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Implementation of reduced shipboard allowance levels : reapplication savings analysis

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IMPLEMENTATION OF
REDUCED SHIPBOARD ALLOWANCE LEVELS:
REAPPLICATION SAVINGS ANALYSIS

by

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March, 1994

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Recently, the Navy instituted a new model (known as .5 FLSIP Plus) for determining the allowance quantities for shipboard spare parts inventories; and as a result, is now in the process of re-stocking ship's storerooms using the new inventory allowance list. The Navy has estimated the amount of savings from this allowance change by developing a cost savings model. This thesis involves evaluation of the cost savings model. It evaluates the reapplication savings estimates projected by the cost savings model by focusing on the actual experience of one ship during its conversion to the new spare parts allowance quantities. Using data developed by Ships Parts Control Center, a thorough analysis and explanation of the Navy's cost savings model is presented. Using the data generated by the Integrated Logistics Overhaul team during the ship's overhaul, a methodology for comparing components of the model's projected reapplication savings is developed. Potential explanations and justifications for deviations between actual and projected results are provided. The results should provide an approach for improving the accuracy of cost savings projections of future inventory model conversions.

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Implementation of Reduced Shipboard Allowance Levels: Reapplication Savings Analysis.

by

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ABSTRACT

Recently, the Navy instituted a new model (known as .5 FLSIP Plus) for determining the allowance quantities for shipboard spare parts inventories; and as a result, is now in the process of re-stocking ships' storerooms using the new inventory allowance list. The Navy has estimated the amount of savings from this allowance change by developing a cost savings model. This thesis involves evaluation of the cost savings model. It evaluates the reapplication savings estimates projected by the cost savings model by focusing on the actual experience of one ship during its conversion to the new spare parts allowance quantities. Using data developed by Ships Parts Control Center, a thorough analysis and explanation of the Navy's cost savings model is presented. Using the data generated by the Integrated Logistics Overhaul team during the ship's overhaul, a methodology for comparing components of the model's projected reapplication savings to actual reapplication savings is developed. Potential explanations and justifications for deviations between actual and projected results are provided. The results should provide an approach for improving the accuracy of cost savings projections of future inventory model conversions.

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I. INTRODUCTION

A. BACKGROUND

The President's Blue Ribbon Commission on Defense Management, commonly known as the Packard Commission, made several recommendations in a 1986 report for improving the organization and management of the Department of Defense (DOD). The President tasked the Secretary of Defense with developing a plan that would fully implement all of the Packard Commission's recommendations in February 1989. In July 1989, the President approved the Defense Management Report (DMR), the Secretary's plan of action and milestones (POA&M) for substantially improving overall defense management. A January 1990 DOD status report detailed implementation specifics including 66 DMR initiatives to save an estimated $39 billion in program costs.[Ref. 1]

The Navy's fiscal year (FY) 1994 DMR proposals, Defense Management Report Decision (DMRD) 981, identifies 62 initiatives with estimated savings of $7.8 billion over fiscal years 1993 through 1999. The Naval Supply Systems Command (NAVSUP) is responsible for nine logistics initiatives totaling $896.5 million. Included is an initiative for reducing the Coordinated Shipboard Allowance Listing (COSAL).

The COSAL is a consolidated listing, specifically tailored to a particular ship, of all equipment, components, repair parts, consumables, and operating space items required to perform that particular ship's operational mission. It is both a supply and technical document. It is a supply document in that it defines all the items, and quantity for each item, required to be stored on board to sustain the ship independently for a specified period of time. The quantity of an item required to be stored on board is called an allowance quantity. The COSAL is also a technical document in that it provides the shipboard technician with descriptions, operating characteristics, and technical manuals for each equipment on board. Additionally, the COSAL provides the technician with a complete listing of the components and/or repair parts associated with each equipment.

By computing and restocking the storeroom item allowance quantities under a revised computation model, known as .5 FLSIP (Fleet Logistics Support Improvement Program) Plus (.5F+), savings totaling $182.8 million over FY 1994 through FY 1999 are expected. These savings were included in the Navy's FY 1994 Defense Management Report Proposals and were approved by the Department of Defense Comptroller 11 December 1992. A 23 March 1993 Chief of Naval Operations (CNO) message advised of the Fleet Support Quality Management Board's approval of the .5F+ COSAL initiative to support DMRD 981 savings goals. Additionally, the message directed establishment of a working group consisting of all affected parties to address the program's business rules and associated significant issues. The Naval Supply Systems Command (NAVSUP) acts as the coordinator for implementing this directive.

B. PURPOSE

This thesis will focus on evaluating the model used by the Navy to determine the amount of savings anticipated from changing the allowance computation model on board surface combatants. Because the new allowance computation model (.5F+) results in a lower total number of allowance quantities, there are two basic sources of savings to the Navy.

First, there are re-application savings. Re-application savings are savings realized from the parts that no longer have allowance quantities using the .5F+ allowance computation model. These excess parts can be removed from shipboard storage and used to fill requirements of other Navy ships and shore facilities. In so doing, requirements will be satisfied without drawing from supply system stocks.

This savings source is primarily realized from the Navy's operating ships. As will be seen, total allowance quantities currently on operating ships is larger than those that will be stocked using the the .5F+ inventory model. These excess parts become assets which can be used to satisfy supply system requirements; thereby, precluding what otherwise would have caused an expenditure.

The second type of savings are procurement offsets. Basically, procurement offsets result from cost avoidance. When ships receive COSALs computed using the .5F+ model, the number of spare parts required to fill the allowance quantities is less than that required under previous shipboard allowance computation models. Therefore, savings are realized in that less material is purchased in support of a particular ship's operational mission under .5F+.

Procurement offsets will be realized in two ways. First, in new construction ships, repair parts need only be procured to the .5F+ modelled COSAL level vice the greater quantity which would have been computed under the ship's planned inventory model. Second, in the area of fleet modernization, the quantity of new system spares required to support modernization efforts will be less because the per ship allowance quantity using the .5F+ inventory model will be less.

The primary goal of this study is to assess the accuracy of the reapplication savings projected by the Navy. Thus, the thesis will focus on the first of the two sources of cost savings just discussed above. Assumptions made by the Navy in arriving at projected reapplication savings will be identified and critiqued. The costs and savings associated with the Navy's business rules for implementing the .5F+ allowance computation model on active ships will be summarized. These costs and savings, in the aggregate, will be referred to as the .5F+ cost savings model throughout this thesis. The .5F+ cost savings model will be tested for accuracy. The approach used to evaluate the accuracy of the cost savings model will be to document the experience of an active ship undergoing conversion to the .5F+ allowance list and compare actual reapplication cost savings with projected cost savings. Revisions will be recommended to the .5F+ cost savings model in an effort to improve the accuracy of future projections of reapplication cost savings from active ships undergoing future conversions to .5F+.

C. SCOPE

The experience of a prototype ship, USS Ingersoll (DD-990), will be used as a benchmark for assessing the accuracy of the .5F+ cost savings model. Three goals will be pursued in studying Ingersoll's conversion to .5F+: (1) Deviations from the Navy's savings projection will be investigated to determine their potential for recurrence in future conversions. (2) Implementation of the new allowance computation model (.5F+) will be carefully tracked to uncover investment requirements not considered by the Navy in their savings projections. (3) Recommendations for modifying the process employed in converting surface combatants to .5F+

allowance levels will be provided to increase the level of savings.

While the .5F+ COSAL initiative is intended to be implemented across all ship types, and used in new construction/conversion programs as well, this study will focus on active surface combatants. Deviations from projected savings experienced by Ingersoll may not necessarily apply to platforms other than surface combatants. Further study of conversions on aircraft carriers, submarines, and auxiliaries is recommended to test the applicability of inferences drawn from Ingersoll's conversion. Additionally, Ingersoll's conversion experience is not applicable to new construction and modernization programs.

D. THESIS ORGANIZATION

In attempting to achieve the aforementioned goals, Chapter II introduces the COSAL development process and the .5F+ allowance quantity computation rules. Chapter III presents the components of and methodology used by SPCC in determining the projected savings of the .5F+ initiative. The detailed data used in determining projected savings is provided in Appendix B. Chapter III concludes with a description of the process that will be used in Chapter IV to verify Ingersoll's potential gross reapplication savings. Chapter IV opens with a detailed analysis of the components comprising the projected reapplication savings Ingersoll will realize as a result of conversion to .5F+. The chapter concludes with a detailed analysis of the components comprising Ingersoll's actual results. Chapter V presents explanations for the deviations between actual and projected results and recommends actions to compensate for those deviations when making other ships' savings projections. The chapter concludes with recommendations for further research.

II. DEVELOPMENT OF A NEW ALLOWANCE COMPUTATION MODEL

This chapter will summarize the approach the Navy uses in developing COSALs and determining those repair parts a ship is authorized to carry in its storerooms. The method used to develop the .5F+ allowance computation model and the savings expected from its implementation will be explained. Finally, decisions for implementing the fleet-wide reduction of allowed quantities of spare parts will be presented. This background information is crucial for assessing the Navy's .5F+ cost savings model.

A. ALLOWANCE QUANTITY COMPUTATION

1. Review of Allowance Computation Processes

Ships Parts Control Center (SPCC) Mechanicsburg, PA is responsible for computing the COSAL for fleet units, based upon supply and technical support information provided them by several organizations. SPCC tracks those parts which generate demand and discovered that only 20 to 25 per cent of the ship's storeroom items (SRI) generate demand between overhauls.[Ref. 2] This data indicates significant resources are invested in spare parts that may not increase the readiness of the systems supported. Readiness refers to the operational availability of a system. For purposes of this study, these terms will be used interchangeably. Thresholds for operational availability are established at the beginning of the acquisition cycle for the system and are used in designing the logistics support for that system.[Ref. 3]

In an effort to reduce the cost and range of fleet unit COSALs, with a minimum impact on readiness, SPCC conducted a detailed review of various alternatives to the current MODFLSIP allowance process. SPCC defined "minimum impact on readiness" to be a reduction in COSAL effectiveness of not more than 4 percentage points when compared to the MODFLSIP model. Effectiveness is the Navy's method for evaluating supply availability. Gross effectiveness evaluates the percentage of total demands for all items, both with and without allowance quantities, that were satisfied from SRI. Net effectiveness evaluates the percentage of total demands for items with allowance quantities that were satisfied from SRI. Gross effectiveness goals are currently 65 per cent while net effectiveness goals are 85 per cent.[Ref. 4]

With the "minimum impact on readiness" objective in mind, SPCC focused their review on three areas---(1) COSAL models; (2) application of demand data available through the 3M and Casualty Reporting (CASREP) files; and (3) creation of a retail level of insurance spare parts ashore.[Ref. 5]

2. Allowance Quantity Computation Rules

The CNO has approved six mathematical models for computing allowance quantities directed in the COSAL. Most fleet unit COSALs are computed using the Modified Fleet Logistics Support Improvement Program (MODFLSIP) allowance model. This model, which is a demand based model, authorizes spare part allowance quantities for the majority of ship equipment, with one failure in four years as the cut point for including an item in a ship's storeroom allowance list.

The basic Fleet Logistics Support Improvement Program (FLSIP) formula is presented below:

$$UR = \frac{POP \ X \ BRF}{4}$$

UR = Usage Rate = An estimate of how often a part will be needed in each 90 day period. The quarterly probability of failure.

