage criteria

Automated surface force ships receive inventory allowances to support 90 days of operation. The additional range and depth of items to be stocked for continuous operations are governed by fleet-wide policy applicable to all ships. According to this policy, an item qualifies for stockage when it has experienced a stated number of recurring demands over a specific time period.

The Atlantic and Pacific Fleets have adopted different stockage criteria. The Atlantic Fleet's criterion is four recurring demands within a 12-month period, while the Pacific Fleet's criterion is two recurring demands within a 6-month period. Once an item qualifies for initial or increased stockage, it must receive

four recurring demands within a 12-month period in the Atlantic Fleet and one recurring demand within a 6-month period in the Pacific Fleet for continued stockage. This is referred to as 4/12-4/12 and 2/6-1/6 frequency-of-demand criteria. If the degree of repetitive demand does not occur, the item should be dropped from stock and redistributed or disposed of.

Our analysis of the master record file of four automated surface ships (three Atlantic and one Pacific) showed that 46.47 percent of the ships' demand-based items were excess. The following table shows demand-based excesses by ship.

<u>Ship</u>	<u>Value of demand items</u>	<u>Excess</u>	<u>Percentage excess</u>	<u>Fleet</u>
U.S.S. <u>Prairie</u>	\$138,046	\$ 30,812	22.32	Pacific
U.S.S. <u>Valcan</u>	84,801	53,481	63.07	Atlantic
U.S.S. <u>Piedmont</u>	47,355	37,442	79.07	Atlantic
U.S.S. <u>Concord</u>	<u>24,756</u>	<u>15,339</u>	61.96	Atlantic
Total	<u>\$294,958</u>	<u>\$137,074</u>	46.47	

The Pacific Fleet ship had a 22-percent excess versus 61 percent or higher for Atlantic Fleet ships. This is attributable to the difference in criteria used by the fleets, 2/6-1/6 for the Pacific versus 4/12-4/12 for the Atlantic. A greater amount of excesses with less inventory is generated by the Atlantic criterion.

The need to revise demand frequency criteria is further discussed in chapter 3.

CONCLUSIONS

We believe that there are several improvements the Navy can make in its supply management policies and practices. These improvements, if made, will result in greater economies and in more effective supply management.

At the time of our review, current policy allowed a ship to retain items that were not a part of its allowance, even though these items were not needed during the previous overhaul period, which was usually about 5 years. In our January 1981 report, we recommended that this policy be discontinued. In March 1981, the Navy stated that current Navy policy requires that excess reparable items be offloaded during supply overhauls if the supply system has projected requirements for them. Effective implementation of this policy would appreciably decrease shipboard excesses.

Each of the fleet commanders has established goals for automated surface ships to follow in determining excesses on order and

excesses on hand. The Atlantic Fleet uses 10 percent of a ship's authorized level, while the Pacific Fleet uses 5 percent of a ship's authorized level to determine and report excesses on hand. Both fleets use 2 percent of a ship's authorized level to determine and report excesses on order. It is our opinion that the establishment of goals which encourage the retention of materials and supplies in excess of the ships' authorized levels is not effective supply management and not efficient use of supply funds. If the fleet commanders would cancel the existing goals of 10 percent and 5 percent for excesses on hand and 2 percent for excesses on order, the Navy could improve its supply management practices and realize added economies.

Automated surface ships of both fleets have automated systems to identify excesses; however, excesses are not being offloaded and redistributed or returned to the supply system on a timely basis.

We believe that since physical inventories provide management with information on which to make procurement decisions, effort should be made to improve record accuracy rates and to maintain an acceptable level of accuracy.

RECOMMENDATIONS

To aid the Navy in improving its supply management policies and practices and to correct deficiencies discussed in this chapter, we recommend that the Secretary of Defense direct the Navy to have its fleet commanders:

- Discontinue the use of goals for determining excesses on hand and on order. Also, direct that any item that exceeds the authorized allowance is in excess, whether it is on hand or on order.
- Monitor excesses and assure that they are offloaded and redistributed or made available to the supply system in a timely manner.
- Assure that inventory accuracy rates are improved to the acceptable level of 90 percent.

AGENCY COMMENTS

The Navy concurred with each of these recommendations and stated that instructions have been issued to implement the recommendations.

CHAPTER 3

FURTHER IMPROVEMENTS NEEDED IN MANAGEMENT OF SUBMARINE INVENTORIES

In June 1977, we reported that the Navy needed to improve its management of submarine supplies by establishing and maintaining optimum stock levels. We concluded that the Navy could reduce future investments in inventory by as much as \$106 million without impairing supply effectiveness. In that report, we identified deficiencies and recommended specific actions to correct these deficiencies. The Navy adopted some of our recommendations, but did not adopt one to change demand frequency criteria; therefore, we believe that from about \$59.4 million to \$72.7 million of the above savings are still achievable.

DEFICIENCIES PREVIOUSLY REPORTED AND NAVY ACTIONS

Our report identified the areas of weaknesses and demonstrated the need for

- annually updating the factors used to compute allowances,
- properly recording demand data,
- revising demand frequency criteria,
- limiting the quantity of items requisitioned to quantities needed, and
- identifying and redistributing excess items.

Our followup review--over 3 years after the report was issued--disclosed that the Navy has corrected some deficiencies, but many still exist.

Deficiencies corrected by the Navy

Need for annually updating factors used to compute allowances

Initial repair parts allowances for submarine tenders are updated every 3 or 4 years during an overhaul. To compute allowances, the Navy uses fleet-wide best replacement factors (BRFs) if the repair parts carried by submarines show no usage during the past 24 months. We found that BRFs were being updated on the basis of usage data that extended over the previous 24 months and tenders were provided allowances that exceeded minimum replacement needs.

We recommended that the Navy take the necessary actions to insure that fleet-wide equipment part BRFs be updated yearly on the basis of the most recent annual fleet usage, or if done less frequently than yearly, all intervening fleet usage data be considered in updating annual usage factors for equipment parts.

The Navy agreed with our recommendation and stated that action to update BRFs annually had already been taken. Our current review disclosed that the Navy had updated BRFs in 1977, 1978, 1979, and 1980. The 1980 statistics showed that there were 683,160 items included. Of this number, 37 percent were not actually updated due to the lack of data. As a result of the 1980 update, 55 percent of the BRFs decreased, 6 percent increased, and 39 percent showed no change. The Navy's annual updates of the BRFs are accomplishing the intent of our recommendation.

