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REPORT TO THE CONGRESS

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Reducing Procurement Of  
Initial Support Stocks  
For Navy Ships B-133058

Department of the Navy

BY THE COMPTROLLER GENERAL  
OF THE UNITED STATES

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JUNE 28, 1972



COMPTROLLER GENERAL OF THE UNITED STATES  
WASHINGTON, D.C. 20548

B-133058

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

This is our report on reducing procurement of  
initial support stocks for Navy ships.

Our review was made pursuant to the Budget and  
Accounting Act, 1921 (31 U.S.C. 53), and the Ac-  
counting and Auditing Act of 1950 (31 U.S.C. 67).

Copies of this report are being sent to the  
Director, Office of Management and Budget; the  
Secretary of Defense; and the Secretary of the  
Navy.

*James B. Axtell*

Comptroller General  
of the United States

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ABBREVIATIONS

ESO	Electronics Supply Office
FBM	Fleet Ballistic Missile
GAO	General Accounting Office
SPCC	Ships Parts Control Center

D I G E S T

WHY THE REVIEW WAS MADE

The Department of the Navy spends millions of dollars annually to obtain repair parts needed to keep new shipboard equipment operating during its initial period of use. The process of obtaining these parts is referred to as initial provisioning and includes estimating the types and quantities of items required.

On the basis of the demand for these repair parts during the initial period, additional stocks subsequently are procured to support the equipment as long as it is kept in service.

If enough parts are not procured, operational capabilities of equipment can be reduced; if too many or the wrong parts are purchased, money is spent prematurely or is wasted.

The General Accounting Office (GAO) evaluated the Navy's policies and procedures under which initial provisioning was carried out because of the substantial sums involved and because of the importance of maintaining effective support of new equipment installed aboard ships.

GAO performed its review at two major procuring activities for shipboard equipment--Ships Parts Control Center and Electronics Supply Office. These two activities spend about \$70 million annually for initial provisioning.

FINDINGS AND CONCLUSIONS

Much of the backup equipment and spare parts acquired by the Navy as initial support for shipboard equipment is seldom, if ever, used. The quantities procured could be reduced significantly without impairing fleet readiness, GAO believes. This reduction would result in savings in inventory investment and in costs of maintaining inventory.

Too many stocks were obtained for the following reasons.

- Excessive quantities of items for which little or no use was expected were purchased as insurance items. One location was carrying an inventory of 34,000 such items which were valued at \$142 million. Of these, 23,000 items, having a value of \$84 million, had potentially excess quantities on hand. (See p. 7.)
- Support for equipment installed aboard ships was duplicated by buying backup quantities of the same equipment in addition to spare parts. As of April 30, 1970, the Navy had an inventory of ship-board equipment valued at \$298 million, much of which had been acquired for backup of installed equipment. (See p. 12.)
- Quantities of spare parts were obtained to load aboard tenders. Spare parts were also obtained for storage at depots on shore. In both instances the parts were intended to support the same expected equipment failures on Fleet Ballistic Missile submarines. (See p. 16.)

GAO found that reviews by Naval Audit Service covered essentially the validity of data and factors used in provisioning but did not deal with the soundness of the Navy's basic provisioning concepts, policies, and practices.

#### RECOMMENDATIONS OR SUGGESTIONS

GAO proposed that the Secretary of the Navy:

- Redefine the policies for acquiring insurance items to ensure that a quantity of not more than one of such items will be obtained, unless the cost of the item is low enough that it would be more cost effective to stock additional units at various locations than to rely on air transportation to distribute the item when needed.
- Reevaluate the policy of obtaining both complete equipment and spare parts to support equipment installed on ships. In view of the significant inventory of such backup equipment already on hand, consideration should be given to using this equipment (1) for installation on new ships, (2) to replace older installed equipment which may not be

economically reparable, or (3) as a source of spare parts for the inventory.

- Eliminate the separate determination of requirements for depot and tender stocks to support ballistic missile submarines. Tenders should be loaded from depot stocks, and tender inventories should be made part of the depot stock reporting system to increase visibility over total system assets.
- Direct the Naval Audit Service to broaden its audit coverage in the provisioning area.

#### AGENCY ACTIONS AND UNRESOLVED ISSUES

The Navy agreed that solutions should be sought to problems concerning Navy investment in repair parts but did not concur in certain of GAO's proposals. The Navy cited actions which had been taken, or which were in the process of being taken, with respect to the problem areas cited. The Navy said that:

- Short-term and long-term actions had been taken which were aimed at reducing unnecessary investment in insurance items. Short-term efforts included the issuance of new instructions which were expected to effectively limit to one the quantity of an insurance item. The long-term effort consisted of studies aimed at providing a more complete solution by developing better item selection and stocking criteria. (See p. 11.)
- The policy of obtaining complete equipment, as well as repair parts as spares, had been reevaluated. This policy limited the quantities of equipment items to be procured when the unit cost was in excess of \$250,000. GAO believes this change will help very little, since few of the equipment items involved were costly. GAO is recommending that the criterion be lowered substantially. (See p. 14.)
- The policy of determining requirements for tender stocks separately had been thoroughly reevaluated and was found to be sound and essential to the critical support role demanded by ballistic missile submarines. GAO discussed this further with Navy officials. They advised GAO that a detailed study had not been made in reevaluating the Navy's policy and that a study had never been made to determine whether stocks bought for depot storage would

be adequate to achieve the level of support needed for submarines, without separate provisioning for tenders. GAO is recommending that the Secretary of Defense require the Navy to conduct an in-depth study of this matter. (See p. 18.)

- The financial inventory reporting system provided information on the dollar value of stocks on tenders. GAO is recommending that the Secretary of the Navy require tenders to periodically submit quantitative inventory reports as well. (See p. 18.)
- The Naval Audit Service would expand its audit coverage to include conceptual shortcomings and practical problems in the provisioning process. (See p. 21.)

#### MATTERS FOR CONSIDERATION BY THE CONGRESS

The Appropriations Committees of the Congress and other committees may wish to consider the matters discussed in this report in connection with future Navy requests for spare parts to initially support new weapons systems.