POP = Installed Population = The total quantity of the part installed in equipment throughout the ship.

BRF = Best Replacement Factor = Reviewed and updated annually to reflect fleet maintenance usage collected through the Material Maintenance Management (3M) system, BRF is the predicted annual replacement rate. This is the only variable in the formula.

4 = Dividing by 4 determines the expected usage for a 90 day period.

Under .5 FLSIP, if the UR is less than .125 (at most one failure in 2 years), the part is not carried in the ship's storeroom. If the UR is equal to or greater than 1 (four or more failures per year), an allowance quantity is computed based upon expected demand.[Ref. 6] If the UR is greater than .125 but less than 1 and the item supports a mission critical equipment then the item is normally carried as an insurance item. Insurance items are parts that do not meet the criteria to be authorized an allowance quantity under normal inventory model computations. However, because the item supports a critical equipment, a nominal quantity (usually 1) is authorized to be carried. Critical equipment are those systems/equipment whose failure would seriously degrade the operational capability of the ship. Typically, the lead time to obtain insurance items is excessive. Without an authorized allowance quantity, the critical equipment the insurance item supports could be seriously impaired or completely inoperative for an extended period of time.

Demand-based items are also stored in the ship's supply storerooms in addition to those items with computed allowance quantities. Allowance quantities are arrived at using the mathematical inventory model, whereas demand-based items are those items for which the decision to stock is based upon previously recorded demand (i. e., the number of times an item has been requested by ship's personnel to execute their duties). Thus, SRI consists of both allowance items and demand-based items.

3. Results of Allowance Computation Review

SPCC isolated potential alternative COSAL models through detailed analysis and simulations that achieved cost/range reductions and met the readiness impact criteria. Results of SPCC's analyses identified the .5 FLSIP model as offering the maximum reduction in spare parts and the highest level of potential savings while minimizing the impact on readiness. The .5 FLSIP model computes allowance quantities based upon the probability of one failure in two years.

Using the historical demand data in the 3M and CASREP files, SPCC additionally identified items with the potential for inclusion in SRI allowances as an override. An override is a part that is authorized an allowance quantity regardless of the value of the usage rate. Using the 3M and CASREP historical demand data, the alternative COSAL models were assessed for their ability to satisfy past spare parts requirements and predict future demand.

Finally, SPCC considered the possibility of reducing insurance level spares across a class or the fleet and positioning a smaller number of these items in strategic shore locations rather than carrying the items on board each ship. The aggregate POP and BRF of all ships in the same class or fleet would be used in determining the usage rate for insurance items. This method would result in lower class-wide or fleet-wide allowance quantities for insurance items. For example, if insurance item A had an allowance quantity of one each on board each of 10 ships in a class, the aggregate class-wide allowance quantity would be 10. However, the allowance quantity across the entire class could be reduced if only one insurance item was held at the strategic shore location. To ensure the continued availability of these insurance items no longer positioned afloat, SPCC proposed establishing a COSAL Spares Ashore (CSA) warehouse at one location on each coast (i. e. the strategic shore location).

A simulation was conducted by the Fleet Material Support Office (FMSO) to compare the gross effectiveness achieved under MODFLSIP with that of the .5 FLSIP model. The FMSO simulation found up to a 10 per cent reduction in gross effectiveness using the .5 FLSIP model over the MODFLSIP model. From the results, SPCC concluded that demand based items needed to be added back to the shipboard allowance to protect the minimum level of effectiveness achieved under MODFLSIP. Using a combination of ship unique and class level 3M and CASREP data, SPCC arrived at demand selection rules to add back allowance items that would increase effectiveness at the least cost. This .5 FLSIP allowance computation model with the addback allowance items attached is referred to as the .5 FLSIP Plus model.[Ref. 7]

B. POTENTIAL SAVINGS

Incorporating the add-back rules into FMSO's .5 FLSIP simulation model provided SPCC with a hybrid model to apply to various ship types. Using this hybrid .5F+ model, SPCC computed a potential savings stream from implementation of this COSAL SRI allowance reduction. The potential savings arises from two sources: (1) future procurement offsets in allowance spares and (2) reapplication of parts off-loaded from ships converted to .5F+. These savings are gross savings.

To realized these gross savings, some investments would be required. SPCC estimated investment requirements to convert to .5F+ modelled COSALs to be $1.75 million in FY 1993 and $1.5 million in FY 1994. This included costs for ADP storage capacity, development of 3M/CASREP files, interim manual .5F+ COSAL production, software development to automate .5F+ COSAL production, software development in support of the CSA program, and initiation of a program for turning material in ashore (MTIS) in connection with ships undergoing availabilities and Integrated Logistics Overhaul (ILO). Because of a sustained MTIS workload increase as the supply system capitalizes the off-loaded excess spare parts, an additional $1 million per fiscal year in the outyears is required.

Given these investment costs, SPCC's estimated net savings for the .5F+ initiative is summarized in the table on the next page. Table I begins by indicating the gross savings from reapplication savings and procurement offsets to be realized over fiscal years 93 through 99. The projected investment costs in 1992 dollars is multiplied by the appropriate inflation rate to arrive at an inflation adjusted investment cost for each fiscal year. This figure is subtracted from the projected gross savings to arrive at projected net savings.

TABLE I. NET OVERALL SAVINGS (in millions) [Ref. 8]

FISCAL YEAR	93	94	95	96	97	98	99	TOTAL
GROSS SAVINGS	0.0	43.648	41.271	33.565	24.817	19.384	16.126	178.81
INVESTMENT	1.75	1.5	1.0	1.0	1.0	1.0	1.0	8.25
INFLATION RATE	1.035	1.078	1.107	1.145	1.184	1.224	1.266	
TOT. INV. COST	1.811	1.617	1.107	1.145	1.184	1.224	1.266	9.35
NET SAVINGS	(1.81)	42.031	40.164	32.420	23.633	18.160	14.860	169.46

C. .5F+ COSAL IMPLEMENTATION PROCESS

After receiving the CNO's message indicating Fleet Support Quality Management Board approval and direction to establish a working group to address significant issues in support of .5F+ implementation, NAVSUP conducted a preliminary .5F+ COSAL Implementation Meeting on 30 March 1993. The working group consisted of representatives from NAVSUP, SPCC, NAVSEA, Naval Sea Logistics Center (NSLC), and Space and Naval Warfare Systems Command (SPAWAR). At the meeting, SPCC reported that four prototype .5F+ COSALs had been implemented: (1) USS Cavalla (SSN-684); (2) USS John F. Kennedy (CV-67); (3) USS Kitty Hawk (CV-63); and (4) USS Ingersoll (DD-990). SRI allowance reductions totalled $8.6 million. While no mechanism was in place to ensure excesses were turned in (i. e., asset re-application savings realized), the SRI allowance reductions for each prototype is summarized in Table II. The net dollar value reduction, reflected in the "Difference" column, is based upon a comparison of the dollar value of inventory computed under the MODFLSIP inventory model versus the dollar value of inventory computed under the .5F+ inventory model. As Table II indicates, the .5F+ methodology generally resulted in a 20 to 30 per cent reduction in SRI quantities and approximately $1 to $3.5 million reduction in cost. The SRI allowance reductions and the net dollar value reduction, based on the difference between MODFLSIP and .5F+ computed inventories, do not reflect adjustments for missing, unserviceable, or obsolete SRI.[Ref. 9]

TABLE II. SRI ALLOWANCE REDUCTIONS

SHIP	MODFLSIP		.5 FLSIP +		DIFFERENCE	
	SRI*	$	SRI*	$	SRI*	$
SSN-684	7,777	$4.3M	5,178	$3.4M	-2,599	-$0.9M
CV-67	27,431	$14.3M	22,327	$12.6M	-5,104	-$1.7M
CV-63	26,044	$16.5M	20,941	$12.9M	-5,103	-$3.6M
DD-990	13,890	$6.7M	9,756	$4.3M	-4,134	-$2.4M

*number of items in inventory allowance

Meetings and implementation efforts are ongoing; however, initial business rules were established and formalized to CNO in early July 1993. Key decisions included:

- Implementation of .5F+ COSALs will be integrated into the ILO process.

- Initial and follow-on COSAL outfitting requirements will be computed using .5F+.
- Deferred COSAL outfitting requisitions will be validated against .5F+ business rules. Those outstanding outfitting requisitions in excess of those expected under .5F+ allowance computation levels will be cancelled.
- Updates to the COSAL as a result of configuration changes, such as new equipment installation, will be provided to fleet units monthly by SPCC. This monthly COSAL maintenance will be computed using .5F+.[Ref. 10]

The most significant issue still outstanding is the rule for ensuring system availability of low demand and insurance items deleted from SRI allowances but not adequately supported in Navy/Defense Logistics Agency (DLA) stocking policies. A COSAL Spares Ashore (CSA) warehouse on each coast comprising tailored allowances for each Fleet and integrated into Fleet Industrial Support Centers (FISC) San Diego and Norfolk is the general proposal discussions revolve around. One outstanding issue is the funding source of the initial CSA allowances. If CSA warehouses are established, the initial allowances must be filled from material excessed from ships converted to .5F+ without credit for turn-in. Several options are currently under consideration.[Ref. 11]

USS Ingersoll (DD-990) entered ILO in Pearl Harbor, Hawaii in January 1993. Conversion to .5F+ was integrated into her ILO process. As shown in Table II, the estimated reduction in the value of SRI allowance material is $2.4 million. Is this an accurate figure? As previously stated, the objective of this thesis is to evaluate the reliability of some of the assumptions underlying the projected cost savings. Actual SRI allowance reductions resulting from Ingersoll's conversion will be compared to projected results and analyzed in the chapters which follow.

III. ANALYSIS OF THE .5F+ COST SAVINGS MODEL

This chapter consists of two major subsections---(1) the underlying assumptions and calculations of SPCC's .5F+ cost savings model and (2) a methodology for analyzing the accuracy of the results achieved using that model. A thorough understanding of the .5F+ cost savings model and the analysis methodology is necessary for logically interpreting the results of USS Ingersoll's (DD-990) conversion to the .5F+ COSAL. Results and analysis of Ingersoll's conversion will be presented in Chapter IV.

A. THE .5F+ COST SAVINGS MODEL

1. Model Components

SPCC established some basic tenets from which a .5F+ cost savings model was developed. Environmental factors forcing the analysis of alternatives to the MODFLSIP allowance computation model include:

- Budget reductions would preclude sustaining MODFLSIP computed COSALs.
- On a variety of ships, storeroom capacity is insufficient to support allowance SRI computed under MODFLSIP. Reductions in low demand and no demand material required by fleet COSALs is desirable to operating units.
- More than 75 per cent of the SRI allowances of MODFLSIP computed COSALs have experienced zero demand.[Ref. 12]

After analyzing various alternatives, SPCC determined .5 FLSIP would result in an optimal mix of potential savings and parts reduction. However, the degradation to readiness was unacceptable. In order to boost the negative impact on readiness, SPCC concluded some quantity of demand based items must be added back to .5 FLSIP computed COSALs. The assumptions used in determining those items to be added back are as follows:

- The majority of parts demanded by the fleet for equipment repair and maintenance are registered in the 3M database.
- The majority of parts demanded to correct ship casualties are registered in the CASREP database.[Ref. 13]

Within this foundation, the .5F+ allowance computation model was developed. Figure 1 illustrates the relationship between inventory items stocked under MODFLSIP and inventory items stocked under .5F+.