Need for properly recording demand data

Requisitions received from submarines show whether the need for the requested items are recurring or nonrecurring. Recurring demands are those for which requisitions are placed to replenish demand-based stock, while nonrecurring are those to fill a one-time need. Erroneously coding nonrecurring demands as recurring demands inflates stock requirements and results in unneeded stock purchases and eventual excesses.

We found that submarine requisitions for items needed to fill one-time stock requirements in initial inventory allowances often were routinely coded recurring or were not coded. Requisitions not coded as to type of demand were treated as recurring demands by the tenders. Our test of 1,557 requisitions to fill nonrecurring initial allowance shortages disclosed that 87 percent were coded incorrectly as recurring or were not coded. We recommended that the Navy instruct submarine and tender supply personnel on the fundamentals and importance of distinguishing and accurately recording the recurring or nonrecurring nature of requirements.

The Navy agreed with this recommendation, and the Atlantic and Pacific Submarine Fleet commanders stressed the need for proper coding of requisitions in training sessions and in written instructions. In our followup review, we tested the coding of requisitions on two submarine tenders--the U.S.S. Canopus and the U.S.S. Frank Cable--and found that demands were being recorded properly.

Deficiencies not fully
corrected by the Navy

Need for revising demand
frequency criteria

The Navy can reduce future investments in demand-based stocks for submarines and submarine tenders by about \$59.4 million to \$72.7 million without impairing submarine mission readiness. To do this, the Navy needs to adopt more stringent criteria for establishing demand-based stock levels.

A repair part or a supply item qualifies for initial or additional stockage when two demands are experienced within a 6-month period. It must have at least one demand every 6 months to warrant continued stockage. This is referred to as the 2/6-1/6 frequency-of-demand criterion.

In our June 1977 report, we stated that fleet reports indicated that the 2/6-1/6 criterion was causing frequent and substantial stock excesses. As early as September 1974, the Navy's Fleet Material Support Office (FMSO) published a study on determining stockage criteria. The study contained various alternatives and criteria that would produce the best results in terms of trade-offs among investment, requisition fill effectiveness, and stock excesses.

For the study, FMSO selected five ships, including one nuclear attack submarine which were considered to be representative of the fleet. To simulate the supply actions under 11 alternative stocking criteria, FMSO developed a computer model and used the prior 2 years' historical demand data for each ship and the ship's current stock of items.

The study concluded that a 2/6-2/12 frequency-of-demand criterion would achieve the best results. However, the study noted that (1) to qualify for initial stockage, recurring demands should be received in two separate months over a 6-month period and (2) to qualify for continued stockage, recurring demands should be received in two separate months over a 12-month period. The study pointed out, for example, that changing the item stock qualification and retention criterion from 2/6-1/6 to 2/6-2/12 (using separate months) would reduce inventory investments \$281,000 for the five ships. It would also reduce stock excesses by 57 percent but decrease requisition fill effectiveness by an average of only 2 percent.

The Navy did not change its fleet-wide stocking criterion on the basis of that study. The primary reason given was that fleet commanders believed that varying the stocking criterion for stock-funded items was their responsibility since they controlled the funds for purchasing these items. Also, they believed that any decrease in requisition fill effectiveness would adversely affect mission readiness.

In highlighting the results of the 1974 study for fleet acceptance, FMSO emphasized the effect that the alternative stockage criterion would have on the relatively inexpensive stock-funded items. FMSO did not highlight the results for the more expensive appropriated purchase account items because they represented only a small percentage of the total items stocked aboard ships.

While appropriated purchase account items represent only a small percentage of the total items, they represent the largest percentage of the total dollar investment in shipboard inventories. Had the study highlighted the large dollar amounts associated with such items, the results might have been more acceptable to the Navy. This especially appears reasonable since these inventories were appropriation-funded items and were issued free to the fleet. For example, for the nuclear attack submarine, the study highlighted a reduction in stock-funded inventory of only \$13,000 by changing to a 2/6-2/12 criterion. It did not emphasize that the change would also have resulted in a \$536,000 reduction in appropriation purchase account items, without any decrease in requisition fill effectiveness.

We recommended that the Navy change the demand frequency criteria used by submarines and tenders to establish and retain demand-based stock levels from two recurring demands in 6 months to qualify and one recurring demand every 6 months thereafter to retain, to two recurring demands in separate months over a 6-month period to qualify, and two recurring demands in separate months every 12 months thereafter to retain.

The Department of Defense and the Navy did not concur with this recommendation. They stated that the 2/6-1/6 policy was critical in providing effective levels of supply support for major weapons systems and was a significant contributor to fleet readiness. However, our followup review showed that, in response to the recommendation, the Submarine Force, U.S. Atlantic Fleet, in late 1977, began using a 2/6-2/12 criterion instead of a 2/6-1/6 criterion for submarine tenders. However, it did not fully adopt our recommendation because its change did not include separate months. As a result, fleet personnel stated that little, if any, change occurred in stock levels.

Submarine Force, U.S. Pacific Fleet, personnel said they had not made any changes in criteria. The reason given is that the shipboard uniform automatic data processing system does not permit using two frequencies of demand in separate months. That may be true, but a slight program change will correct that situation. Personnel responsible for writing the data processing programs said that such a change can be made easily. They stated, however, that such a change must be directed from the Navy Supply Systems Command.

The fleet-wide stockage criterion used by submarines and tenders resulted in constant stock fluctuations. Large volumes of items which qualified for stockage in one 6-month period were being eliminated in a subsequent 6-month period because of insufficient repetitive demands. For example, in August 1979, the U.S.S. Dixon reported an authorization stockage level of \$757,000 for demand-based material. In November 1979 the reported figure was \$4,548,000, and then in February 1980 the reported figure was \$1,024,000.

The current criterion has resulted in the generation of large amounts of excesses. As an example, for the 11-month period ended June 1980, submarine tenders offloaded over \$22 million of excess stocks. While we agree that excesses should be offloaded and re-distributed, we do not agree with the criterion that permits their generation.

The Navy has not revised its frequency-of-demand criterion to ensure optimal stockage levels. As demonstrated above by the tender offloads, quantities of excesses continue to be generated at about the same level that we found in our prior report. We believe, therefore, that the savings shown in our 1977 report are still valid.