## CHAPTER 1

### INTRODUCTION

The principal objective of provisioning is to ensure that items required to support and maintain new end-items being introduced will be available in the proper quantities when and where needed.

The Naval Material Command under the Chief of Naval Operations is responsible for provisioning policies and principles. Using these policies and principles, the material systems commands, such as Naval Ship Systems Command and Naval Ordnance Systems Command, are responsible for developing specific provisioning policies for the particular types of military hardware under their jurisdictions. They provide data on equipment to be supported and technical data, such as military essentiality of parts, expected wear-out rates, and recoverability rates for reparable parts.

Using data from these sources, the Naval Supply Systems Command or its agents, the inventory control points, are responsible for determining the types and quantities of items required and for procuring and stocking these items so that they will be available when, where, and in the quantities needed. Where it is determined that there is little likelihood that a given item may be needed, provision is made for stocking minimal quantities for insurance purposes.

By its nature provisioning is, to a considerable extent, guesswork. Because the equipment for which spare parts are provisioned is new, estimates of the performance of these parts must be based on past experience with similar parts and on engineering judgments. Underestimates can be adjusted by additional procurements as usage experience is obtained. Overestimates, on the other hand, result in excessive quantities of spare parts in the supply system which may never be needed.

Funds for provisioning are included in the appropriation--Other Procurement, Navy.

This review is concerned with provisioning for major items of equipment installed aboard ships. Actions taken by two Navy inventory control points--Ships Parts Control Center (SPCC), Mechanicsburg, Pennsylvania, and Electronics Supply Office (ESO), Great Lakes, Illinois--were reviewed. Annual expenditures for provisioning by these locations are about \$30 and \$40 million, respectively. Visits were made to the Naval Ship Engineering Center of the Naval Ships Systems



Command and the Strategic Systems Projects Office, Washington, D.C.

We reviewed Navy provisioning policies and procedures and their implementation by inventory control points. Although our review efforts were concentrated on past provisioning actions, we also determined that the policies and procedures used in the past are still being used.

## CHAPTER 2

### EXCESSIVE INVESTMENTS IN INSURANCE-TYPE ITEMS

Many of the items procured by the Navy for insurance purposes--i.e., when repetitive demand is not anticipated--have never been used and some have been declared excess. Our analysis of the usage experience on these items indicates that the Navy's inventory of this type of material could be reduced without impairing material readiness. This reduction would result in savings in inventory investment and in costs of maintaining the inventory.

At the time of initial provisioning, the quantity of parts determined necessary to support newly installed equipment is computed from the number of installed equipments, from the expected failure rate of the individual part, and from the length of time support will be required. Various other factors are considered, such as protection level desired, military essentiality, price, cube, and weight.

Under Navy policy items that have been selected for maintenance purposes during initial provisioning are not stocked when requirement computations show that less than one item will be needed during the first year of operation. However, these items may be considered as insurance items because their failure could affect mission capability. They may be stocked in minimal quantities at one location on each coast, even though computations might show that less than one item would be needed. This policy states that every effort will be made to minimize both stocks and places of stockage of insurance items.

At the time of our review, SPCC's inventory of repair parts included about 71,000 line items, valued at about \$235 million, for which there had been no usage for 2 or more years. We found that about 34,000 of these items, valued at more than \$142 million, had been carried for insurance purposes.

### QUANTITIES OF INSURANCE ITEMS GREATER THAN NEEDED

Our analysis demonstrated that many of the parts obtained by the Navy for insurance purposes were not needed. About 23,000 of SPCC's insurance items, valued at \$84 million, had quantities of two or more items, even though, at the time of initial provisioning usage of less than one item was computed to be needed in the first year of operation. Although some of these parts may ultimately be needed, a

review of the demand history for many of these items shows that a quantity of one for each line item would have been adequate for insurance purposes. Since rapid air transportation generally is readily available, it would not seem necessary to stock expensive insurance items on each coast.

From a list of high dollar value items that had not been used during the preceding 2 years, we reviewed 25 insurance items, valued at about \$6.7 million, and found that, although no usage could be predicted for these items during the initial period of operation, in all instances the Navy had carried quantities of more than one unit for insurance purposes. Some of the insurance items carried in SPCC's inventory for which quantities of more than one item were obtained and the money that could have been saved if only one item had been purchased follow.

	<u>Quantity over one item</u>	<u>Unit cost</u>	<u>Potential savings</u>
Gear assembly speed decreaser	4	\$175,000	\$ 700,000
Control assembly	16	20,400	326,400
Cylinder steering gear	3	76,300	228,900
Rotor assembly	3	48,480	145,440
Pallet loader	5	13,000	65,000
Isolator assembly	9	6,840	<u>61,560</u>
			<u>\$1,527,300</u>

Likewise a sample of items in ESO's inventory showed that 41 items had been entered in the inventory at the time of provisioning as insurance items. Our review of these 41 items showed that 29 had quantities of more than one on hand. For example, 13 electronic components, having a total value of \$10,478, were entered in the inventory as a result of provisioning in January 1967. As of February 1970 no demands for this item were received. For the remaining 12 items, having a quantity of one each on hand, no demands were received for eight, and some demands were received for four and additional items had been procured.

NAVY POLICY PERMITS PROCUREMENT  
OF HIGHER QUANTITIES

Although Navy policy states that insurance items should be stocked in minimal quantities, this policy permits management decisions at the time of provisioning, which results in buying greater quantities. There are two reasons for this.

In our review of provisioning policy and from discussions with ESO and SPCC personnel, we learned that the decision to provide an item for insurance purposes generally was limited to the consideration that, if the item were to fail, it would affect the mission capability of the equipment or weapon system. Those responsible for provisioning decisions therefore were reluctant to risk an out of stock position on the item. However, once the decision that an item should be stocked as an insurance item has been made, the quantity to be carried is obtained from a table.

The use of this table can result in carrying quantities ranging from one to four units, depending on the procurement lead time and the number of equipments to be supported. In our opinion the determination of quantities in this manner is more appropriate for estimating quantities of items having a recurring usage than for procuring insurance items.