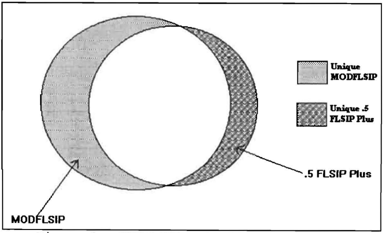


Figure 1. MODFLSIP and .5F+ Relationship

In determining potential Navy-wide gross savings, SPCC first identified the two components of the .5F+ COSAL for various ship types.

1. .5 FLSIP Inventory Computation Model Components. Allowance items that were determined based upon FMSO simulation of .5 FLSIP modelled COSALs for various ship types. A flowchart of the .5 FLSIP model calculation used in FMSO's simulation is presented in Appendix A.

2. The Addback Components. Based upon 3M and CASREP historical demand data, SPCC projected an average cost of demand based addbacks for each ship class.

The dollar value of the .5 FLSIP allowance items plus the addbacks were subtracted from the dollar value of the allowance items authorized by the respective ship type's current inventory model (typically MODFLSIP) to arrive at the net SRI reduction. The net SRI reduction is the first step in projecting gross savings. Table II of Chapter II presented the net SRI reductions for four prototype ships.

As previously discussed, whether an individual ship is a new construction ship or an active ship will determine whether reapplication savings or procurement offsets result. Regardless, a further calculation is required to arrive at SPCC's projected gross savings.

1. Reapplication Savings. These savings are realized when the excess spare parts resulting from conversion to a .5F+ modelled COSAL are returned to the supply system to satisfy future requirements. When one considers that the .5F+ initiative is aimed at removing low or no demand items from shipboard SRI, one can anticipate there will be a portion of excess spare parts for which the supply system has no requirement due to obsolescence or system saturation. To account for this reality, SPCC developed an applied asset factor. The applied asset factor estimates the portion of the excess inventory for

which a future need is expected. In addition, overhead and administrative costs of obtaining, storing, issuing, and maintaining system spares is passed on to the requestor in the unit price. This surcharge, set at a percentage of cost, has to be subtracted out to arrive at gross reapplication savings. Thus, gross reapplication savings consists of the value of the excess inventory, multiplied by an applied asset factor (reflecting expected application), less a surcharge percentage (reflecting inventory carrying costs).

2. Procurement Offsets. These savings result from a combination of the reduction in initial outfitting requirements to support modernization efforts and a reduction in requirements to outfit new construction platforms. SPCC projected budgeted system spares procurement in support of initial outfitting for modernization efforts would be reduced by 3.25 per cent. For new construction platforms, SPCC developed .5F+ reduction factors based upon ship class to project savings.[Ref. 14]

Net savings results after subtacting investment costs from gross savings. SPCC categorized investment requirements into five resource pools:

1. SPCC and NSLC labor costs to support interim manual requirements and develop 3M/CASREP files;
2. CSA software development costs;
3. .5F+ COSAL production software development;
4. additional ADP storage capacity;
5. MTIS support.

Projections for each resource pool are summarized in Table III on the following page. The detailed data SPCC used in calculating investment costs, new construction savings, procurement offsets, and individual ship savings is presented in Appendix B.[Ref. 15]

TABLE III. .5F+ INVESTMENT SUMMARY

Fiscal Year	1993	1994
SPCC/NLSC Labor Costs	$ 550,413	$ 499,095
CSA Software Development	300,000	0
.5F+ COSAL Software Development	500,000	0
ADP Storage Capacity	100,000	0
MTIS Support*	300,000	1,000,000
Total Investment	$1,750,413	$1,499,095

*$1M MTIS Support per FY in the outyears

2. SPCC Calculation of Individual Ship Reapplication Savings

To determine reapplication savings for individual active ships, SPCC first calculated the ship's net SRI reduction in dollar terms. The net SRI reduction was arrived at by taking the total quantity of allowed parts under the ship's current inventory computation method (typically MODFLSIP) extended at unit price to arrive at a total dollar value for the ship's SRI. From this value, the total quantity of allowed parts under .5F+ extended at unit price to arrive at a total value of the ship's .5F+ SRI was subtracted. This result is the ship's net SRI in dollar terms---the net cost difference between the two inventories.

Next, SPCC categorized the net SRI reduction by inventory type. The applied asset factor (i. e., an estimate of future need) for each inventory category was multiplied by the dollar value of the inventory category. This result was then divided by the surcharge rate to backout administrative and overhead costs included in the unit prices of each item to arrive at the individual ship's gross reapplication savings.[Ref. 16]

This section has outlined the components of the Navy's model used to project the savings resulting from execution of the .5F+ initiative. Within the Navy wide model, there are two type of savings, reapplication savings and procurement offsets, from which anticipated investments is subtracted to determine net savings. In determining an individual ship's gross reapplication savings, the net reduction in SRI is extended at unit price, multiplied by the appropriate inventory category's applied asset factor, and divided by the surcharge rate. Figure 2 summarizes the components of the

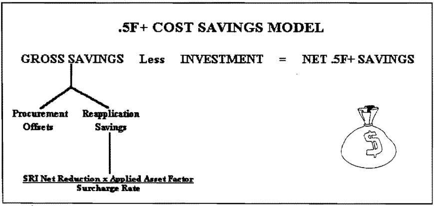


Figure 2. Components of the .5F+ Cost Savings Model

Navy's cost savings model and illustrates SRI net reduction, the focus of this thesis, within that framework.

B. .5F+ COST SAVINGS MODEL ANALYSIS METHODOLOGY

As previously discussed, gross savings in the .5F+ cost savings model is comprised of two major elements---reapplication savings and procurement offsets. Reapplication savings will be realized in the near term as active ships are converted to .5F+ modelled COSALs whereas procurement offsets will be realized over the long term as a result of reduced outfitting provisioning requirements. The SPCC projection representing procurement offsets for fleet modernization and new construction programs will depend upon force structure reduction initiatives.[Ref. 17]

Since reapplication savings are based upon the reduction in SRI allowances, analysis will seek to verify USS Ingersoll's (DD-990) net SRI reductions. In analyzing the validity of the Navy's projected reapplication savings, it is assumed that if the net SRI reductions are achieved, the net savings projected after consideration of supply system need less the appropriate surcharge rate will result in the projected gross reapplication savings. Thus, this study will focus on verifying the accuracy of the projected net SRI reductions.

A four step process will be used to test the accuracy of the projected net reduction to Ingersoll's SRI. First, the number of SRI that computes for an allowance quantity under both MODFLSIP and .5F+ will be isolated. Those SRI common to both COSAL models have no effect on cost savings as long as all common SRI are physically located in Ingersoll's storerooms and are in Ready for Issue (RFI) condition. Material that can be used for the purpose originally procured (i. e., maintenance and repair) is called RFI material. This step will seek to substantiate whether, in future conversions, it is reasonable to expect 100 per cent of the common SRI will be onboard and RFI.

The second and third steps in the process will consist of isolating the SRI unique to MODFLSIP and the SRI unique to .5F+. The unique MODFLSIP SRI has two applications in SPCC's cost savings model. First, its value is used to offset the cost of the unique .5F+ SRI. Then the remaining value of the unique MODFLSIP SRI is considered to be the net SRI reduction. SPCC then applies the asset factors less surcharge to this net SRI reduction to arrive at individual ship reapplication savings.

The SPCC model inherently assumes that offloaded unique MODFLSIP SRI equal in value to the cost of the onloaded unique .5F+ SRI will be in 100 per cent usable condition and that there is a need for the excess material elsewhere in the Navy. The unique MODFLSIP SRI physically located onboard Ingersoll and determined to be RFI will be compared with the projected MODFLSIP SRI to validate this assumption. Additionally, this step will determine to what extent, if any, excess unique MODFLSIP material is available to satisfy other supply system requirements.

In addition to this comparison process, the unique .5F+ material will be isolated to determine if any of this material may already be onboard Ingersoll in usable condition. In effect, this situation would increase the net SRI reductions and in turn, the gross reapplication savings.

Finally, the dollar value of unique .5F+ SRI verified as not already onboard Ingersoll will be subtracted from the dollar value of the unique MODFLSIP SRI that is in usable condition. This step will result in the Ingersoll's actual net SRI reductions and will be compared against that projected (See Table II in Chapter II).

The analysis methodology makes the following assumptions:

- Reapplication savings are based upon the net difference between any deficiency requisitions generated to cover missing or otherwise non-RFI common MODFLSIP material and RFI excess material. Regardless of the accuracy of the applied asset factors or surcharge rates, anticipated excess material must be RFI in order to be used to fill other requirements and must exceed the dollar value of any requisitions issued to cover storeroom deficiencies.

- The aggregate allowance quantities for spare parts with an allowance source code of "W" or "X" equal the 'plus' part of the .5F+ model. The allowance source code describes how the allowance quantity was derived. Code "W" designates those spare parts allowed as a CASREP addback. Code "X" designates those spare parts allowed as a 3M addback.

- The ILO generated Excess Candidates Listing represents Ingersoll's RFI excess material. The potential exists for ILO personnel to determine material is RFI, but when material is transferred to MTIS personnel, the material is determined to be other than RFI.[Ref. 18]

Databases used in conducting this analysis are MODFLSIP and .5F+ modelled COSALs for USS Ingersoll (DD-990) generated by SPCC and Ingersoll's Excess Candidates Listing generated by Pearl Harbor ILO Team which lists all excess parts. The deficiency requisitions generated through the ILO process will be used to determine to what extent material to fill .5F+ allowance quantities had to be purchased. The majority of database manipulation will be accomplished using DBase III+ software. Because the databases are not compatible with each other, computer programs generated to manipulate the data are provided in Appendix C.

This chapter has presented a complete description of the .5F+ cost savings model and described the methodology to be used in assessing reapplication savings estimates. Chapter IV will employ the described methodology to analyze the results of Ingersoll's conversion. This analysis will provide the foundation for the conclusions and recommendation presented in Chapter V.

IV. COMPONENTS OF PROJECTED AND ACTUAL CONVERSION RESULTS

This chapter will outline and compare the critical components of USS Ingersoll's (DD-990) projected net SRI reduction and the components of the actual net SRI reduction experienced during Ingersoll's conversion. As presented previously, the projected net reduction in Ingersoll's SRI is 4,134 items with a value of $2.4 million. What is the value of excess material that must be reapplied to offset the cost of the unique .5F+ SRI? How much of the expected excess material is actually identified during ILO as RFI? Interpretation of the results of Ingersoll's conversion will answer these questions. The first section of this chapter will analyze the net SRI reduction projected by the cost savings model described in Chapter III. The chapter will conclude with Ingersoll's actual net SRI reduction. Generalizations and explanations for variations between actual and expected results will be presented in Chapter V.

A. COMPONENTS OF INGERSOLL'S PROJECTED NET SRI REDUCTION

In order to interpret the results of Ingersoll's conversion to .5F+, the data must be analyzed from two standpoints---SRI quantity and dollar value. The total dollar value of the reduction in the quantity of SRI will vary depending upon the specific composition of excess spare parts.

Therefore, the components of projected SRI and dollar value reductions must first be identified.