Need for limiting quantities of
items requisitioned to quantities
needed

Submarine tenders are provided initial 90-day inventory allowances, computed on the basis of past historical demands or initial technical estimates of expected usage. These initial allowances are considered part of the Navy's war reserves, and the tenders are required to maintain these fixed levels of inventory between supply overhauls, regardless of changes in actual usage. In addition to the 90-day supply, tenders are required to establish and maintain sufficient stock levels to sustain operations based on current demand experience.

In our earlier report, we concluded that submarine tenders could realize substantial savings without impairing supply effectiveness. They could do this by viewing the 90-day reserve level in light of current demand-based stock levels. We recommended that the Navy limit demand-based increases in stock levels to quantities needed to sustain operations after taking into consideration initial allowance stocks in excess of the 90-day requirement based on current demand experience.

The Department of Defense agreed with the intent of this recommendation but stated that a policy change was not necessary. Defense believed that tenders limit the stock levels to the higher of the initial 90-day allowance or to quantities needed to meet

current demand experience. This was not the case then and is not the case now.

In our earlier report, we cited examples where the initial 90-day allowance represented hundreds of months of supply, when viewed in terms of current demand experience. Yet the levels were increased based on current demand experience. For example, in one cited case, the initial inventory allowances represented a 118-month supply, yet another 14-month level was added because of current demand experience.

Our followup review disclosed that the situation continues to exist, as the following table illustrates.

Stock No.	Initial allowance	Based on current demand data		Excess initial allowance available for current needs	Demand-based increase
		Monthly demand	90-day req.		
1H 00-0617836	10	1.5	5	5	7
1H 00-1108702	5	0.5	2	3	2
9G 00-1818097	10	1.3	4	6	5

None of the initial allowance items were being used to meet current demands.

Need for identifying and redistributing excess items

We found that submarine tenders could have increased their cancellations of excess stock on order and their redistributions of excess stock on hand by millions of dollars annually through improved policies and practices. We reported that excess material on order for the 11 tenders averaged \$3.7 million a quarter. Items identified as excess are supposed to be offloaded and returned to the supply system for redistribution or disposal. However, the 11 tenders were retaining an average of \$10.5 million worth of onhand excesses. We recommended that the Navy:

- Direct submarine tenders to use their automated capabilities to identify all excess on order stocks on a monthly or more frequent basis and promptly initiate cancellation action.
- Adopt standard automated excess offload analysis programs which permit maximum excess offloads with minimum personnel effort, such as that implemented by the U.S.S. Simon Lake in 1975.

The Navy agreed with both recommendations and stated that a standard policy for determining a common excess on order goal would be determined. The Navy also stated that the need for a uniform offload program was recognized.

Our followup review disclosed that the Navy had established standards for excesses on order and on hand, but they were being exceeded in many cases. The standards for each fleet are no more than 2 percent of a ship's authorized allowance for excess on order and no more than 5 percent of the allowance for unauthorized long supply (excess on hand). We found that many of the tenders in both fleets still order stocks in excess of the 2-percent standard and continue to hold excesses greater than the 5-percent standard.

During the 12-month period ended July 1980, eight of the nine Atlantic submarine tenders reported \$924,700 of unauthorized stock on order and \$649,300 of unauthorized long supply items on hand. The three Pacific submarine tenders reported \$1,303,500 unauthorized stock on order and \$3,830,800 of unauthorized long supply items on hand. As discussed on page 9, we believe that standards above the authorized allowance level should not be continued.

Atlantic Fleet ships were retaining less unauthorized long supply material than Pacific Fleet ships because of a more active offload policy. The Command's policy and supply management inspections emphasize that excesses be offloaded. The Pacific Fleet, on the other hand, stated that all unauthorized long supply material is subject to offload, but it is not monitored as vigorously as in the Atlantic Fleet. This is evidenced by the fact that the Pacific tenders reported an average of at least \$642,300 of unauthorized long supply for each ship as compared to the Atlantic tenders reporting an average of \$72,144 for each ship.

CONCLUSIONS

In our 1977 report, we estimated that future inventory investments could be reduced by \$59.4 million to \$72.7 million by changing the stockage criterion from 2/6-1/6 to 2/6-2/12 separate months of demand. On the basis of our previous review and our followup review, we believe our previous recommendation is still valid and the 2/6-2/12 separate months-of-demand criterion should be adopted.

Stock levels for submarine tenders are being increased when the items achieve demand-based status, even though the initial allowance equals or exceeds the 90-day supply. This condition occurs because Navy policy requires tenders to maintain sufficient stocks to meet expected current needs without revising the initially allowed 90-day supply. We believe that policy should require tenders to periodically review initial 90-day allowance stocks in light of current demand experience and apply the excess to fill current demand-based stock levels.

We believe that the Navy has made appreciable progress in the areas of identifying and redistributing its excesses, especially the Atlantic Fleet. Both fleets, however, need to do more to

identify and cancel unauthorized on order material, and the Pacific Fleet needs to place more emphasis on the offloading of unauthorized or excess material.

RECOMMENDATIONS

We recommend that the Secretary of Defense direct the Navy to:

- Require its submarines and submarine tenders to adopt a more stringent demand frequency criterion to add and retain items for demand-based stock levels--namely, two recurring demands in separate months over a 6-month period to establish, and two recurring demands in separate months every 12 months thereafter to retain.
- Change its policy so that submarine tenders will limit demand-based increases in stock levels to quantities needed to sustain current operations after considering initial allowance stocks in excess of the 90-day requirement when reevaluated based on current demand experience.
- Direct submarine tenders to periodically identify all excess on order stocks, say monthly, and promptly initiate cancellation action.
- Direct the Pacific Fleet to more vigorously emphasize the offloading of unauthorized material and more closely observe current standards.

AGENCY COMMENTS AND OUR EVALUATION

The Navy stated that this report reiterates dollar savings published in previous reports which were not concurred with by the Navy. The Navy stated that, while it had concurred with accrual of savings, it had not agreed with the extent of savings. The total estimated savings in this report is \$94 million. Of this, \$73 million is applicable to adopting more stringent criteria for submarines and submarine tenders. The remaining \$21 million applies to automated surface ships, not previously reported on. (See ch. 2.) Our initial savings estimate applicable to submarines and tenders was arrived at by using data included in a Navy study which showed that the more stringent criteria would reduce excess stocks by about 67 percent. Since our current review showed excesses being generated at about the same level as the prior review, we believe the estimate is still valid. Savings expected to result from use of excess stocks aboard automated ships were estimated on the basis on the percentage of those excesses needed to satisfy current requirements of other Navy activities. Although not intended to be a precise measurement of savings, we believe these approaches are reasonable and demonstrate that significant savings can be achieved.