We were informed that the quantities of items carried for insurance purposes could be increased by the systems commands and project managers. They can specify the additional quantities that they feel are necessary for insurance purposes, even though the original determinations of quantities by the inventory control points were based on technical information furnished by these same commands and managers. Because of a lack of documentation, we were unable to establish why the quantities of insurance items on hand in some instances exceeded those indicated on the table.

#### DISPOSAL OF INSURANCE ITEMS

Military equipment rapidly becomes obsolete, and parts which have been stocked for its support must be disposed of eventually. Thus, it is especially important that stocks of insurance items be kept to a minimum.

During our review SPCC undertook a program to eliminate from its inventory those items that were excess because little or no demand had been received. At the time of our review, 99 items, valued at about \$489,000 and carried for insurance purposes, had been completely eliminated from the inventory. For numerous other items the quantities in inventory were reduced. Of the 99 items completely eliminated, we found that 62, valued at about \$355,000, had on hand quantities of two or more units with no usage at least within the last 2 years. The quantities over one item that were disposed of were valued at about \$267,000. Had a criterion of acquiring only one item for insurance purposes been applicable, the acquisition and subsequent disposal of this material valued at \$267,000 could have been avoided.

The following list of some of these items shows the dollar value of excess quantities disposed of because the Navy provided more than one unit for insurance purposes.

	<u>Quantity in excess of one item</u>	<u>Unit cost</u>	<u>Dollar value of excess quantities</u>
Breaching housing	4	\$10,500	\$42,000
Bearing assembly	2	7,500	15,000
Expansion joint	5	3,000	15,000
Starter motor	1	6,080	6,080
Screw and nut assembly	2	2,000	4,000
Blading set turbine	3	1,080	<u>3,240</u>
			<u>\$85,320</u>

To summarize, the determinations made at initial provisioning are estimates of the types and quantities of items needed for an initial period of support on the basis of the best information available at the time. Underestimates can be adjusted by procuring additional items and quantities as experience dictates. Little can be done to overestimates if the items are not subsequently used, except to dispose of the items which were procured--an inefficient and uneconomical procedure. It is therefore important that items entering the supply system through initial provisioning be kept to a minimum.

Quantities of items have been provided for insurance stock which exceed what would reasonably be considered to be adequate for insurance purposes. We recognize the need to provide such items in minimum quantities to ensure readiness. In view of the lack of demand for these items and in view of the availability of rapid transportation, we believe that the quantities of items stocked for insurance purposes can be considerably reduced.

We suggested that the Secretary of the Navy redefine the policy for stocking items for insurance purposes to ensure that a quantity of not more than one of such items is obtained, unless the cost of the item is low enough that it would be more cost effective to stock additional units in various locations rather than to rely on air transportation to distribute the item when needed.

## AGENCY COMMENTS AND OUR EVALUATIONS

The Navy generally agreed with our finding that excessive quantities of insurance stocks had been procured in some instances. It did not agree with our suggestion that the policy be redefined so that a quantity of one item would be obtained for insurance purposes. The Navy offered several reasons why additional quantities should be purchased in some instances in justification of its policy for stocking insurance items.

The Navy further advised us of actions to reduce the unnecessary investment in insurance items. Short-term actions include instructions issued by SPCC and ESO which will limit the depth of insurance items to one, where possible. We made inquiries at SPCC concerning its instruction. We found that an instruction had been issued subsequent to that cited in the Navy's reply. This instruction requires that, in computing requirements for insurance items, certain conditions be met before the item can be stocked. When these conditions have been met, procurement is limited to a quantity of one or \$25 worth of material, whichever is greater.

Long-term actions include a study being conducted by the Navy and aimed at providing a more complete solution by developing better item selection and stocking criteria. A study of secondary item management is also being conducted.

We believe that the recently issued instructions will achieve the intent of our proposal to limit to one the quantity of insurance items. The study mentioned by the Navy and the Navy's planned long-term effort should further improve the provisioning processes of insurance items.

## CHAPTER 3

### DUPLICATION OF SUPPLY SUPPORT

When the Navy buys equipment to be installed on new ships, it also buys backup quantities of the same items as replacements in case of failures. In addition, spare parts are bought to support repair and overhaul of the equipment. This tends to result in a duplication of support, because the backup equipment is seldom used when shipboard equipment fails; rather the spare parts are used to repair the inoperable items.

### INVESTMENT IN INVENTORY OF COMPLETE EQUIPMENT

As of April 30, 1970, the Naval Ship Systems Command had on hand \$298 million in inventory of shipboard equipment. Examples of the categories of equipment contained in the command's inventories follow.

<u>Categories</u>	<u>Quantity on hand</u>	<u>Value</u>
Generators	1,829	\$ 40,663,592
Pumps	4,744	32,638,258
Diesel engines	1,986	25,006,423
Compressors	<u>606</u>	<u>5,077,580</u>
	<u>9,165</u>	<u>\$103,385,853</u>

According to command personnel the items contained in this inventory were purchased for (1) backup support in the event of a complete breakdown or total destruction of the installed equipments, (2) installation in vessels scheduled for construction, or (3) planned programs of ship overhaul or alteration. In discussions with command personnel, we were told that there had been little or no demand for these items.

We requested the command to furnish us with information on 125 line items, valued at about \$21 million, that were carried in this inventory. From the information furnished we were able to determine for 94 line items that quantities of stocks, valued at more than \$8 million, had been acquired for backup support of installed equipments.

Our review of records for the 94 line items obtained for support purposes clearly showed that 47 line items either had no usage experience or had, at most, only one demand since acquisition. Although records showed usage

for the remaining 47 items, we were unable to determine the purpose for which they had been used, i.e., for support, new ship construction, or alteration. We noted that some of this equipment had been carried in the Navy's inventory for as long as 17 years.

We determined for the remaining line items selected that 24 line items, valued at about \$6 million, had been acquired for new ship construction or alterations. One item had been returned by a ship that did not need it, and for six of the items the command did not reply or indicated that the reason for acquisition was unknown.