1. Projected Quantity Reductions

a. Determining SRI From The SNSL

The first step in identifying the components of Ingersoll's net SRI reduction requires isolating the set of allowance parts which make up Ingersoll's SRI under the MODFLSIP and the .5F+ inventory models. USS Ingersoll's (DD-990) Stock Number Sequence List (SNSL), provided by SPCC, computed using the MODFLSIP and .5F+ inventory models, is the point of departure for determining SRI. Because the SNSL contains the repair parts supporting all installed equipment/systems onboard Ingersoll, regardless of whether they compute for an allowance quantity, the SNSLs computed under both models contain 151,340 line items each. By deleting all line items with an allowance quantity of zero in each SNSL, total shipwide spare parts remain. Under MODFLSIP, 26,066 line items remain and 21,932 line items remain under .5F+.

Within the set of .5F+ shipwide spare parts, it will become important to know which items computed for an allowance quantity because of the CASREP and 3M addback rules. This set of allowance quantities, the addback components defined in Chapter III, are identified by an allowance source code of "W" or "X" respectively. Therefore, it is necessary to breakdown the .5F+ line items by allowance source code. Table IV, below, presents the results of the allowance source code frequency distribution. From these results, Ingersoll's addback SRI can be computed at 868 line items by totalling

TABLE IV. .5F+ ALLOWANCE SOURCE CODE FREQUENCY DISTRIBUTION

Allowance Source Code	Frequency	Percent	Cumulative Frequency	Cumulative Percent
A	1329	6.1	1329	6.1
D	1991	9.1	3320	15.1
E	30	0.1	3350	15.3
I	4434	20.2	7784	35.5
N	12485	56.9	20269	92.4
P	733	3.3	21002	95.8
S	34	0.2	21036	95.9
W	34	0.2	21070	96.1
X	834	3.8	21904	99.9
5	28	0.1	21932	100.0

allowance source codes "W" and "X". The remaining 21,064 line items, therefore, represent the shipwide spare parts computing under a pure .5 FLSIP model. Recall that allowances computing under a pure .5 FLSIP model would also compute under the MODFLSIP model; therefore, this set of items should already be onboard Ingersoll.

The final step in arriving at the SRI computed under the MODLSIP and .5F+ inventory models requires deleting the operating space items from the line items with non-zero allowance quantities. As discussed in Chapter III, OSI are those items required by maintenance personnel and technicians to perform routine tasks (e. g. tools, test equipment). Because these items are physically located in operating spaces, they are not included in SRI.[Ref. 19] Deleting those line items in each database designated as OSI results in 13,890 SRI using MODFLSIP modelling rules and 9,756 SRI using .5F+ modelling rules.

b. Critical Components of Net SRI Reduction

In determining net SRI reduction, the MODFLSIP and .5F+ SRI can be categorized into one of the following four critical components:

1. .5 FLSIP SRI. This set of SRI is determined by identifying those line items which compute for an allowance quantity under both MODFLSIP and .5 FLSIP.

2. Common .5F+ Addbacks. This set of SRI is determined by identifying those line items which compute for an addback allowance quantity (i. e., allowance source code of "W" or "X") under .5F+ and compute for allowance quantity under MODFLSIP.

3. Unique .5F+ Addbacks. This set of SRI is determined by identifying those line items that compute for an addback allowance quantity under .5F+ but do NOT compute for an allowance quantity under MODFLSIP.

4. Unique MODFLSIP SRI. This set of SRI is determined by identifying those line items which do not compute for an allowance quantity under the .5F+ model.

(1) .5 FLSIP SRI

When the SRI under each inventory model (MODFLSIP and .5F+) was computed, it was determined there were 9,756 .5F+ SRI. Additionally, the addback SRI (868 line items) was determined by totalling those line items with allowance source codes of "W" and "X". By subtracting the addback SRI from the .5F+ SRI, the .5 FLSIP SRI remains. Thus, the first component in determining the net SRI reduction from changing to .5F+ is 8,888 SRI. That is, 8,888 SRI allowances computed under MODFLSIP modelling rules can be used to fill SRI allowances computed under .5F+ modelling rules.

(2) Common .5F+ Addbacks

To determine the second component of the net SRI reduction, the SRI which computes an allowance quantity because of CASREP and 3M addback rules had to be identified. To do this, the MODFLSIP and .5F+ SRI databases were used. The MODFLSIP SRI database contains 13,890 line items. As previously demonstrated, the .5F+ SRI database is the sum of the .5 FLSIP SRI (8,888 line items) and the addback SRI (868 line items) which total 9,756 line items. The .5F+ SRI allowance quantities were compared with the MODFLSIP SRI allowance quantities. This process resulted in an overlap of 9,373 allowance quantities. In other words, there are 9,373 common SRI allowance quantities between Ingersoll's MODFLSIP and .5F+ modelled COSALs.

Subtracting the .5 FLSIP allowance quantities that are common with MODFLSIP allowance quantities (8,888 line items) from this result identified the number of addback SRI which are common with MODFLSIP allowance quantities. There are 485 addback SRI which may be filled by MODFLSIP SRI.

(3) Unique .5F+ Addbacks

The third component of the net SRI reduction is fairly easy to determine based upon results of components one and two. The 9,373 common SRI under MODFLSIP and .5F+ modelled COSALs was subtracted from the 9,756 total .5F+ SRI to arrive at the 383 SRI which are unique to the .5F+ modelled COSAL.

(4) Unique MODFLSIP SRI

The final component of the net SRI reduction was determined by subtracting the unique .5F+ SRI (383 line items) from the total .5F+ SRI (9,756 line items) to get the SRI common to both MODFLSIP and .5F+ (9,373 line items). Then, subtracting the SRI common to both MODFLSIP and .5F+ from the total MODFLSIP SRI (13,890 line items) produced the

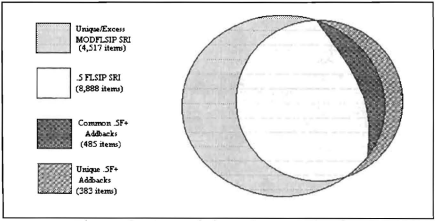


Figure 3. Composition of SRI Reduction

unique MODFLSIP SRI. This gross excess SRI was determined to be 4,517 line items. Figure 3, on the previous page, summarizes the composition of Ingersoll's net expected reduction in SRI.

2. Projected Dollar Value Reduction

In analyzing the dollar value reduction, the first component, the .5 FLSIP SRI, was arrived at by simply extending each line items by its associated unit price. The third component, the unique .5F+ addback SRI, similarly extended has a value of $182,243. The other two components required more extensive computations. Specific procedures for arriving at the dollar value of these components are presented in this section.

A particular problem, 'partial fill' situations, had to be addressed in analyzing the net SRI dollar value reduction. Throughout this thesis, partial fill is defined as that situation where the quantity of a particular stock number computed under the .5F+ addback rules is different (either higher or lower) from the allowance quantity computed under MODFLSIP. Because of the potential for partial fills, the analysis of the projected dollar value reduction maintains the association between the stock number and its computed allowance quantity. In other words, the specific allowance quantities computed for the common stock numbers under

MODFLSIP and .5F+ were compared to identify all variances in computed quantities.

a. *Common .5F+ Addbacks*

To determine this component of the projected dollar value reduction, the potential for partial fills had to be considered. Of the 485 common .5F+ addback SRI, there are 477 addback SRI which have identical stock numbers and allowance quantities as those computed under MODFLSIP modelling rules. These common SRI present no partial fill problem and have a value of $603,347. The remaining 8 addback SRI have identical stock numbers but the associated allowance quantity is different than that computed under MODFLSIP modelling rules. Further investigation revealed the allowance quantity computed under MODFLSIP for each stock number was two while the allowance quantity computed under the addback rules was one. Therefore, in Ingersoll's case, all common addback SRI can be fully supported from MODFLSIP SRI. The value of the 8 partial fills is $529, for a total common addback value of $603,876.

b. *Unique MODFLSIP SRI*

To determine the unique MODFLSIP SRI component of the projected dollar value reduction, the value of the .5 FLSIP SRI plus the value of the common .5F+ addbacks was subtracted from the value of the MODFLSIP SRI. Extending unit prices for each SRI stock number by the allowance quantity produced a value of $6,741,394 for Ingersoll's MODFLSIP SRI and $3,554,150 for Ingersoll's .5 FLSIP SRI. The difference between the value of the two SRIs, $3,187,244, is the amount available to support CASREP and 3M addback SRI. Subtracting the value of the common .5F+ addback SRI from this figure produced $2,583,368, the dollar value of unique MODFLSIP material.

Table V summarizes the relationship between SRI and dollar value reductions discussed thus far. The actual results of Ingersoll's conversion will be presented in the next section. The components discussed in analyzing Ingersoll's projected savings will be determined and compared against those arrived in this section.

TABLE V. SRI/DOLLAR VALUE REDUCTION SUMMARY

	SRI Quantity	Cumulative Total	Dollar Value	Cumulative Total
MODFLSIP:	13,890	13,890	$6,741,394	$6,741,394
.5F+: .5 FLSIP	8,888		3,554,150	
Common Addbacks	477		603,347	
Partial Fills	8		529	
Unique Addbacks	383	9,756	182,243	4,340,269
Total Reduction:		4,134		2,401,125

B. COMPONENTS OF INGERSOLL'S ACTUAL SRI REDUCTION

In analyzing the components of Ingersoll's actual SRI reduction, an understanding of the context in which the conversion takes place is necessary. Therefore, a brief overview of the ILO process is provided in the following section.

1. ILO Process

The ILO process has evolved to meet the need for a coordinated effort to ensure the principal elements supporting a ship's end of overhaul configuration are on board and are mutually supportive. The ILO site meets this need by (1) providing the ship with logistics support products that accurately reflect the ship's configuration at the end of the ship's industrial availability or overhaul and (2) training the ship's personnel to properly maintain and use those products so that a high level of support can be sustained between industrial availabilities or overhauls. The ILO site and the ship accomplish these functions during the ship's availability or overhaul. For purposes of this section overhaul is synonymous with industrial availability.[Ref. 20]

Depending upon the length and scope of the availability/overhaul the ship is scheduled for, the ILO site is capable of performing a variety of logistics support functions. These include configuration analysis, PMS analysis, technical manual analysis, and repair parts analysis. The ILO process is conducted off-ship under the direction of the officer-in-charge (OIC) of the ILO site; however, the process is a ship self-help effort. That is, the ship's CO is responsible for providing ship's force personnel to perform the logistics support functions scheduled in conjuction with the ship's overhaul under the direction of the OIC of the ILO site.[Ref. 21]

Specific steps and milestones to be accomplished in providing the ship with an accurate and complete configuration and logistics database at the end of the overhaul begin nine months prior to the scheduled start of overhaul date. Milestones considered relevant to the subject area of this thesis will be described below. Further information regarding milestone planning for ships' overhauls may be obtained from the Integrated Logistics Overhaul (ILO) Policy and Procedures Manual.