The Navy concurred with the last two recommendations. The Navy stated that both the Atlantic and Pacific Fleets have

instructions directing ships to periodically identify excess onorder stocks and to initiate cancellation actions. In response to the last recommendation, the Navy stated that the Pacific Fleet eliminated goals for excess on hand or on order and established this as an interest item on supply management inspections.

Concerning the recommendation for a more stringent frequency-of-demand criterion, the Navy concurred in part and stated that a stockage criterion of two frequencies of demand in 6 months to establish and two frequencies of demand every 12 months thereafter to retain has been directed for submarine tenders. The Navy stated that the policy has been implemented in the Atlantic Fleet and is being implemented in the Pacific Fleet.

The Navy did not agree with our recommendation of using separate months of demand and opted instead to use frequency of demand applied to the 2/6-2/12 criterion. According to the Navy, its decision was based on the results of a March 1976 FMSO study, which showed that application of a frequency of demand policy would have less adverse impact on supply effectiveness for submarine tenders than would application of a months of demand policy which we recommended.

We believe the change made by the Navy, with respect to submarine tenders, is a step in the right direction and will result in significant savings and reduced stockage turbulence. However, we continue to believe that the additional benefits of a separate months-of-demand criterion outweigh the possible adverse impact on supply effectiveness. For example, the March 1976 FMSO study included data on 2 of the Navy's 11 submarine tenders. Application of a separate months-of-demand criterion for these two ships shows a greater reduction in inventory by over \$1.6 million than does a frequency-of-demand criterion. The months-of-demand criterion shows a less supply effectiveness rate than does the frequency-of-demand criterion by 1 percent for reparable items and 2 percent for consumables.

The Navy has not made any change in its stockage policy for submarines. The Navy stated that it would reexamine the issues of the previous FMSO studies and determine the optimal stockage criterion for submarines and submarine tenders which will minimize generation of excesses while meeting the requisite fill effectiveness goals.

We do not see the need for further Navy studies to determine optimum stockage criteria for submarines. As noted on page 15, FMSO published a study in 1974 which showed that a 2/6-2/12 criterion would achieve the best results. FMSO reached the same conclusions in its March 1976 report, which was the basis for the above-mentioned change in stockage policy for submarine tenders.

We believe, therefore, that the 2/6-2/12 separate months-of-demand criterion should also be applied to submarines. This criterion would result in greater reduction in inventories than

would the frequency-of-demand criterion, and there is no difference in the impact on supply effectiveness.

The Navy did not agree with our recommendation that submarine tenders limit demand-based increases in stock levels to quantities needed to sustain current operation after considering initial allowance stocks in excess of the 90-day requirement when reevaluated based on current demand experience. The Navy stated that the tender load lists represent a 90-day endurance load and are built to provide 90 days of support without replenishment in a wartime scenario; therefore, the material should not be used as peacetime stocks.

The Navy further stated that the load lists are updated on a 2- to 3-year cycle, on the basis of demand experience. Thus, an updated load list reflects usage during this cycle of peacetime operation. Should demand during this period not support the previous 90-day requirement allowance, the updated load list would be revised accordingly. We are not recommending that load lists be revised during this operating cycle. But, we continue to believe that tenders should not add to their stock levels to satisfy current demand without considering the quantities that would be excess to a 90-day requirement when viewed in light of current demand experience. The Navy agreed with this recommendation which was also included in our June 1977 report. In our opinion, the rationale for the recommendation and the Navy's reasons for its earlier concurrence are still sound. We believe, therefore, that the recommendation should be implemented.

CHAPTER 4

FURTHER IMPROVEMENTS NEEDED IN MANAGEMENT OF CARRIER INVENTORIES

In December 1978, we reported that the Navy could save over \$100 million in future procurement and repair costs on aviation parts for support of aircraft aboard carriers. These savings could be achieved, together with an increase in supply effectiveness, by improving policies and procedures for establishing and maintaining optimum stock levels on aircraft carriers. In that report, we identified deficiencies and recommended specific actions to correct these deficiencies.

DEFICIENCIES PREVIOUSLY REPORTED AND NAVY ACTIONS

Our report identified areas of weaknesses and demonstrated the need for improvements in

- processing and maintaining supply records,
- computing requisitioning objectives for fixed allowance items,
- controlling appropriated purchase account items,
- identifying and redistributing excess stocks,
- improving the system for controlling excesses, and
- updating the allowance lists.

In commenting on that draft, Defense agreed with each of our recommendations and stated that action had been taken, or would be taken, to correct the deficiencies. Our followup review--about 2 years after the report was issued--disclosed that the Navy has corrected some deficiencies, but some still exist.

Deficiencies corrected by the Navy

Problems in processing and maintaining supply records

We reported that over a 2-year period ended December 31, 1977, the 12 Atlantic and Pacific Fleet aircraft carriers periodically reported stock excesses averaging \$154 million. This buildup of stock excesses was caused by (1) a lack of receipt processing standards (material receipts were frequently not recorded or recording was delayed up to 167 days), (2) a lack of action to determine the cause of inventory record inaccuracies, (3) data keypunching problems, and (4) improper recording of recurring

and nonrecurring demand codes. To aid the Navy in correcting these problems, we recommended that:

- Aircraft carrier commands establish a reasonable standard for processing material receipts aboard carriers and a feedback system for monitoring effectiveness of carriers in meeting this standard. Aircraft carrier commanders be directed to establish a system for maintaining complete visibility over receipts in process to insure timely storing and recording of material receipts.
- Aircraft carrier commanders be directed, as a part of their physical inventory programs, to perform causative research of significant inventory record inaccuracies in order to identify and resolve underlying recurring system problems. Also, that aircraft carriers be directed to include the results of their causative research and corrective actions being taken in their commands. Also, that carrier commands establish, as an additional benchmark for measuring and monitoring inventory record accuracy, a gross physical inventory dollar adjustment ratio (ratio of gross dollar adjustments made to value of material physically inventoried). In addition, that aircraft carriers, as a part of their physical inventory programs, be directed to account for reparable in their intermediate maintenance activity repair cycle prior to processing physical inventory loss adjustments.
- Aircraft carrier commands and higher management levels be directed to give priority attention to alleviating data keypunching problems aboard aircraft carriers.
- Aircraft carrier commands and higher management levels emphasize to the carrier fleets the importance of properly assigning a nonrecurring demand code to requisitions for initial allowances and increases in allowances of appropriation-funded reparable. Also, that the carrier commands and higher management levels require carriers to use requisitions with preprinted nonrecurring demand codes to order allowances of appropriation-funded reparable.