#### RELIANCE ON USE OF REPAIR PARTS

Of the 94 line items carried as backup for installed equipment as discussed above, we selected 20, valued at about \$6.4 million, and found that individual repair parts, valued at about \$3 million, were carried by SPCC to support the same installed equipment. The following examples show the inventory value of complete equipment and individual repair parts that compose the duplicate support.

<u>Nomenclature</u>	<u>Inventory</u>		
	<u>Complete units</u>		<u>Repair parts</u>
	<u>Number</u>	<u>Value</u>	
Supercharger	14	\$3,000,000	\$600,000
Gear assembly	5	875,000	83,612
Steam turbine	2	106,000	71,073
Refrigeration plant	8	115,920	51,734
Pump, centrifugal	2	232,210	14,116

There had been little or no use of much of the complete equipment after it was procured. However, there were varying amounts of usage of the individual repair parts. For example superchargers were first procured in 1961; yet, as of January 1970, only one of the 14 complete superchargers in stock had been issued for use. However, our examination of past demand records showed continuing use of individual repair parts for superchargers. The same usage pattern occurred in the case of the other items.

We believe that the Navy's practice of providing both backup equipment and repair parts contributes to the accumulation of large, inactive inventories, which ultimately must be disposed of at a financial loss.

We proposed that the Secretary of the Navy reevaluate the policy of obtaining both complete equipment and spare parts to support equipment installed on ships. In view of the significant inventory of such backup equipment already



on hand, consideration should be given to using this equipment (1) for installation on new ships, (2) to replace older installed equipment which may not be economically repairable, or (3) as a source of spare parts for the inventory.

#### AGENCY COMMENTS AND OUR EVALUATIONS

The Navy advised us that the policy of obtaining both complete equipments and repair parts to support equipment installed aboard ships had been reevaluated and was considered a reasonable and logical policy. The Navy justified the need for this equipment on the basis that it would not be technically feasible to assemble a complete equipment from repair parts inventory, if it were necessary because all components were not normally stocked. The Navy felt that manufacturing costs and lead times for replacing missing components would be prohibitive.

On the basis of the usage pattern we observed, we believe that it would be rare that anyone would attempt to assemble a complete item of equipment from all its component parts. Rather, when equipment needs repair, individual parts should be replaced as needed. We would expect, of course, that insurance stock of perhaps one unit of these items of equipment would still be maintained in the Navy system, in case a piece of equipment was completely destroyed by fire or explosion, etc.

The Navy commented that almost none of the equipments cited by us had been specially acquired for backup purposes but that they had been left over from fleet maintenance actions, ship disposals, and program changes and cancellations. Almost 100 percent of the power generators cited in our draft report, according to the Navy, were acquired as long ago as World War II. The Navy said that most of the equipment inventory had been acquired under past policies which were no longer applicable.

We recognize that some of the equipment in inventory was obtained for purposes other than for backup support. As noted on page 13, of the 125 selected items reviewed, 94 were acquired for backup support. For generators, of 25 line items selected, 10 were obtained solely for support, nine for support and other purposes, five for ship alterations or new construction, and the reason for one item was not furnished. These generators entered the system between 1945 and 1968; the majority were obtained between 1954 and 1956.

The Navy concurred in our suggestion that backup equipment on hand should be utilized for new installation and replacements.

The Navy cited as its basic policy an instruction 4200.4 issued by the Office of Chief of Naval Operations in October 1969. (See p. 28.) However, the scope of this instruction

\*\*\* pertains to any system or major unit thereof, intended for shipboard installation, and having a unit cost in excess of \$250,000 \*\*\*"

Very few of the items on hand at the time of our review had unit costs in excess of \$250,000. Of the 125 line items selected for detailed review, only three had unit costs exceeding that amount and two of these were in stock as a result of cancellation of a ship construction program. Under the existing policy large quantities of support equipment that would duplicate support acquired in the form of spare parts could still be obtained.

#### CONCLUSIONS

Past policies have permitted stocking large quantities of equipment for support which, in many cases, has had little or no usage. The revised policy, while placing some restrictions on future procurements of this equipment, is too limited in its application. In our opinion this policy will not prevent the procurement of quantities of such lower cost equipment as is currently in inventory.

#### RECOMMENDATIONS

We recommend that the Secretary of the Navy reconsider the policy for providing spare shipboard equipment with a view toward substantially reducing the \$250,000 unit cost limitation.

## CHAPTER 4

### PROVIDING FOR LEVELS OF STOCK TO SUPPORT FLEET BALLISTIC MISSILE SUBMARINES

Procedures used by SPCC and ESO to determine spare-parts support for fleet ballistic missile (FBM) submarines at the time of initial provisioning are resulting in the obtaining of too many parts. Spare-parts support is being provided for loading aboard submarine tenders, while at the same time additional spare parts to support the same requirements are being procured for storage at depots on shore.

We were unable to determine the total extent of the acquisition of too many parts. Considering that the value of stock aboard the five FBM tenders is about \$54 million and that the Navy spent \$4.4 million in fiscal years 1969 and 1970 on stocks for tenders, we believe that the amount may be substantial.

In case of failures or breakdowns in equipment installed in naval vessels, the Navy stocks repair parts as follows. A full complement of spare parts is placed aboard the individual vessel for support during its operating period on the basis of the crew's repair capability. In addition, repair parts are obtained for supply system stocks and are placed at various land-based depots. Finally, to preclude the necessity for each vessel to return to port for replacement of parts which have failed, part of the supply system or depot stocks is loaded on tenders so that the parts will be more accessible to the ships during periods of operation. However, in the case of ballistic missile submarines, stocks are not taken from the depot stocks for the five tenders, but additional purchases are made.

Supply system stocks at the depots remain under the control of the inventory control points. The various depots report all transactions affecting these stocks. Stocks on individual vessels and on tenders are not controlled by the inventory control points since they are considered as having been issued. Inventory control points therefore receive no reports on stocks aboard submarines and tenders.