Three months prior to the start of the overhaul, SPCC provides the ILO site with the ship's SNSL, reflecting all stock numbers supporting existing equipment on board and all stock numbers supporting any new equipment planned for installation during the overhaul. Two months prior to the start of the overhaul, the ship provides the ILO site its configuration database. The ILO builds a new configuration database from the SNSL submitted by SPCC and incorporates selected information from the ship's database submission such as the stock record and requisition files. The resulting start of overhaul (SOH) configuration database is loaded onto computers at the ILO site and all configuration status accounting is conducted at the ILO site for the duration of the ship's overhaul. At the end of the overhaul, after all material shortages and excesses have been resolved (i. e. requisitioned in the case of shortages and processed for turn-in ashore in the case of excesses), the configuration database is backloaded to the ship.[Ref. 22]

In Ingersoll's case, Pearl Harbor ILO site was responsible for conducting the Repair Parts Analysis and Configuration Analysis fuctions. The goal of the Repair Parts Analysis function is to provide 100 per cent, on board or on

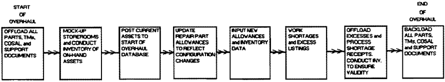


Figure 4. ILO Repair Parts Analysis Function

order, repair part support at the end of the overhaul. By offloading the ship's repair parts and supply records to the ILO site at the start of the overhaul, current repair part assets are established through the identification and inventory of those parts carried. These assets are then compared to the SOH configuration database, discussed above. Excess repair parts are removed from the ship's inventory and returned to the supply system (i. e. MTIS). Shortages not on order are requisitioned. All documentation supporting these actions are handled by the ILO site for the duration of the overhaul. Figure 4 provides a simplified overview of the ILO Repair Parts Analysis function.[Ref. 23]

Ingersoll's material shortages and excesses are identified through a series of four inventories. During each inventory, the parts carried on board Ingersoll are identified and inventoried. The inventory is then compared to the baseline repair parts allowances established from the ship's COSAL and the configuration analysis function of the ILO. After each inventory, excess repair parts are pulled from the ship and returned to the supply system and shortages not on order are identified and requisitioned. A Quality Assurance (QA) review follows each inventory to assess inventory accuracy. By the end of the overhaul, all on board repair parts will be properly packaged, identified and ready for issue to an inventory accuracy level of at least 98 percent.[Ref. 24]

The primary purpose of the Configuration Analysis function is to validate the ship's equipment/systems to determine the ship's actual configuration at the end of overhaul. A ship's configuration status is stored in the Weapon Systems File (WSF) and the COSAL is generated from that information. The ILO site carefully analyzes the SOH COSAL received from SPCC in relation to other sources of configuration data such as equipment technical manuals and physically conducted equipment validations. When this analysis reveals repair part support errors, the ILO site takes the action necessary to correct them and update the ship's configuration status stored in the WSF.

The listing Pearl Harbor ILO site generates to track material identified as excess is called the Excess Candidates Listing. The deficiency listing reflects the material shortages requisitioned by the ILO site. These are the two listings which will primarily be used to analyze Ingersoll's actual conversion results in the next subsection.

2. Data Analysis

Components of Ingersoll's net SRI reduction were determined from the deficiency listing and the Excess Candidates Listing. Based upon the Navy's cost savings model, the ILO deficiency listing should consist of the 383 unique .5F+ addback items. Additionally, the Excess Candidates Listing should consist of the 4,517 unique MODFLSIP items. The components resulting from Ingersoll's deficiency listing, as well as those resulting from Ingersoll's Excess Candidates Listing, will be identified and compared in the two sections which follow.

a. *Deficiency Listing Analysis*

To determine the composition and dollar value of Ingersoll's deficiency listing, the .5F+ stock numbers were compared with the stock numbers requisitioned on the ILO deficiency listing. The underlying assumption of this comparison is that if a deficiency requisition was issued for a stock number expected to be available from the *SRI Ingersoll* started the overhaul with (i. e., MODFLSIP computed SRI), then that stock number must have been missing or otherwise NRFI. If a deficiency requisition was not issued for a particular stock number, it is assumed the stock number was RFI and physically available from Ingersoll's MODFLSIP computed SRI.

Requisitions issued from 26 April 1993 through 11 January 1994 are included in the ILO deficiency listing. There were 1,923 NAVSEA Technical Operating Budget (TOB) funded requisitions issued during this period with a value of $4,517,038. Generally speaking, NAVSEA TOB funded requisitions cover the initial allowance quantity of a repair part for a ship whereas replenishment of that allowance quantity is the funding responsibility of the ship's type commander. The analysis focused on NAVSEA TOB funded requisitions because the unique .5F+ addbacks are initial allowance quantities and would be funded through this account. The stock numbers contained on the ILO deficiency listing were compared with the .5F+ SRI by each of the components isolated in the first portion of this chapter---.5 FLSIP SRI, common .5F+ addbacks, and unique .5F+ addbacks. The unique MODFLSIP component will be addressed in connection with the Excess Candidates Listing in the next section.

Of the 8,888 .5 FLSIP SRI, 442 stock numbers were requisitioned with a value of $881,274. The quantity requisitioned exceeded the .5 FLSIP computed allowance quantity for 92 stock numbers. Justification for these requisition quantities will be addressed in Chapter V. Of the

485 common .5F+ addbacks, 18 stock numbers were requisitioned with a value of $167,209. Of the 383 unique .5F+ addbacks, 54 stock numbers were requisitioned with a value of $66,364. Table VI, on the following page, summarizes these results.

Note: If the cost savings model projections were perfect, then one would expect to see zero deficiency requisitions for the .5 FLSIP and common .5F+ addback categories and 100 percent deficiency requisitions (383 items) for the unique .5F+ categories.

TABLE VI. PROJECTED VS. ACTUAL DEFICIENCIES

	Cost Savings Model		Onboard Ingersoll		Deficiency Requisitions	
	SRI Qty	$ Value	SRI Qty	$ Value	SRI Qty	$ Value
.5 FLSIP	8,888	$3,554,150	8,538	$2,672,876	442	$881,274
Common .5F+ Addbacks	485	603,876	467	436,667	18	167,209
Unique .5F+ Addbacks	383	182,243	329	115,879	54	66,364
TOTAL (.5F+)	9,756	$4,340,269	9,335	$3,225,422	514	$1,114,847

These results raise a myriad of issues for further investigation. While Ingersoll had 460 stock numbers missing or otherwise NRFI, there were 329 stock numbers on board Ingersoll which would have been excess had they not supported the unique .5F+ addbacks. The SRI percentage of material missing or otherwise NRFI was 4.9% while the dollar value percentage of this material was 25.1%. These *statistics* point out the importance of analyzing net SRI quantity and dollar value reductions simultaneously. Explanations for the relatively high average unit price of this material will be explored in the next chapter.

The percentage of SRI onboard in support of unique .5F+ addbacks was 85.9% while the dollar value percentage of that material was 63.6%. Recalling that the .5F+ unique addbacks were derived from 3M and CASREP usage data, one might expect previous casualty and maintenance requirements for some of this material was sufficient to meet demand criteria necessary for the item to be carried onboard even though it had no computed allowance quantity under MODFLSIP. Potential explanations for these results will also be investigated further in the next chapter.

The ILO deficiency listing provides only half of Ingersoll's conversion results. The excess candidates listing must also be analyzed to complete the comparison between projected and actual cost savings.

b. Excess Candidates Listing Analysis

(1) Drivers Affecting the Volume of Excess Material

The excess candidates listing contained a total of 9,238 stock numbers with a dollar value of $4,208,542. In looking at the volume of this listing, it is important to understand the context in which the listing is generated. Onboard Navy ships, there is a set of stock numbers for which a quantity greater than the computed allowance quantity may be stocked in the ship's storerooms. To be included in this set of stock numbers, the item must experience two or more demands within a six month period. A demand is defined as a request for a particular item, regardless of the quantity requested. After a stock number experiences two or more demands within a six month period, it is designated for Selected Item Management (SIM). Through this process, material which may not have a computed allowance quantity can be stocked in the ship's storerooms. The total stock numbers qualifying for SIM onboard a ship is known as the SIM battery.

When a ship enters overhaul, her material is offloaded to the ILO site, and the inventories begin. SIM material is initially considered to be excess material. Each individual ship has the option of determining whether their SIM battery will be backloaded at the end of the overhaul after all other ILO functions have been completed. However, it is the policy of Ingersoll's type commander (Commander, Naval Surface Forces Pacific) that the only portion of the SIM battery which will be backloaded to the ship are those stock number which computed for an allowance quantity greater than zero.[Ref. 25] These factors contribute significantly to the size of the excess candidates listing.

(2) Components of the Listing

The Navy's cost savings model projected 4,517 excess MODFLSIP SRI with a value of $2,583,368. To analyze the excess candidates listing against this goal, the MODFLSIP computed COSAL was compared against the excess candidates listing. Three components of the MODFLSIP computed COSAL were identified---.5 FLSIP SRI, common .5F+ addbacks, and unique MODFLSIP SRI. Results of the analysis uncovered one additional component contained on the excess candidates listing---excess material with no .5F+ or MODFLSIP application.

Of the 9,238 SRI on the excess candidates listing, 5,131 SRI matched those which computed for MODFLSIP allowance quantities, with a dollar value of $3,894,163. Of these total matches, 1,989 SRI computed for .5 FLSIP allowances, with a dollar value of $601,507, and 40 SRI computed for common .5F+ addbacks, with a dollar value of $35,881; 3,102 SRI with a dollar value of $3,256,775 were unique MODFLSIP SRI. Table VII summarizes these results.

TABLE VII. PROJECTED VS. ACTUAL EXCESSES

	Excess Candidates		Cost Savings Model	
	SRI Qty	$ Value	SRI Qty	$ Value
.5 FLSIP	1,989	$601,506	0	
Common .5F+ Addbacks	40	35,881	0	
Unique MODFLSIP SRI	3,102	3,256,775	4,517	$2,583,368
Excess with no .5F+ or MODFLSIP application	4,107	314,380	0	
Total Excess	9,238	$4,208,542	4,517	$2,583,368

Note: If the cost savings model projections are correct, the excess candidates listing should include

4,517 items of unique MODFLSIP SRI and no additional excess items.

As presented in Table VII, the unique MODFLSIP SRI is 1,415 SRI below that projected, but the dollar value of this material is $673,407 greater than expected. Once again, the importance of associating the particular SRI with its dollar value is apparent. Further explanation for these results will be discussed in the next chapter.

This chapter has interpreted and compared Ingersoll's actual inventory conversion data with that projected using the Navy's cost savings model. The results of the analysis have opened the proverbial can of worms. Explanations for deviations from expected results, conclusions regarding the accuracy of the Navy's cost savings model, and recommendations for further research in this area will be provided in the next chapter.

V. CONCLUSIONS AND RECOMMENDATIONS

The previous chapter compared Ingersoll's actual conversion data with that projected by the Navy's cost savings model. The variations between actual and projected savings are clear; however, explanations for these variations must be explored. This chapter will provide the explanations as well as recommended modifications to the Navy's cost savings model to compensate for the variations most likely to recur in future conversions. The chapter will conclude with recommended areas for further research.

A. MAJOR ISSUES

This section will address the three significant issues revealed by the data interpretation presented in Chapter IV.

1. Carried unique .5F+ addback SRI. The potential for unique .5F+ addbacks to be carried in the ship's storerooms.

2. Not carried .5 FLSIP and common .5F+ addback SRI. The potential for .5 FLSIP and common .5F+ addbacks to be not carried or otherwise NRFI and meet the criterion to generate NAVSEA TOB requisitions.

3. Reapplication of Excess Candidates. The potential for excess candidates to be returned to supply system stocks and satisfy other system requirements.

These issues will be addressed in turn, in the subsections which follow.