The Navy concurred with our recommendations and took action to improve the situations. It stated that a "dual route" system had been implemented to reduce keypunch problems. This system transmits a supply status to the nearest shore AUTODIN terminal where it is received as a punched card. Ships are using magnetic encoded Treasury checks that make keypunching of check values unnecessary. Additionally, carriers are minimizing nonessential use of computer facilities. Also, the Navy has taken action to incorporate correct demand codes into the aircraft carriers' data processing programs.

In our followup review, we visited two aircraft carriers, one in the Atlantic Fleet and one in the Pacific Fleet. Actions

taken by the Navy have improved the situations that we reported on. For example, we tested 25 items aboard each of the carriers and found that the demand coding for all of them had been properly recorded. Also, we concluded that the carriers no longer had a serious keypunching problem and requisitions were being processed without delay.

In response to our recommendation to perform causative research and correct inventory records, the Navy stated that afloat inventory management directives would be revised. These revisions were being made at the completion of our followup review.

Problems in computing requisitioning objectives for fixed-allowance items

We reported that carrier inventory allowances for aviation replacement parts were overstated substantially. This condition was caused by untimely and inaccurate updating of carrier inventory allowances. To assist in preparing more timely and accurate updates of inventory allowances, we recommended that the Navy require aircraft carrier commanders to use their computerized capabilities to compute demand-based requisitioning objectives for fixed-allowance items for obtaining authorization for increases or decreases in allowances.

The Navy concurred with this recommendation. It stated that Navy directives on afloat inventory management require the demand processing program be run whenever demands are received, beginning with predeployment and continuing through deployment. This produces a listing of candidates qualifying for allowance changes which is reviewed and, if appropriate, allowance change requests are submitted to the Aviation Supply Office.

In our followup review, we found that demand processing programs were being run monthly and that allowance change requests were being submitted.

Need to better control appropriated purchase account items

We reported that large amounts of excesses in appropriated purchase account items were being generated because of overordering. Appropriated purchase account items do not affect fleet supply funds because these items are issued free to the fleet from the wholesale level. To aid in preventing a large buildup of excesses in appropriated purchase account items and to establish financial control over such items, we recommended that the Navy establish funding controls and limitations at the fleet command level over issues of appropriation-funded items.

The Navy agreed to make a feasibility study, which was completed in August 1979. As a result of the study, the Navy

directed that a pilot program begin in April 1981 in the surface ship fleet. The Navy expects that it will take at least 3 years to complete the program, with evaluations made thereafter.

Deficiencies not fully corrected by the Navy

Problems in identifying and redistributing excess items

We reported that one of the major reasons large amounts of excesses were retained aboard aircraft carriers was due to the lack of an adequate system to identify and redistribute excesses. To assist the Navy in correcting these deficiencies, we recommended that the Navy:

- Require aircraft carrier commanders to comply with fleet carrier type commands' standards and requirements for limiting the buildup of and promptly offloading stock excesses.
- Establish an automated system at the fleet command level for identifying and directing immediate offloading and redistributing excesses on board one carrier needed to satisfy shortages of other carriers during periods of concurrent inport availability.
- Establish a system and standards at the fleet command level for monitoring and measuring performance of aircraft carriers in canceling and offloading excesses.
- Direct the Atlantic Fleet carrier command to adopt the Pacific Fleet Command's procedure for insuring prompt and maximum offload of excesses.

The Navy agreed with these recommendations and stated that existing directives on afloat inventory management provide guidance and standards for determining excesses and require offloading of excess reparable items within 30 days after identification as excess. The Navy also stated that the Atlantic Fleet would start using the Pacific Fleet's procedure for offloading in the last quarter of calendar year 1978.

Our followup review disclosed that the directives do require offloading of excess reparable items within 30 days after identification as excess. However, carriers do not offload excesses within 30 days after they are identified. Generally, excesses are offloaded after deployments, which seems to be more practical than offloading while in a deployed status. However, we believe that the excesses should be offloaded promptly after deployment and not allowed to continue to buildup.

Our review at the Atlantic and Pacific carrier commands and on board two carriers disclosed that the aircraft carriers have

reduced excesses significantly, but still have large amounts of excesses on hand and on order. As of June 30, 1980, Pacific Fleet carriers reported \$30 million of excesses on hand and another \$8.8 million on order. At that date, Atlantic Fleet carriers reported \$70.5 million of excesses on hand and \$19.2 million on order. This means that Pacific Fleet carriers were reporting, as excesses on hand and on order, 8.1 percent of their appropriated purchase account item allowance and 10.4 percent of their stock-funded allowance. Pacific Fleet directives limit carriers to 4 percent of total authorized inventory for excess appropriated purchase account aviation items and 5 percent of total authorized inventory for excess stock-funded items. The Atlantic Fleet still has not established a standard for limiting the buildup of onhand stock excesses aboard its carriers.

The Atlantic Fleet carrier command did adopt a procedure similar to that of the Pacific Fleet carrier command's for offloading excesses during an overhaul period. Under this procedure, an Atlantic Fleet carrier offloads and stores its total inventory in a warehouse. While in the warehouse, the materials and supplies are inventoried and matched to current allowance lists. Items needed for current allowances are reloaded on the carrier, and excess items are removed from the carrier's inventory. Excess appropriated purchase account items are returned to the supply system, while excess stock-funded items are held in the warehouse and are used to fill deficiencies of other carriers and shore stations.