### PROVISIONING FOR FBM SUPPORT

Computations of requirements for stocks aboard individual FBM submarines, for the depots, and for the tenders are made independently. However, the computations for tenders and the depots are based on the same failure rates and quantities of equipment to be supported. As a result they duplicate each other.

To demonstrate that the formulas used for computing depot stocks and tender load stocks were intended to support the same equipment, we obtained examples from SPCC personnel. The following table sets forth the commonality of factors used in both the tender load and depot stock formulas for selected items.

	Tender load formula (equipment population) <u>submarines</u>	Depot stock formula (equipment population)		
		<u>Subma- rines</u>	<u>Other</u>	<u>Total</u>
Transformer	24	24	9	33
Network module	2,664	2,664	999	3,663
Filter	2,672	2,672	1,002	3,674
Blower	152	152	57	209
Amplifier	8	8	3	11
Power unit	640	640	240	880

In most instances the quantities actually placed on board the tenders were considerably less than those provisioned, and the balances were added to stocks at shore-based depots. This tended to put the depots into extreme excess positions in some cases. For example:

<u>Item</u>	<u>Stock position years' supply on hand</u>
Electrical amplifier	52.0
Relay assembly	33.0
Network module	11.9
Light assembly	9.5
Stabilizing network	5.1

There was further evidence that too many parts for support of submarines had been obtained. In provisioning for FBM tender load quantities, both SPCC and ESO provided equal quantities for each of five tenders, regardless of the number of submarines each tender was scheduled to support. However, ESO provided equal quantities for two additional tender loads, or a total of seven. The two were for shore activities and were in addition to quantities provided for the depots. Insofar as we could determine, the reason for the two additional loads was to ensure that the net supply effectiveness rate for FBM items required by the Chief of Naval Operations would be met.

We recognize the vital role of the FBM submarine fleet as part of our strategic deterrent force and we appreciate

the importance of having a high level of supply support to maintain this fleet in a favorable readiness position. However, we believe that the desired degree of supply support can be obtained at far less cost.

Although we were unable to determine the total extent of unnecessary stockage, we believe that much of what has been acquired for support of the FBM submarines is not needed.

To ensure that funds are being utilized most economically and effectively, we proposed that the Secretary of the Navy eliminate the duplicative determination of requirements for depot and tender stocks to support ballistic missile submarines.

#### AGENCY COMMENTS AND OUR EVALUATIONS

The Navy advised us that the policy of separately provisioning spare parts to load aboard tenders and to store at depots on shore had been thoroughly reexamined and was considered sound and essential to the critical support role demanded by deployed FBM submarines. The Navy stated that separate provisioning for FBM tenders was done deliberately to obtain the protection levels required to meet the 90-percent material availability standard set by the Office of the Chief of Naval Operations. Navy officials termed as inaccurate our statement that in most instances total quantities provisioned were not placed aboard tenders. They agreed that there were a number of instances where this had happened and that the items became, in effect, insurance items.

The Navy advised us also that it had a financial inventory report to give the supply system visibility over tender stocks and that on a quantity basis certain items were required to be reported under the High Value Asset Control Program. There is also a requirement for reporting tender stocks to the fleet Polaris Material Office. This office maintains a consolidated-stock status file which achieves the objective of ensuring the most effective use of these assets within the entire FBM community.

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We met with Navy officials to discuss their comments on separate provisioning for FBM tenders. In response to our request as to whether a study had been made during the reexamination of the policy over separate provisioning, we were told that a formal study had not been made. The decision to separately provision for tender loads apparently

dates from the beginning of the FBM submarine program and has been accepted as the most feasible means of ensuring that the 90-percent availability standard is attained. According to these officials a study has never been made to determine whether the stocks provisioned for storage at depots would be adequate to achieve the required degree of support without separate provisioning for tenders.

Because stocks in the separate provisioning actions are obtained for the depots and for the tenders to support the same expected failures, a serious question arises as to the need to obtain all the parts to support these failures during the initial period of operation.

With respect to the practice of not placing total quantities provisioned aboard tenders, records were not readily available to show the extent to which provisioned items were not loaded. At our request during the review, the Navy prepared a computer printout on one provisioning project which showed that quantities of 2,213 line items were needed. Of these items, 617 were placed on board in quantities fewer than those provisioned. The value of items not loaded totaled \$1.7 million.

The Navy's reply stated that inventories aboard tenders had been reduced by 31 percent over a 2-year period. Navy officials advised us that no demands for this material had been received by the tenders and it had been returned to depots. This situation, in our opinion, illustrates the effect of duplicate provisioning. If the tenders received no demands, excesses would result. Then the depots would not need the stocks either, because they would not have received any demands for these items in resupplying the tenders.

We are aware of the existence of the financial inventory reporting for stocks aboard tenders. Although this gives an inventory control point, such as SPCC, the value of material under its management, it does not give visibility as to specific items which may be available to defer or preclude procurement of the same items. The High Value Asset Control Program provides this type of visibility, but the number of items in this program is limited.

In our opinion the inventory control points should be receiving and maintaining the type of information now being furnished to the Polaris Material Office. Inventory control points are responsible for computing item needs, for analyzing needs against assets, for determining procurements and repairs, and for distributing items. Effective fulfillment of these responsibilities requires a knowledge of quantities, location, and condition of all items managed. We therefore

believe that inventory control points should receive quantitative inventory reports from tenders on a periodic basis.

### CONCLUSIONS

The strategic role of the FBM submarines and the degree of supply support desired to maintain their operational capabilities are military determinations which we accept. The degree of support could be achieved, we believe, without the current policy of separately providing for submarine tenders and depots. In view of the excess spare parts which have been generated and of the continuance of the duplicate provisioning, we believe that the Navy should reevaluate its policy of providing support for submarines.

We believe that with visibility of tender stocks, inventory control points could provide adequate support to the submarine fleet at a lower investment in total inventory.

### RECOMMENDATIONS

We recommend that the Secretary of Defense require the Navy to conduct an in-depth study to evaluate its policy of separate provisioning for FBM tenders.

We recommend also that the Secretary of the Navy revise the present reporting system to require tenders to periodically submit quantitative inventory reports to the cognizant inventory control points.