1. Carried Unique .5F+ Addbacks

a. Finding

The Navy's cost savings model treats the dollar value of the .5F+ unique addback material as a cost. Based upon requirements registered in the 3M and CASREP databases, a cost of $182,243 was expected to support new allowances for material necessary to preserve Ingersoll's level of effectiveness under MODFLSIP. Of this amount, $115,879 or 63.6% of the expected dollar value cost was already onboard.

b. Explanation

An explanation for this result can be found in the procedures for designating an item for Selected Item Management (SIM). As previously discussed, an item which has experienced a frequency of demand of two or more within six months is designated for SIM. If the material does not compute for an allowance quantity and therefore, is not carried (NC), but receives two or more demands within a six month period, the item will be procured, stocked and managed as a SIM item. In addition, provisions exist for stocking an NC item in a minimum replacement quantity (usually one) as a non-SIM item when the item receives two demands within a one year period.[Ref. 26]

Material which registered more than three demands in two years on two or more ships in the class in the CASREP database and material which registered more than eight demands in four years on at least two ships in the class in the 3M database was selected to be added back to the .5 FLSIP modelled COSAL to boost effectiveness.[Ref. 27] In the context of this selection criteria, it follows that a significant portion of the unique .5F+ (i. e. not carried under MODFLSIP modelling rules) addback material would have either met the SIM or non-SIM designation rules and therefore, be stocked.

c. Recommendation

The Navy's cost savings model needs to factor in the value of potential .5F+ unique addbacks already carried onboard. One method for arriving at a factor which accurately reflects this inevitability is to look at class data in the 3M and CASREP files on a one year basis. In other words, take the total number of demands for a particular item across the class and divide by the number of ships in the class to arrive at a per ship average for that particular item. If the per ship average across the class is two or more, assume the item is already carried onboard. Repeat this procedure for all items computing for an allowance quantity in the .5F+ unique addback category to obtain the dollar value expected to be carried.

2. Not Carried .5 FLSIP and Common .5F+ Addbacks

a. *Finding*

In looking at the percentage of .5 FLSIP and common .5F+ addback material that was not carried onboard Ingersoll as expected, the difference between the SRI and dollar value deficiency percentages is striking. The SRI was deficient 4.9% while the dollar value deficiency was 25.2%. These deficiencies can not be attributed to lost material or failure to reorder. The deficiency requisitions used in Chapter IV's analysis were all NAVSEA TOB requisitions. In order for a requisition to qualify for financing from the NAVSEA Technical Operating Budget, the material must be the ship's initial allowance or an increase to the ship's existing allowance to support installed equipment or systems.[Ref. 28]

To explore the possible explanations for these results, it is necessary to first gain an understanding of the circumstances which must exist for the ILO site to generate a deficiency requisition. The baseline for determining NAVSEA TOB funded deficiency requisitions is the end of overhaul (EOH) database. The primary purpose of the configuration analysis and COSAL maintenance function conducted by the ILO site is to ensure that the Weapon Systems File (WSF) and the EOH database conform to the ship's actual EOH configuration (i. e. the actual equipments/systems installed onboard the ship).[Ref. 29]

If, for example, the ILO site identifies a piece of installed equipment which is not reported in the ship's configuration database, it will be added. Accompanying the equipment record, the supporting allowance parts list (APL), covering all the repair parts associated with maintaining that equipment will also be added to the ship's configuration database. Those repair parts computing for an allowance quantity will result in NAVSEA TOB funded requisitions. The important point here is that the period of time the unreported equipment has been installed onboard the ship is irrelevant. The fact that the initial repair parts allowed to be carried in the ship's storeroom in support of maintenance and repair of the installed equipment have not been provided the ship is the determining factor in generating a NAVSEA TOB requisition.[Ref. 30]

b. Explanation

With this procedure in mind, explanations for the extent of Ingersoll's .5 FLSIP and common .5F+ addback deficiency requisitions can be explored. While not exhaustive, two of the most probable explanations will be discussed here. In weighing the merit of each, the reader should keep in mind Ingersoll's SNSLs provided by SPCC and used as the basis for determining expected results of Ingersoll's conversion to .5F+ equate to the SOH COSALs.

(1) Correction of WSF Errors

The most common explanation for these deficiency requisitions is the identification and correction of WSF configuration errors. To illustrate, a new pump could have been installed in the ship's engineroom and the installation is reported to the WSF. The APL should be loaded into the ship's database via the automated shore interface (ASI) process. ASI is the Navy system for transmitting ship's configuration and logistics support information system (SCLSIS) data to the ship. An adjunct to the WSF, maintenance of the ship's configuration and logistics support information (SCLSI) database automatically updates the WSF.[Ref. 31] If, for some reason, the report of the pump's installation is erroneously excluded from ASI processing, neither the equipment record nor APL record would be loaded in the ship's database. In this case, the initial requisitions for the pump would never have been generated. In addition, while the WSF indicated the pump was installed onboard, the ship would have no record of it. These circumstances would result in an expectation for the pump's allowed repair parts to be onboard, but they would not be.

(2) SNAP II System Operation

The second explanation for the .5 FLSIP and common .5F+ addback deficiency requisitions requires an understanding of the Shipboard Non-Tactical ADP System (SNAP

II). The SNAP II system provides automated data processing equipment to submarines and surface ships (AE, AGF, AO, AOE, AOR, AVT, BB, CG, CGN, DD, DDG, FF, FFG, LCC, LKA, LPD, LSD, SSN, SSBN, TAH) to manage their maintenance, supply, financial, and administrative functions. The SNAP II system is made up of several subsystems, including the Supply and Financial Management Subsystem (SFM). A manager is assigned responsibility for each subsystem. Based upon the concept that each user of the SNAP II system should have the authority to perform a given set of functions, the subsystem manager is responsible, among other things, for assigning personnel the access necessary to perform that set of functions.[Ref. 32]

The Supply Officer is designated as the SFM subsystem manager and, in this capacity, ensures data security and integrity of the subsystem. In assigning personnel user function access, the Supply Officer is able to control the authorized range of records and the depth of functional authority within the SFM subsystem. The personnel working in the ship's storerooms are known as supply users. In order to perform their required duties, there are usually three supply users besides the Supply Officer who have record deletion capability as well as the ability to update the stock record file.[Ref. 33]

The stock record file contains a record for each stock number of COSAL material carried onboard the ship which includes information relative to that stock number, such as allowance quantity, unit price, SIM designation, location where the material is kept in the ship's storerooms and quantity on hand and/or on order. In addition to the material carried onboard, stock records are generated by the SNAP II system whenever they are requisitioned. Obviously, then, it is necessary to periodically review and delete those stock records which have no value (for example, procurement of material not computing for an allowance quantity without recurring demand) to prevent the stock record file from becoming enormous.[Ref. 34]

Within in this context lies the conditions necessary to cause the .5 FLSIP and common .5F+ addback deficiency requisitions. There may be a situation where a particular stock number has a computed allowance quantity of one and it is issued to a work center. After the issue, the option exists to reorder the stock number, but reorder is not required. If the stock number is not placed on order immediately, perhaps due to budget constraints, all conditions necessary to delete that stock record exist. In order to delete a stock record, the on-hand quantity must be zero and there must be zero on order.[Ref. 35]

There is another set of circumstances that will allow the stock record to be deleted from the SNAP II system. Suppose again, a stock number has a computed allowance quantity of one and in conducting periodic inventories of storeroom material, the material can not be located. Assuming all actions taken to resolve the inventory difference are fruitless, the SNAP II system will generate a Loss By Inventory (LBI) record to account for the lost material. The SNAP II system keeps track of all gains and losses by inventory. These listing are required to be reviewed and annotated, signed by the Supply Officer, and retained for 12 months as part of the logistics audit trail. The key, here, however, is that once the LBI has been processed and the on-hand quantity is zero, all conditions for deleting the stock record are met, as long as the stock number is not reordered.[Ref. 36]

If the stock record card of material with a computed allowance is deleted---so what? When the installed equipment requiring that material is reviewed during the ILO configuration analysis and COSAL maintenance function, it will appear that the initial allowance quantity of that particular material has not been provided the ship because no record of the stock record card exists. As previously discussed, the ILO site will generate a NAVSEA TOB funded deficiency requisition.

While it is possible that stock record cards covering allowance material could be intentionally deleted, it is more probable they could be unintentionally deleted through human error or various SNAP II processes to purge files of useless records. While NAVSEA has a screening process designed to review the validity of NAVSEA TOB funded requisitions, the percentage of requisitions rejected because initial allowance quantities have been previously issued are not tracked.[Ref. 37] Regardless of the effectiveness of the NAVSEA TOB screening process, the deficiency listing used in this research was not purged of unauthorized requisitions.

c. Recommendation

Development of a factor, to be incorporated into the Navy's cost savings model, to represent this explanation for .5 FLSIP and common .5F+ addback deficiency requisitions will require tracking initial conversions to see if a correlation exists between ship class and the percentage of this category of requisitions. The deviation between the SRI percentage and the dollar value percentage of deficiency requisitions may be an anomaly. Future conversions should be analyzed for similar deviations.

3. Potential Reapplication of Excess Candidates

This subsection will discuss two issues related to excess material identified through the ILO process that potentially explain the unexpected additional excess categories (i. e. .5 FLSIP excesses; common .5F+ addback excesses; and excesses with no .5F+ or MODFLSIP application) as well as the deviation between the MODFLSIP actual and projected excesses. Recall from Table VII, while the actual dollar value of expected MODFLSIP excesses exceeded the dollar value projected by $673,407, actual SRI was 1,415 line items short of projections.

a. SIM Battery Issue

The first issue revolves around how the SIM battery is handled during the ILO process. Recall from Chapter IV that material carried onboard because it qualifies for SIM is initially considered to be excess material until just prior to backloading. At Ingersoll's discretion, the portion of the SIM battery which computed for an allowance quantity greater than zero under .5F+ can be backloaded up to the quantity computed under SIM procedures. The contents of the SIM battery not backloaded to the ship accounts for some of the unexpected additional excess categories. The Navy's cost savings model disregards the contents of the SIM battery and the manner in which SIM material is handled during the ILO process in projecting excess material available to satisfy other system requirements.

b. Recommendation

In accounting for this situation in the Navy's cost savings model, research into the contents of the SIM battery of a representative sample of ships is necessary. The policies of the various type commanders regarding the handling of the SIM battery during an ILO must be reviewed and if inconsistent with one another, a consensus should be reached.

Given the consensus procedures, average SIM SRI percentages could be determined and eliminated from the model.

c. Material Condition Issue

The second issue focuses on the condition of the material turned in as excess. What percentage of the excess material is RFI? At the same time ILO identifies material as excess, it makes a determination of material condition and assigns a condition code, classifying the material as to readiness for issue and use. When the material is turned in as excess, it is screened for correct stock number, quantity, and other logistics data and the condition code may be changed. Condition code modifications are not tracked. Material turned in to store is categorized as accepted with or without granting credit to the submitting activity's type commander or not accepted. Accepted, credible material is serviceable for its intended use and meets the dollar threshold (currently $20.00) for the type commander to receive credit. On the other end of the spectrum, unaccepted MTIS submissions are forwarded to disposal.[Ref. 38] The Navy's cost savings model does not consider condition code changes once excess material is turned over to the MTIS site. Because condition code modifications are not tracked, the significance of this factor is not known.