From October 1978 through May 1980 the Atlantic Fleet carrier command used over \$47 million of offloaded stock-funded excesses to fill deficiencies of other ships and shore activities, and it had over \$22 million of stock-funded items on hand to fill other deficiencies. In addition, command officials estimated that at least \$20 million of appropriated purchase account material was returned to the wholesale supply system. Thus, the Atlantic Fleet carrier command offloaded, redistributed, and/or made available to the supply system over \$89 million of excess items.

The Pacific Fleet carrier command does not make its excesses available to the supply system, as does the Atlantic Fleet. Pacific Fleet excesses are kept on hand to meet the needs of other carriers. The Pacific Fleet did not have redistribution figures available, but its onhand inventory of excesses amounted to \$50.4 million as of August 10, 1980.

Need for improvements to prevent
the buildup of excess stocks

We reported in 1978 that the buildup and retention of excesses was a continuing problem. Excesses were building up because of ordering above allowances, not making timely reorder reviews, and not identifying excess onorder quantities for which shipping advice had been received and items with back-ordered excess quantities. The lack of realistic standards for monitoring

and controlling onhand and onorder excesses was also a cause for building up and retaining excesses. To assist the Navy in correcting these problems, we recommended that the Navy:

- Establish the necessary controls aboard carriers to prevent requisitioning of appropriation-funded reparable replacements for items already in excess supply.
- Have the carrier Fleet Computer Assistance Groups revise carrier automated programs for periodically identifying excess on-order items to include items with excess on-order quantities for which shipping advice has been received and items with back-ordered excess quantities. Aircraft carrier commanders should also establish, as a control for preventing receipt of excess stocks during periods of inport availability, a system for matching excess on-order listings with material receipts at carrier loading docks.
- Establish realistic standards for monitoring and controlling onhand and on-order excesses. Standards should be a percentage of total on-order value or onhand inventories, as appropriate.

The Navy agreed with these recommendations and stated that directives require that these things be done, but that they would be reemphasized. The Navy also said it would revise its inventory management directives to establish standards for excess stock to include a percentage of total monetary value.

As previously noted, Pacific Fleet carriers reported \$30 million of excesses on hand and another \$8.8 million on order, while Atlantic Fleet carriers reported \$70.5 million of excesses on hand and \$19.2 million on order, for a total of \$128.5 million of excesses on hand or on order. While significant improvements have been made, the Navy needs to do more reduce and control excess stocks aboard aircraft carriers.

As a part of these excesses, we found that the U.S.S. Nimitz reported as excess 13 CLAMP 1/ items valued at \$60,834. CLAMP items are managed on a one-for-one basis, therefore, excesses should not be generated. One of these items, for example, was valued at \$47,000. Additionally, there were existing requirements in the supply system for 11 of the 13 items.

CONCLUSIONS

We recognize that the Navy has taken some positive action, especially in the Atlantic Fleet, to offload and redistribute excesses from aircraft carriers after deployments and during overhaul periods. However, we believe that the Pacific Fleet needs

1/Closed Loop Aeronautical Management Program.

to be more positive in making offloaded excesses available to the supply system. The buildup of excesses on board carriers, while improved, continues to be a problem. We believe that the Navy needs to (1) improve its management of shipboard supplies, (2) identify and cancel excesses on order in a timely manner, and (3) closely monitor excesses to control and prevent future buildup of excesses aboard carriers.

RECOMMENDATIONS

To assist in controlling future buildup of excesses aboard Navy aircraft carriers, we recommend that the Secretary of Defense direct the Navy to:

- Exercise controls aboard carriers to prevent requisitioning of materials and supplies that will put the ships in an excess condition.
- Direct carriers to perform sufficient reorder reviews to permit timely identification and cancellation of those items that are excess to the ships' needs.
- Direct carriers to exercise controls to prevent ordering CLAMP items that are excess to allowances and to promptly turn in all excess CLAMP items.

AGENCY COMMENTS

The Navy concurred with each of these recommendations and stated that instructions either have been revised, or are being revised, to implement the recommendations. The Navy also reiterated its concurrence with our prior recommendations--shown on page 28 of this report--and noted that some actions have been taken and that revised instructions to eliminate goals for excesses will be applicable to carriers in October 1981.



DEPARTMENT OF THE NAVY
OFFICE OF THE SECRETARY
WASHINGTON D C 20350

18 JUL 1981

Donald J. Horan
U. S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Horan,

This is in reply to your letter of June 1, 1981, to the Secretary of Defense regarding your draft report SMD-81-20 entitled "Navy Shipboard Supply -- An Overview of Management of Fleet Supplies and Spare Parts," (OSD Case #5724). Detailed comments are attached.

This report reiterates dollar savings published in previous reports which were not concurred in by DON or DoD. While DON concurred in the accrual of savings it did not agree in the extent of savings projected by GAO. We generally concur in the findings and recommendations in the current report except as noted below.

We disagree with the GAO recommendation to utilize initial allowance stocks (PWRS) to sustain current operations. GAO recommended that PWRS levels be reevaluated based on current demand and any levels in excess of a 90-day operating requirement be applied to quantities needed to support current requirements. This recommendation is not concurred in on the basis that peacetime operating stock levels do not duplicate the 90-day endurance load.

While we concur in the need for more stringent demand-frequency criteria to add and retain items for demand-based stock levels on submarine tenders, the Navy weighs very heavily the impact on supply effectiveness of any criteria used. Therefore, we are implementing the demand-frequency policy, also recommended by the Navy Fleet Material Support Office, that impacts supply effectiveness less adversely than the policy selected by GAO, while also significantly reducing inventory investment and dollar value of excesses.

Sincerely,

C.B. COX
DEPUTY

ASSISTANT SECRETARY OF THE NAVY
SHIPBUILDING AND LOGISTICS

Attachment
As stated

DEPARTMENT OF DEFENSE COMMENTS

ON

GAO DRAFT REPORT

DATED JUNE 1, 1981

NAVY SHIPBOARD SUPPLY -- AN OVERVIEW OF MANAGEMENT
OF FLEET SUPPLY AND SPARE PARTS

(OSD CASE #5724)

I.A. Summary of GAO Findings and Recommendations:

Prior GAO reviews have disclosed that the Navy needs to improve its shipboard supply management policies and practices. Actions taken to adopt some of the GAO recommendations have resulted in achieving measurable savings of at least \$89 million. GAO believes this is a good start, but further actions should be taken. Additional opportunities are available to the Navy to save as much as \$94 million over a 5-year period on the procurement of repair parts and supplies.