## CHAPTER 5

### INTERNAL AUDIT

The Naval Audit Service conducts periodic and continuing audits at inventory control points. We reviewed the internal audit findings developed at SPCC and ESO in the area of initial provisioning.

The findings pertained to deficiencies found at these activities, such as the use of incorrect factors in determining needs and the providing of incorrect data when requesting stock-number assignments, which resulted in duplicate items' entering the supply system. These reviews were conducted at the inventory control points, and, although reviews at these locations were adequate, they did not identify the types of deficiencies discussed in this report which relate to the Navy's basic provisioning concepts, policies, and practices.

In view of the findings in this report and of the importance of the initial provisioning function, we proposed that the Secretary of the Navy direct the Naval Audit Service to broaden its audit coverage in the provisioning area.

The Navy concurred in our suggestion and advised us that the Naval Audit Service, in its audit coverage of provisioning, would include identification of all possible conceptual shortcomings and practical problems.





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

Mr. J. Kenneth Fasick  
Associate Director  
Defense Division  
U.S. General Accounting Office  
Washington, D. C. 20548

8 NOV 1971

Dear Mr. Fasick:

The Secretary of Defense has asked me to reply to your letter of 30 July 1971 which forwarded the GAO draft report on reducing procurement of initial support stocks for Navy ships.

I am enclosing the Navy reply to the report.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Frank Sanders".

FRANK SANDERS  
ASSISTANT SECRETARY OF THE NAVY  
(FINANCIAL MANAGEMENT)

Encl:

- (1) Department of Navy Reply to GAO Draft Report of 30 Jul 1971 on Reducing Procurement of Initial Support Stocks for Navy Ships (OSD Case #3321)

BEST DOCUMENT AVAILABLE

Department of Navy Reply

to

GAO Draft Report of 30 July 1971

on

Reducing Procurement of Initial Support

Stocks for Navy Ships

(OSD Case #3321)

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I. Summary of GAO Findings and Recommendations

GAO reviewed the Navy's acquisition of repair parts needed to support new shipboard equipment during its initial period of use at two major procuring activities for shipboard equipment: Ships Parts Control Center (SPCC) and Electronics Supply Office (ESO). GAO found that much of the back-up equipment and spare parts acquired by the Navy as initial support for shipboard equipment, is seldom if ever used. GAO believes the quantities procured as initial support could be significantly reduced without impairing fleet readiness. This would result in savings in inventory investment and in costs of maintaining the inventory. GAO noted unnecessary or duplicate procurement of support stocks in the following areas: (1) items bought for insurance purposes (2) duplicate stocks of equipment and parts, and (3) duplicate provisioning for FBM submarines. Further, GAO found that reviews by Internal Audit while adequate for the area of provisioning covered, did not identify the type of deficiencies discussed in this report, which relate to the Navy's basic provisioning concepts, policies, and practices.

GAO recommends that SECNAV:

1. Redefine the policies for acquiring insurance type items to ensure that a quantity of not more than one of such items is obtained unless the cost of the item is low enough that it would be more cost effective to stock additional units in various locations rather than relying on air transportation to distribute the item when needed.

2. Re-evaluate the policy of obtaining both complete equipment and spare parts to support equipment installed on ships. In view of the significant inventory of such back-up equipment on hand, consideration should be given to using this equipment (1) for installation on new ships, (2) to replace

older installed equipment which may not be economically reparable, or (3) as a source of spare parts for inventory.

3. Eliminate the duplicative determination of requirements for depot and tender stocks to support ballistic missile submarines. Tenders should be loaded from supply system stocks in depots, and tender inventories should be made part of the depot stock reporting system to increase centralized visibility over total system assets.

4. Direct the Naval Audit Service to broaden its audit coverage in the provisioning area.

## II. Summary of the Department of the Navy Position

The Department of the Navy agrees with the intent of the GAO effort which seeks solutions to the problems concerning Navy investment in insurance quantities of repair parts, but does not concur with the recommended actions. Comments on these recommendations and current efforts being taken are discussed below.

## III. Statement

Recommendation 1 - Do not concur with the recommendation. GAO has developed a sound finding that in some cases the Navy has procured excessive quantities of initial support insurance stock. However, the conclusion offered ("GAO believes that only rarely would it be necessary to acquire more than one unit of insurance type items.") is purely subjective. Determination of the proper quantity of an item to procure is an extremely complex problem which must take into account many variables. It is because of the extreme complexity of the provisioning process that errors are made. However, just as errors of excessive procurements are made, as pointed out by GAO, errors of deficient procurements are also made with resultant adverse effect on the Navy's operational capability. Ships and units have been resorting, with increasing frequency, to cannibalization actions, material diversions, special contractor support, and other extraordinary means of providing repair parts due to insufficient provisioning during the provisioning process. Certain aspects of initial support investment were not specifically addressed in the GAO report but must be considered. In particular, recognition of the following factors is given in the acquisition of insurance type items:

1. Items being processed through Navy provisioning are subjected to the following SECNAV policy criteria:

## APPENDIX I

- a. Expected replacement rate of the end item and its overhaul cycle.
- b. Probability of failure.
- c. The degree of recoverability and repair turnaround cycle of repairable supporting items, including level of maintenance, i.e., organizational, intermediate or depot.
- d. Relative cost of procurement concurrent with equipment production as compared with subsequent parts procurement.
- e. Possible inability to obtain items by subsequent production without excessive costs or adverse effect on production schedules of other equipment.
- f. Cost of storage and handling of items.
- g. Prospective rates of use and obsolescence.
- h. Military essentiality of the item.
- i. Availability of critical raw materials.
- j. Availability from commercial market or other Service stocks.
- k. Number of end items planned for immediate use.
- l. Number of end items being procured, not requiring immediate support.
- m. Transportation responsiveness and costs as they affect inventory, including materials in the pipeline, and considering inventory trade-offs against the use of premium transportation.
- n. Other factors as applicable.