Historically, in Pearl Harbor, 45 to 50% of the material submitted for MTIS processing is not accepted and is forwarded to disposal.[Ref. 39] While the most common reasons for non-acceptance is material obsolescence or the cognizant inventory control point (generally, SPCC) has no need for the material, these non-acceptance percentages include condition code modifications.

d. Recommendation

This issue points out the need to track material identified as excess by the ILO site through to its final disposition. Even with the SIM material that will be backloaded deleted from the excess candidates listing, one cannot determine how much of the remaining material is RFI. Condition code changes should be collected to determine the impact this issue has on the Navy's cost savings model.

B. SUMMARY OF THE NAVY'S COST SAVINGS MODEL

Now that Ingersoll's actual reapplication savings have been analyzed and deviations from projected reapplication savings have been explored, a comparison between Ingersoll's projected and actual net savings can be computed. Using SPCC's applied asset factors and surcharge rates, Table VIII summarizes the accuracy of the Navy's cost savings model by comparing projections against actual results. The column labelled 'Cog' refers to the cognizance symbol. The cognizance symbol identifies the Inventory Manager and the Inventory Control Point (ICP) which has logistic responsibility for each stock number. SPCC is the ICP for 1H and 7 cog material; whereas, DLA has responsibility for the remaining material.

Recall that the cost savings model used applied asset factors and backed out surcharges for material offloaded from ships (refer to Appendix B); this computation occurred against gross reapplication savings. As indicated in Table VIII, gross savings are just over $250,000 short of projection and net savings (which assumes accurate applied asset factors and surcharge rates) are a mere $50,000 short of projection. It is important to note the actual savings are highly dependent upon the reapplication of the excess material to offset the $1 million additional investment required for deficiency requisitions.

TABLE VIII. ACTUAL VS. PROJECTED SAVINGS

	Excess Candidates	Deficiency Requisitions	Gross Savings
Actual Results	$3,256,775	$1,114,847	$2,141,928
Cost Savings Model	$2,583,368	$182,243	$2,401,125

COST SAVINGS MODEL ($M)								
Gross Savings	Cog	Cog Factors	Cog Split	Applied Asset Factor	Applied Assets	Surchg Rate	Assets Less Surcharge	Total Net Savings
$2.401	DLA	0.23	$0.552	0.4	$0.221	1.300	$0.170	
	1H	0.09	0.216	0.4	0.086	1.270	0.068	
	7 Cog	0.68	1.633	0.2	0.327	1.238	0.264	$0.502
ACTUAL RESULTS ($M)								
Gross Savings	Cog	Cog Factors	Cog Split	Applied Asset Factor	Applied Assets	Surchg Rate	Assets Less Surcharge	Total Net Savings
$2.141	DLA	0.23	$0.493	0.4	$0.197	1.300	$0.152	
	1H	0.09	0.193	0.4	0.077	1.270	0.061	
	7 Cog	0.68	1.457	0.2	0.291	1.238	0.235	$0.448

C. STANDARD OF SUPPLY SUPPORT

In concluding the discussion of deviations between Ingersoll's actual conversion results and those projected, it is important to address one more potential explanation. If the supply support performance (i. e. inventory accuracy rates, inspection results) of a ship has been substandard, it would be reasonable to attribute a portion of the deficiency requisitions to that poor performance. The Afloat Training Group Pearl Harbor conducts the Logistics Management Assessments (LMA) on USS Ingersoll. The LMA, conducted every 18 to 24 months, assesses all aspects of logistics support onboard the ship including configuration management, sustainability, crew support, food service, and crewmember's level of logistics knowledge. An adjective grade ranging from unsatisfactory to outstanding is assigned to each functional area. The functional area of the inspection covering inventory accuracy and all aspects of supply support is sustainability.

In 1989, Ingersoll was assessed as excellent and in December 1991, Ingersoll was assessed outstanding in the sustainability functional area. In discussing her performance with the leading storekeeper of the LMA team, the condition of Ingersoll's supply department upon entering ILO was estimated to be excellent, easily meeting all force goals.[Ref. 40] Therefore, substandard supply support is not a likely explanation for Ingersoll's deficiency requisitions. However, if the impact of substandard supply performance on the quantity of deficiency requisitions is determined to be significant, it should be factored into the Navy's cost savings model.

D. RECOMMENDATIONS FOR FURTHER RESEARCH

Areas recommended for further research concern other potential costs not addressed by the cost savings model.

1. Warehouse Space

An area of concern of ashore personnel involved in the .5F+ conversion process was sufficiency of warehouse space. There is currently no mechanism in place to gauge the degree to which warehouse space usage has increased. It is recommended a methodology for quantifying this increase be developed. Availability of warehouse space could become critical, particularly in view of the recent increase in the rate of decommissioning ships which many of the same shore facilities must handle. Warehouse space could also become an issue for the Defense Reutilization and Marketing Office (DRMO), which receives all the material identified as excess that is not returned to the supply system. It is recommended that alternative methods for dealing with the volume increase be assessed, both quantitatively and qualitatively.

2. Impact on Weight and Moment

While the cost savings model addresses material stock number and unit price, the weight and cube of the excess material earmarked to be offloaded, as well as the unique addback material to be onloaded, is ignored. When the .5F+ COSAL parts are backloaded to the ship, to what extent are stowage modifications required and what is their impact? It is recommended that future research look at a sampling of ships' storerooms before and after conversion, compare the MODFLSIP weight and cube with that of .5F+, and quantify any required actions (e. g. additional bins, storeroom modifications).

3. Ultimate Disposition of Excess Material

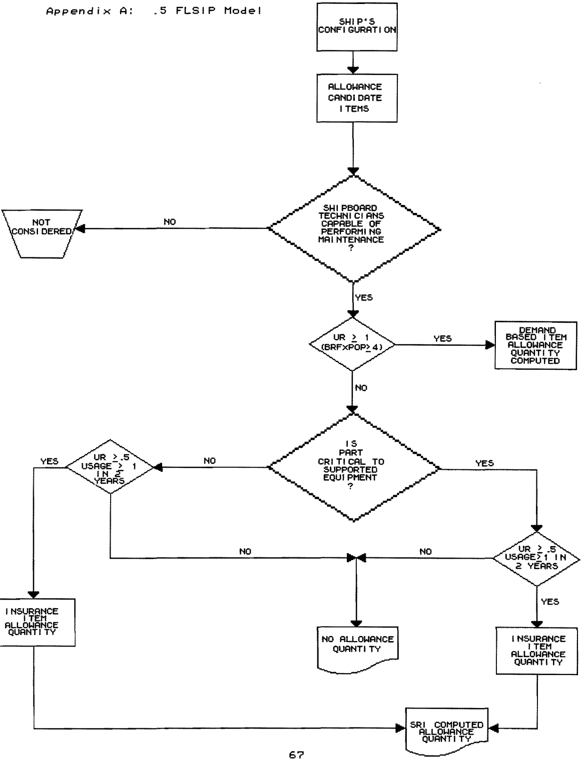
To date, material identified as excess has not been traced to see where it actually ends up. There is no database maintained which tracks how much of the ship's excess candidates listing returns to the supply system to satisfy other requirements. Without this type of information, the accuracy of the cost savings model cannot be verified against actual experience.

Another issue which plays into the MTIS process is the credit policy. If there is no system need for an item identified as excess, the type commander may decide to maintain possession of the material vice turning the item over to disposal. The type commander's basic rationale is that the type command originally paid for the material and a future need from another ship in the type command could arise. If that need can be satisfied from type commander warehouses, an expenditure is avoided. The downside to this policy is the obsolescence and holding costs of maintaining the warehouses. It is recommended further research be conducted to determine the final destination of material identified as excess during the .5F+ conversion process and to document the savings realized and costs incurred.

4. NAVSEA Screening Process

As previously discussed, the potential exists for an initial allowance of a repair part to be provided to a ship, but because the SRF record is erroneously deleted from the SNAP II database, another requisition is submitted for NAVSEA TOB funding. It is recommended the NAVSEA screening process be analyzed to determine if requisitions of this type would be processed or rejected. If the screening process does not adequately identify this type of duplicate request, methodologies for rectifying the situation should be developed and investigated.

Appendix A: .5 FLSIP Model



Appendix B: Cost Savings Model Master Data

Navy Ships Parts Control Center
.5 FLSIP Plus Investment Costs
Master Data

Activity/Dept Code	GS/GM	1993 Salary Base (Step 5)	Fringe (19 %)	G&A (15%)	Total Cost	%	FY 93	FY 94
SPCC 0572X	GM-14	$64,179	$12,194	$9,627	$86,000	0.5	$43,000	$43,000
SPCC 05723	GM-13	$54,308	$10,319	$8,146	$72,773	1.0	$72,773	$72,773
SPCC 05723A	GS-12	$45,670	$8,677	$6,851	$61,198	1.0	$61,198	$61,198
SPCC 05723B	GS-9	$31,493	$5,984	$4,724	$42,201	1.0	$42,201	$42,201
SPCC 05723C	GS-9	$31,493	$5,984	$4,724	$42,201	1.0	$42,201	$42,201
SPCC 012/013	GS-11	$38,107	$7,240	$5,716	$51,063	0.3	$15,319	$15,319
SPCC 051/52/53	GS-11	$38,107	$7,240	$5,716	$51,063	1.0	$51,063	$0
SPCC 031	GS-12	$45,670	$8,677	$6,851	$61,198	0.3	$18,359	$18,359
SPCC 0553	GS-9	$31,493	$5,984	$4,724	$42,201	0.5	$21,100	$21,100
SPCC 0553	GS-9	$31,493	$5,984	$4,724	$42,201	1.0	$42,201	$42,201
SPCC 0553	GS-11	$38,107	$7,240	$5,716	$51,063	0.5	$25,532	$25,532
SPCC 0422	GS-12	$45,670	$8,677	$6,851	$61,198	0.6	$36,719	$36,719
SPCC 0422	GS-12	$45,670	$8,677	$6,851	$61,198	0.3	$18,359	$18,359
SPCC 0422	GS-13	$54,308	$10,319	$8,146	$72,773	0.2	$14,555	$14,555
SPCC 0422	GS-12	$45,670	$8,677	$6,851	$61,198	0.4	$24,479	$24,479
NAVSEALOGCEN	GS-9	$31,493	$5,984	$4,724	$42,201	0.5	$21,100	$21,100
							$550,158	$499,095
			CSA Programming - FMSO				$300,000	$0
			COSAL Programming - FMSO/SPCC				$500,000	$0
			DASDI Increase				$100,000	$0
			MTIS (Labor, PHS&T)				$300,000	$1,000,000
			TOTAL INVESTMENT				$1,750,158	$1,499,095

New Construction Data Analysis
Master Data ($M)