II.A. Summary of the Department of Defense Position:

The DoD and the DON have responded to prior GAO reviews and concurred that improvements to shipboard supply management policies and practices will result in savings. The Navy has taken actions, as recognized by GAO in this report, to effect changes recommended by GAO. Additional policy changes have occurred since this study was completed in December 1980 to execute additional changes recommended by GAO. Principle areas of variance between the DON and GAO have been the degree of savings that will accrue as a result of implementing recommendations and, in isolated cases, the degree or extent of change possible.

III.A. Statement of the Department of Defense Position on Specific GAO Recommendations:

GAO Recommendation: Direct the fleet commanders to discontinue the use of goals for determining excess on hand and on order. Also, direct that any item exceeding the authorized allowance be considered excess, whether it is on hand or on order.

Comment: Concur. CINCPACFLTINST 4440.3D of March 1981 eliminated goals for CINCPACFLT. CINLANTFLTINST 4440.5E of June 1981 contains no goals with regard to excesses.

GAO Recommendation: Direct fleet commander, to monitor excesses, and assure that they are off-loaded and redistributed or made available to the supply system in a timely manner.

Comment: Concur. This will be a CINCPACFLT interest item on Supply Management Inspections (SMIs). CINLANTFLTINST 4440.5E provides that levels in excess of those authorized are long supply and directs actions for processing them.

GAO Recommendation: Direct fleet commanders to assure that inventory accuracy rates are improved to the acceptable level of 90 percent.

Comment: Concur. This is a CINCPACFLT interest item on SMIs and a CINCPACFLT review of the 50 most recent SMIs shows that the 90% goal for inventory accuracy rates is being measured and reported upon by the Type Commanders. CINLANTFLT instructions direct Type Commanders to review and measure inventory accuracy rates and to meet or exceed the 90 percent inventory accuracy standard.

GAO Recommendation: Require its submarines and submarine tenders adopt a more stringent demand-frequency criterion to add and retain items for demand-based stock levels -- namely two recurring demands in separate months over a 6-month period to establish and two recurring demands in separate months every 12-months thereafter to retain.

Comment: Concur in part. More stringent stocking criteria of two frequencies of demand in 6-months to establish and two frequencies of demand every 12-months thereafter to retain have been directed for submarine tenders both CONUS and deployed. This policy has been promulgated by appropriate directives in CINLANTFLT and is in the process of being promulgated by CINCPACFLT.

FMSO Report #124 entitled, "SIM/DBI Analysis for Submarines and Submarine Tenders", dated 30 March 1976, was requested by GAO ltr of 11 July 1975. The results of this study showed several alternative criteria that reduce dollar investment, workload and volatility, but with some loss in effectiveness. The study concluded that: "... alternatives to the current criteria can reduce dollar investment and

volatility, but with a decrease in effectiveness. Better results can be achieved by revising the SIM/DBI criteria to either: (1) two requisitions in six months to qualify and two requisitions in 12 months to retain; or (2) two months with demand in six months to qualify and one month with demand in six months to retain; or (3) two months with demand in six months to qualify and two months with demand in 12 months to retain. There is no single policy that is optimal for all ships." The principle difference between criteria (1) above (Navy policy) and criteria (3) above (GAO recommendation) is that criteria (1) recognizes all demand frequencies whereas criteria (4) requires that the demand frequencies be experienced in separate months.

Navy has opted to implement the 2/6-2/12 (frequency) policy because the FMSO study of 1976 showed it to have less adverse impact on supply effectiveness for submarine tenders than the 2/6-2/12 (months of demand) policy recommended by GAO. As previously indicated, DON will reexamine the issues of the previous FMSO studies, in view of the current performance shortfalls and the elapsed time since the previous studies, and determine the optimal stockage criteria for submarines and submarine tenders which will minimize generation of excesses while meeting the requisite fill effectiveness goals.

GAO Recommendation: Change its policy so that submarine tenders will limit demand-based increase in stock levels to quantities needed to sustain current operations after considering initial allowance stocks in excess of the 90-day requirement when reevaluated based on current demand experience.

Comment: Do not concur. Submarine tender load lists represent a 90-day endurance load, i.e., they are built to provide 90-days of support without replenishment in a wartime scenario. Therefore, this load list material should not be used as peacetime operating stock. Peacetime operating stock levels are computed based on peacetime demand placed for submarine tender material and do not duplicate the 90-day endurance load. TARSELLs are updated by SPCC on a two-to-three year cycle. These updates recognize experienced demand and are tailored to the submarines supported by that specific tender. This procedure enhances load list stability and centralized visibility over the operating cycle between updates, and precludes invalid allowance changes which could result from local tender updates that are probable under the

GAO recommendation, when local, short-term increases as well as decreases in demand are the basis for the changes.

Submarine tenders provide intermediate level maintenance to assigned submarines and resupply the assigned submarines. As such, the submarine tender load list is constructed based on the repair parts on the assigned submarines that can be removed and replaced by the tender. A submarine tender load list is primarily a maintenance based inventory. Demand for repair parts is erratic. In fact, based on a FMSO study, the standard deviation of demand for a repair part during a 90-day period is about 1.6 times the average quarterly demand of the item. Based on the GAO examples, Navy appears to be understocked, not over stocked, as the report implies.

Assuming that load list demand is normally distributed, erratic, and that the GAO monthly demand figures are accurate, the three items would have approximately an 80 percent chance, a 93 percent chance, and an 85 percent chance, respectively, of satisfying all their demand in a 90-day period. The attack submarine tender load list is built to a 90 percent net effectiveness goal and the FBM tender load list is built to a 95 percent net effectiveness goal. If the items GAO has chosen are representative, Navy appears to be understocked.

GAO Recommendation: Direct submarine tenders to periodically identify all excess on order stocks, say monthly, and promptly initiate cancellation action.

Comment: Concur. Both CINCPACFLT and CINCLANTFLT have instructions directing ships to periodically identify excess on order stocks and to initiate cancellation action.

GAO Recommendation: Direct Pacific Fleet to more vigorously emphasize the offloading of unauthorized material and more closely observe current standards.

Comment: Concur. CINCPACFLT has eliminated goals for excesses on hand or on order and established this as a CINCPACFLT interest item on SMIs.