Determination of exact quantity is a factor of the item's essentiality, cost, and procurement lead time. In all provisioning decisions, a subjective trade-off between economic considerations and military requirements must be made. Inflexible decision rules which consider only a single factor, such as the GAO concentration on the economic aspect, do not promote optimum provisioning effectiveness. Complete disregard for military essentiality and procurement lead time would create intangible costs in such areas as inoperative equipment,

cannibalization efforts, and supply system expediting of urgently needed items which are not in stock. Simply stated, the point which all of these comments focus upon, is that Navy places strong emphasis on the economic aspect of provisioning, but the military essentiality and procurement lead time also receive consideration.

2. GAO's recommendation to buy only one of an insurance type item assumes that this single item will always be available commercially. If such were the case one unit would probably be enough; however, since that is usually not the case for military equipments, the GAO does not recognize the problems involved in the procurement of additional items at a later date, such as long lead time for repair or procurement, requalification of source, non-existence of source, and cost of retooling. It should also be pointed out that a single item supporting a large population of installed equipments would provide virtually no support for increased tempo of operations in a war-time environment. A fallacy in the GAO report is that in all three areas the findings were based on usage (or the lack of usage) occurring during a period of reduced equipment operating schedules and a period which is certainly devoid of any battle casualty experience. There should be no arbitrary restriction of quantity when a competent technical judgement reflects the need for a multiple quantity to ensure fleet readiness, and that technical judgement considers the economics of life of type, lack of resupply sources, costs of the insurance item as a percentage of cost of installed equipments which it insures, and the economic trade offs.

3. The existing ICP inventory contains many items that are designated as "insurance" that were not initially stocked solely on the basis of provisioning criteria for insurance items. These items became available as excesses to various ship construction and overhaul programs and because of their military essentiality were transferred to the ICP for retention. This difference in insurance items, that is, those selected on the basis of provisioning criteria and those transferred from excess programs, is critical to the proper analysis of the ICP insurance item inventory. The GAO report does not make this differentiation, consequently, the analysis of the problem and the conclusions drawn are somewhat distorted.

4. Many items stocked by the Navy must be stocked in quantities of more than one for maintenance purposes. Items such as piston rings and gears are replaced in matched sets and this special maintenance requirement dictates the quantity that must be stocked.

## APPENDIX I

The Navy has undertaken both short-term and long-term actions aimed at reducing unnecessary investment in insurance items. In the short term, ESO and SPCC have implemented new provisioning requirements determination procedures that will effectively limit the depth of new insurance items to a quantity of one where possible. SPCCINST 4400.30A of 27 January 1971 and ESOINTINST 5230.1, SUP 1-11 of June 1970 apply. The long-term Navy effort consists of a major Navy study of the provisioning requirements determination process that is a part of the DoD Advisory Group on Secondary Items effort to improve the overall provisioning process. At this juncture, an initial set of criteria has been developed that is aimed at not only limiting the depth of insurance items but also improving the criteria for selection of insurance items. While the short-term effort coincides with the GAO recommendation, it is only considered to be a stop-gap measure and a partial solution. The longer term Navy effort is aimed at providing a more complete solution by developing item selection and stocking criteria that will be based on more complex factors such as the economics of transportation and costs of future production start-ups. This effort also includes the expanded development of Median Family Replacement Factors (averages of experienced replacement factors for categories of like-type items) that will be utilized to improve the Navy's capability to predict requirements for new items. Also, this change will reflect the present Navy provisioning requirements determination process which does not, as a matter of practice, compute and procure multiple quantities of an item just to ensure stockage on both coasts. Thus, this change will result in the determination of actual requirements based upon criteria other than adherence to a two-coast stocking policy. The insurance item study is scheduled for completion in early 1972. Revisions to official policy statements should be made shortly thereafter.

Recommendation 2 - The Navy policy of obtaining both complete equipments and repair parts to support equipments installed in ships has been re-evaluated. The Navy's reasonable and logical policy is expressed in OPNAVINST 4200.4 (Subj: Spare equipments; requirements, budgeting, and procurement policy for). Under that policy, procurement of equipment in excess of planned installations is not always appropriate. Alternatively, the need to procure either one or two backup equipments, dependent upon the total number of installations and, when in excess of 20 such installations are planned, is as expressed in that Instruction: "Spare systems . . . are required to provide expeditious replacement in event of major damage beyond repair (in peacetime: from fire, collision, explosion, storm) in wartime: same, plus battle damage. The combination or assembly of spares and repair parts, and replacement units provided in provisioning will not ordinarily permit complete system assembly to meet these requirements." Equipments in many instances contain elements which would not be purchased as repair parts (e.g., frames, mounts, panels), and the

alternative to availability of an equipment would be an expanded scope of provisioning and number of items stocked - with associated cost increases. Additionally, in the event of a fire or explosion which renders the entire equipment unserviceable, it would not be technically feasible to assemble a complete replacement equipment from repair parts inventories and in most cases the manufacturing costs and lead time for replacement of any missing components would be prohibitive. Spare equipments, like the ships in which they are installed, become extremely vital during periods of emergency but tend to be a less attractive investment when no emergency exists. The requirement to respond to catastrophic equipment failure is not interchangeable with the need to provide adequate repair parts support for installed ship-board equipments.

For purpose of clarification of the findings in the report pertaining to this recommendation a distinction should be made between the inventory (quantity/value) of a given equipment as of a recent point in time and circumstances which produced that particular inventory. GAO apparently assumes that the on-hand inventory was acquired specifically for the purpose of stockpiling insurance components as a reflection of current procurement policy. Almost none of the equipments in the listings on page 15 of the report were acquired specifically for insurance purposes but were instead taken up in stock as a result of roll-back from fleet maintenance actions, ship disposals, and program changes and cancellations. For instance, of the power generators cited in the report almost 100% are in stock as a result of roll-back of equipments initially acquired as long ago as during World War II, and are now the only support available for aging ships/equipments still in active service. Many or most equipments which now constitute the inventory were acquired in the past in accordance with policies which are no longer applicable under current conditions.