GAO Recommendation: Establish the necessary controls aboard carriers to prevent requisitioning of appropriation-funded repairable replacements for items already in excess supply.

Comment: Concur. SUADPS programs produce listings to identify items already in excess supply.

GAO Recommendation: Direct the carrier Fleet Computer Assistance Group to revise carrier automated program for periodically identifying excess on-order quantities for which shipping advice has been received and items with back-order excess quantities. Also, carriers be directed to establish, as a control for preventing receipt of excess stocks during periods of import availability a system for matching excess on-order listings with material receipts at carrier loading docks.

Comment: Concur. The Shipboard Inventory Management Analysis Report (SIMAR) program presently identifies excess both by money value and line item count. Further, another existing program, Excess Stock Due Cancellation Request, generates cancellation request documents. A management tool to match excess on-order listings with material receipts is available and can be used. However, manual research and actions on interchangeability/substitutability, physical verification of stock position, and open order file review/clearing are actions which must take place prior to offloading of stock receipts identified as potential excesses.

GAO Recommendation: Establish realistic standards for monitoring and controlling on-hand and on-order excesses. Standards should be a percentage of total on-order value or on-hand inventories as appropriate.

Comment: Concur. CINCPACFLTINST 4440.3D and CINCLANTFLTINST 4440.5E will be applicable to carriers 1 October 1981 and the standards included in those instructions have eliminated goals for excesses. The guidelines of those instructions are realistic and in compliance with the requirements of this recommendation.

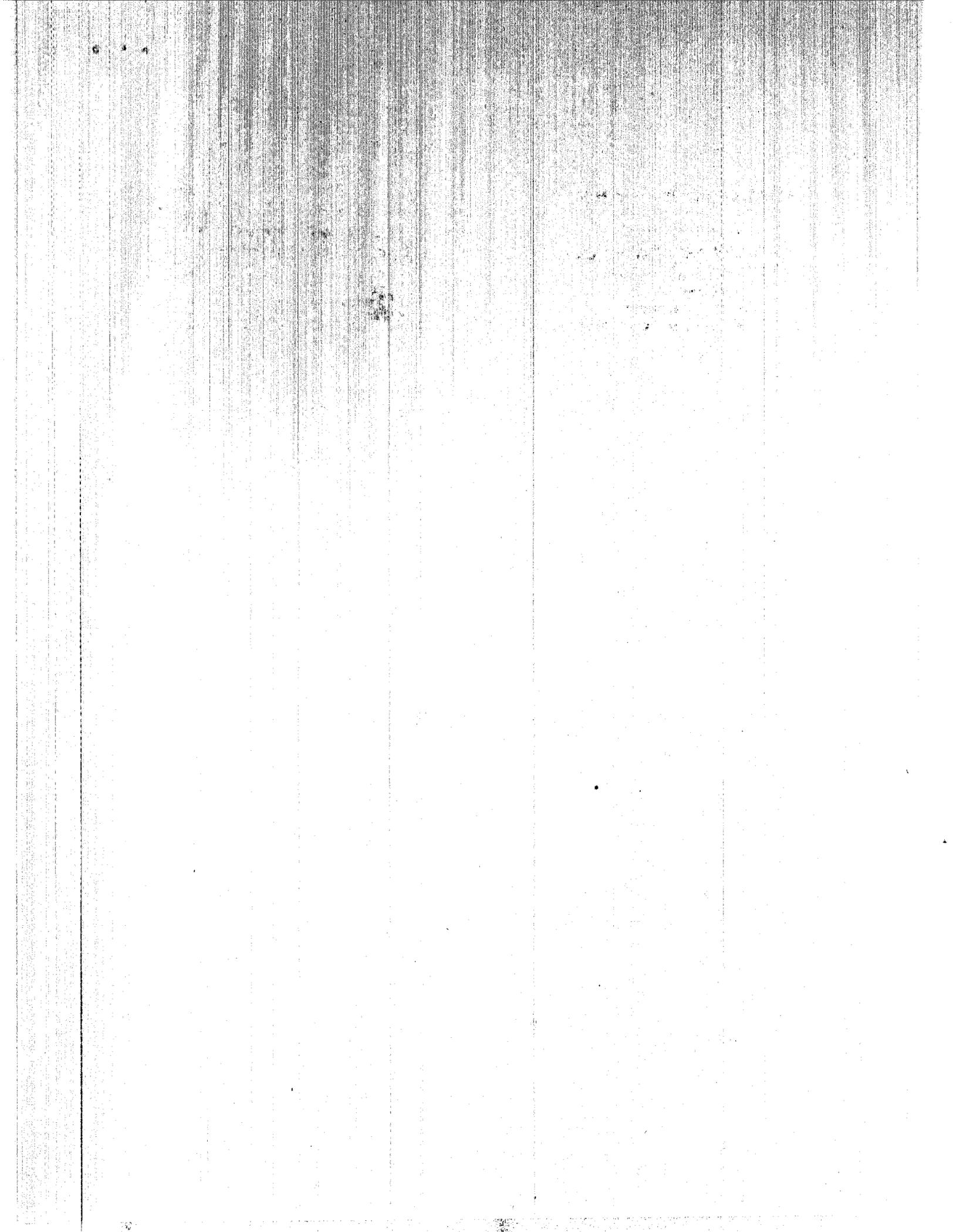
GAO Recommendation: Direct that controls be exercised to prevent aircraft carriers from ordering CLAMP items that are excess to allowances, and that carriers be directed to promptly turn in all excess CLAMP items.

Comment: Concur. FASOINST 4440.92D and 4441.16F direct that CLAMP items will only be requisitioned on a one-for-one exchange basis and that all CLAMP items excess to allowance must be shipped to the appropriate wholesale storage site. Direction for immediate turn in of CLAMP excesses is also included in the proposed revision to NAVSUPINST 4440.16D.

These policies will be reemphasized and enforced by NAVSUP and ASO. CLAMP items are not excluded from CINCLANTFLTINST 4440.5E or CINCPACFLTINST 4440.3D and therefore the inventory management of CLAMP items includes the same criteria for excesses as any other item of inventory.

GAO Recommendation: Exercise controls aboard carriers to prevent requisitioning of materials and supplies that will put the ship in an excess condition.

Comment: Concur. CINCPACFLTINST 4440.3D and CINCLANTFLTINST 4440.5E will apply to carriers the same as other classes of ships.



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