With regard to utilization of back-up equipment, Navy concurs in considering such equipment for new installations/replacements. The on-hand inventory is a prime source of supply to ships undergoing overhaul/conversion, and to programs such as the Fleet Modernization Program. Equipments of dated design, unsuitable for installation on newer ships, provide direct material support as is the case with many of the generators mentioned previously. Failing utilization in one of the foregoing manners, and after consideration for contingency requirements, equipments are subject to disposal. Consequently, it is considered that Navy policy and procedures are in consonance with this GAO recommendation.

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Recommendation 3 - The Navy has thoroughly reexamined the policy of provisioning retail operational level FBM Tender loads as a separate level from wholesale depot stocks. The current policy is considered sound and essential to the critical support role demanded by our world-wide ranging, deployed FBM submarines.

Because of the vital strategic role of the FBM system, initial provisioning of its spares deliberately provides for stock at the retail (tender) level, whereas for non-FBM support, provisioning stocks are provided only for the wholesale (depot) system and reliance is placed on demand to "pull" material to the retail level. It should be noted that each tender is provisioned to support one-quarter to one-fifth of the SSBN population, whereas the system is provisioned to support the total SSBN population. Each tender requires pipeline stocks for the order and shipping time from the system to the tender (with a safety level protection) for demands received from her shops and alongside ships, whereas the system requires pipeline stocks (plus safety level) for repair cycle regenerations, and procurement lead times for consumable and scrapped reparable to support total population. The times are additive, but the computer quantities are not duplicative.

Separate and protected levels of FBM material in the FBM tender are required because of the higher net availability standard (90%) set by the CNO for the FBM system and the fact that even with use of air transportation, response from CONUS depots frequently cannot be made in time to preclude disruption of intricately scheduled refit cycles for FBM submarines.

Examples cited on page 21 of the report imply that in most instances total quantities provisioned were not actually placed aboard the tenders. This is inaccurate. There were, however, a number of instances (including those specific examples cited) wherein initial estimates of demand made during provisioning proved to be high. These items became, in effect, "insurance items" and stocks excess to minimal quantities required on board were later returned by the tenders to shore activities. Given the fallibility of the provisioning process, such a situation is, lamentably, impossible to avoid. The Navy is, however, continuing its aggressive efforts to improve provisioning forecasts for all categories of technical material.

To a large degree, system visibility of FBM tender stocks is provided on a financial inventory basis by the Stores Account Material Management Afloat/Ship's Authorized Level (SAMMA/SAL) Program and on a quantity basis for those items subject to reporting under the High Value Asset Control (HIVAC) Program. In this regard, it is considered



pertinent that FBM tender inventories have been reduced by 31% between March 1969 and March 1971. Further visibility is assured by the requirement for quarterly reporting of FBM tender stocks to the fleet Polaris Material Office (PMO). This office maintains a consolidated stock status file which, while not duplicated at the ICP level, achieves the objective of assuring the most effective use of these assets within the entire FBM community.

Computational and estimating techniques are under continual review in an effort to eliminate unnecessary duplication in initial provisioning. The GAO report will be helpful in this effort; however, elimination of FBM tender provisioning stocks, or their absorption into wholesale system stock levels is not considered to be consistent with attainment of the supply effectiveness required for FBM material.

Recommendation 4 - Concur.

The GAO audit coverage was devoted to SPCC, ESO, and NAVSEC. As pointed out in the GAO report, the Naval Audit Service has audited various aspects of provisioning at ESO and SPCC and the audit effort has been productive. The Naval Audit Service will continue to provide audit coverage of the provisioning area, including identification of all possible conceptual shortcomings and practical problems.

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APPENDIX II

PRINCIPAL OFFICIALS OF THE DEPARTMENT OF DEFENSE  
 AND THE DEPARTMENT OF THE NAVY  
 RESPONSIBLE FOR ADMINISTRATION OF ACTIVITIES  
 DISCUSSED IN THIS REPORT

	<u>Tenure of office</u>	
	<u>From</u>	<u>To</u>
<u>DEPARTMENT OF DEFENSE</u>		
SECRETARY OF DEFENSE:		
Melvin R. Laird	Jan. 1969	Present
Clark M. Clifford	Mar. 1968	Jan. 1969
Robert S. McNamara	Jan. 1961	Feb. 1968
DEPUTY SECRETARY OF DEFENSE:		
Kenneth Rush	Feb. 1972	Present
Vacant	Jan. 1972	Feb. 1972
David Packard	Jan. 1969	Dec. 1971
Paul H. Nitze	July 1967	Jan. 1969
Cyrus R. Vance	Jan. 1964	June 1967
ASSISTANT SECRETARY OF DEFENSE (IN- STALLATIONS AND LOGISTICS):		
Barry J. Shillito	Jan. 1969	Present
Thomas D. Morris	Sept. 1967	Jan. 1969
Paul R. Ignatius	Dec. 1964	Aug. 1967
<u>DEPARTMENT OF THE NAVY</u>		
SECRETARY OF THE NAVY:		
John W. Warner	Apr. 1972	Present
John H. Chafee	Jan. 1969	Apr. 1972
Paul R. Ignatius	Sept. 1967	Jan. 1969
Charles F. Baird (acting)	Aug. 1967	Sept. 1967
Robert H. Baldwin (acting)	July 1967	Aug. 1967
Paul H. Nitze	Nov. 1963	June 1967
UNDER SECRETARY OF THE NAVY:		
Frank Sanders	Apr. 1972	Present
John W. Warner	Feb. 1969	Apr. 1972
Charles F. Baird	Aug. 1967	Jan. 1969
Robert H. Baldwin	July 1965	July 1967

Tenure of office	
<u>From</u>	<u>To</u>

DEPARTMENT OF THE NAVY (continued)

ASSISTANT SECRETARY OF THE NAVY  
(INSTALLATIONS AND LOGISTICS):

Charles L. Ill	July 1971	Present
Frank Sanders	Feb. 1969	July 1971
Barry J. Shillito	Apr. 1968	Jan. 1969
Vacant	Feb. 1968	Apr. 1968
Graeme C. Bannerman	Feb. 1965	Feb. 1968

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