Ship Name	Ship Class	Estimated Delivery	Cost of SRI	.5 FLSIP + Reduction Factor	SCN $ Savings	DLR Factor	DLR $ Reduction	Surcharge Rate	Assets Less Surcharge	DBOF Factor	Estimated DBOF Savings
USS Port Royal (CG-73)	CG-47	01/31/94	$16.893	20.8%	$3.514	0.68	$2.389	1.238	$1.930	0.0%	$0.00
USS John S McCain (DDG-56)	DDG-51	03/25/94	$12.260	6.5%	$0.797	0.68	$0.542	1.238	$0.438	0.0%	$0.00
USS Stout (DDG-55)	DDG-51	03/28/94	$12.260	6.5%	$0.797	0.68	$0.542	1.238	$0.438	0.0%	$0.00
USNS Henry Eckford (TAO-187)	TAO-187	04/15/94	$1.883	26.5%	$0.499	0.68	$0.339	1.238	$0.274	0.0%	$0.00
USS Enterprise (CVN-65)	CVN-65	05/04/94	$13.188	22.5%	$2.967	0.68	$2.018	1.238	$1.630	0.0%	$0.00
USS Rainer (AOE-7)	AOE-6	05/24/94	$3.474	26.5%	$0.921	0.68	$0.626	1.238	$0.506	0.0%	$0.00
USS Laboon (DDG-58)	DDG-51	07/01/94	$12.260	6.5%	$0.797	0.68	$0.542	1.238	$0.438	40.0%	$0.18
USS Chief (MCM-14)	MCM-1	07/08/94	$1.389	6.5%	$0.090	0.68	$0.061	1.238	$0.050	40.0%	$0.02
USS Harpers Ferry (LSD-49)	LSD-41	08/02/94	$3.169	34.4%	$1.090	0.68	$0.741	1.238	$0.599	40.0%	$0.24
USS Mitscher (DDG-57)	DDG-51	08/08/94	$12.260	6.5%	$0.797	0.68	$0.542	1.238	$0.438	40.0%	$0.18
USS Charlotte (SSN-766)	SSN-750	08/31/94	$11.989	15.6%	$1.870	0.68	$1.272	1.238	$1.027	40.0%	$0.41
		FY 94 SCN Savings			$14.139			FY 94 DBOF Savings			$1.020

Ship Name	Ship Class	Estimated Delivery	Cost of SRI	.5 FLSIP + Reduction Factor	SCN $ Savings	DLR Factor	DLR $ Reduction	Surcharge Rate	Assets Less Surcharge	DBOF Factor	Estimated DBOF Savings
USS Russell (DDG-59)	DDG-51	11/14/94	$12.260	6.5%	$0.797	0.68	$0.542	1.238	$0.438	40.0%	$0.18
USS Paul Hamilton (DDG-60)	DDG-51	12/02/94	$12.260	6.5%	$0.797	0.68	$0.542	1.238	$0.438	40.0%	$0.18
USS Hartford (SSN-768)	SSN-750	12/03/94	$11.989	15.6%	$1.870	0.68	$1.272	1.238	$1.027	40.0%	$0.41
USS Boxer (LHD-4)	LHD-1	12/10/94	$6.912	26.5%	$1.832	0.68	$1.246	1.238	$1.006	40.0%	$0.40
USS Arctic (AOE-8)	AOE-6	02/07/95	$3.474	26.5%	$0.921	0.68	$0.626	1.238	$0.506	40.0%	$0.20
USS Toledo (SSN-769)	SSN-750	02/28/95	$11.989	15.6%	$1.870	0.68	$1.272	1.238	$1.027	40.0%	$0.41
USS Kingfisher (MHC-56)	MHC-51	03/08/95	$1.389	6.5%	$0.090	0.68	$0.061	1.238	$0.050	40.0%	$0.02
USS Carter Hall (LSD-50)	LSD-41	03/10/95	$3.169	34.4%	$1.090	0.68	$0.741	1.238	$0.599	40.0%	$0.24
USS Ramage (DDG-61)	DDG-51	03/13/95	$12.260	6.5%	$0.797	0.68	$0.542	1.238	$0.438	40.0%	$0.18
USS Fitzgerald (DDG-62)	DDG-51	04/28/95	$12.260	6.5%	$0.797	0.68	$0.542	1.238	$0.438	40.0%	$0.18
USNS Patuxent (TAO-201)	TAO-187	06/07/95	$1.883	26.5%	$0.499	0.68	$0.339	1.238	$0.274	40.0%	$0.11
USS Cormorant (MHC-57)	MHC-51	07/05/95	$1.389	6.5%	$0.090	0.68	$0.061	1.238	$0.050	80.0%	$0.04
USS Stethem (DDG-63)	DDG-51	07/17/95	$12.260	6.5%	$0.797	0.68	$0.542	1.238	$0.438	80.0%	$0.35
USS Oak Hill (LSD-51)	LSD-41	08/07/95	$3.169	34.4%	$1.090	0.68	$0.741	1.238	$0.599	80.0%	$0.48
USS Tucson (SSN-770)	SSN-750	08/31/95	$11.989	15.6%	$1.870	0.68	$1.272	1.238	$1.027	80.0%	$0.82
USS XXXXXX (MHC-58)	MHC-51	09/22/95	$1.389	6.5%	$0.090	0.68	$0.061	1.238	$0.050	80.0%	$0.04
USS Carney (DDG-64)	DDG-51	09/29/95	$12.260	6.5%	$0.797	0.68	$0.542	1.238	$0.438	80.0%	$0.35
		FY 95 SCN Savings			$16.095			FY 95 DBOF Savings			$4.576

New Construction Data Analysis
Master Data ($M)

Ship Name	Ship Class	Estimated Delivery	Cost of SRI	.5 FLSIP + Reduction Factor	SCN $ Savings	DLR Factor	DLR $ Reduction	Surcharge Rate	Assets Less Surcharge	DBOF Factor	Estimated DBOF Savings
USS XXXXXX (MHC-59)	MHC-51	11/22/95	$1.389	6.5%	$0.090	0.68	$0.061	1.238	$0.050	80.0%	$0.04
USNS Rappahannock (TAO-204	TAO-187	11/30/95	$1.883	26.5%	$0.499	0.68	$0.339	1.238	$0.274	80.0%	$0.22
USS Benfold (DDG-65)	DDG-51	12/04/95	$12.260	6.5%	$0.797	0.68	$0.542	1.238	$0.438	80.0%	$0.35
USS XXXXXX (MHC-60)	MHC-51	01/22/96	$1.389	6.5%	$0.090	0.68	$0.061	1.238	$0.050	80.0%	$0.04
USS Greeneville (SSN-772)	SSN-750	02/28/96	$11.989	15.6%	$1.870	0.68	$1.272	1.238	$1.027	80.0%	$0.82
USS Columbia (SSN-772)	SSN-750	02/29/96	$11.989	15.6%	$1.870	0.68	$1.272	1.238	$1.027	80.0%	$0.82
USS Gonzalez (DDG-66)	DDG-51	03/14/96	$12.260	6.5%	$0.797	0.68	$0.542	1.238	$0.438	80.0%	$0.35
USNS Laramie (TAO-203)	TAO-187	04/05/96	$1.883	26.5%	$0.499	0.68	$0.339	1.238	$0.274	80.0%	$0.22
USS Cole (DDG-67)	DDG-51	05/06/96	$12.260	6.5%	$0.797	0.68	$0.542	1.238	$0.438	80.0%	$0.35
USS John C Stennis (CVN-74)	CVN-68	06/30/96	$13.188	22.5%	$2.967	0.68	$2.018	1.238	$1.630	80.0%	$1.30
USS Cheyenne (SSN-773)	SSN-750	08/31/96	$11.989	15.6%	$1.870	0.68	$1.272	1.238	$1.027	95.0%	$0.98
USS The Sullivans (DDG-68)	DDG-51	09/13/96	$12.260	6.5%	$0.797	0.68	$0.542	1.238	$0.438	95.0%	$0.42
		FY 96 SCN Savings			**$12.944**			**FY 96 DBOF Savings**			**$5.908**

Ship Name	Ship Class	Estimated Delivery	Cost of SRI	.5 FLSIP + Reduction Factor	SCN $ Savings	DLR Factor	DLR $ Reduction	Surcharge Rate	Assets Less Surcharge	DBOF Factor	Estimated DBOF Savings
USS XXXXXX (DDG-69)	DDG-51	10/14/96	$12.260	6.5%	$0.797	0.68	$0.542	1.238	$0.438	95.0%	$0.42
USS XXXXXX (DDG-70)	DDG-51	03/14/97	$12.260	6.5%	$0.797	0.68	$0.542	1.238	$0.438	95.0%	$0.42
USS XXXXXX (DDG-71)	DDG-51	03/24/97	$12.260	6.5%	$0.797	0.68	$0.542	1.238	$0.438	95.0%	$0.42
USS Bataan (LHD-5)	LHD-1	05/20/97	$6.912	26.5%	$1.832	0.68	$1.246	1.238	$1.006	95.0%	$0.96
USS XXXXXX (DDG-72)	DDG-51	09/12/97	$12.260	6.5%	$0.797	0.68	$0.542	1.238	$0.438	95.0%	$0.42
		FY97 SCN Savings			**$5.019**			**FY 97 DBOF Savings**			**$2.619**

Ship Name	Ship Class	Estimated Delivery	Cost of SRI	.5 FLSIP + Reduction Factor	SCN $ Savings	DLR Factor	DLR $ Reduction	Surcharge Rate	Assets Less Surcharge	DBOF Factor	Estimated DBOF Savings
USS Bon Homme Richard (LHD-	LHD-1	05/31/98	$6.912	26.5%	$1.832	0.68	$1.246	1.238	$1.006	95.0%	$0.96
USS United States (CVN-75)	CVN-68	06/30/98	$13.188	22.5%	$2.967	0.68	$2.018	1.238	$1.630	95.0%	$1.55
		FY 98 SCN Savings			**$4.799**			**FY 98 DBOF Savings**			**$2.504**

OPN Procurement Offset Analysis
Master Data ($M)

	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99	TOTAL
Estimated TOB Account	$221.0	$211.0	$221.0	$190.0	$220.0	$185.0	$199.0	$1,447.0
Savings Factor	3.25%	3.25%	3.25%	3.25%	3.25%	3.25%	3.25%	3.25%
Procurement Offset	$7.1825	$6.8575	$7.1825	$6.1750	$7.1500	$6.0125	$6.4675	$47.0275
Inflation Factor	1.035	1.078	1.107	1.145	1.184	1.224	1.266	
OPN Savings	$7.434	$7.392	$7.951	$7.070	$8.466	$7.359	$8.188	$53.860

DBOF Savings Analysis
Master Data ($M)

	FY 93	FY 94	FY 95	FY 96	FY 97	FY 98	FY 99	TOTAL
Number of Ships	51	57	49	37	40	22	16	272
Material Offloaded	$77.681	$98.179	$74.462	$56.632	$45.802	$28.248	$30.006	$411.010
Gross Savings	$16.233	$20.517	$15.560	$11.834	$9.571	$5.903	$6.270	$85.888
Inflation Factor	1.035	1.078	1.107	1.145	1.184	1.224	1.266	
Net Savings	$16.801	$22.117	$17.225	$13.550	$11.332	$7.225	$7.938	**$96.188**

Availability COSAL Savings Categorized by Major Asset Pools

Fiscal Year	Number of Ships	Gross Value ($M)		Cog Factors	Cog Breakdown	Applied Asset Factor	Applied Assets	Surcharge Rate	Assets Less Surcharge	Total Savings $M
1993	51	$77.681								
			DLA	0.23	$17.867	0.4	$7.147	1.300	$5.498	
			1H	0.09	$6.991	0.4	$2.796	1.270	$2.202	
			DLR (7 Cog)	0.68	$52.823	0.2	$10.565	1.238	$8.534	
										$16.233
1994	57	$98.179								
			DLA	0.23	$22.581	0.4	$9.032	1.300	$6.948	
			1H	0.09	$8.836	0.4	$3.534	1.270	$2.783	
			DLR (7 Cog)	0.68	$66.762	0.2	$13.352	1.238	$10.785	
										$20.516
1995	49	$74.462								
			DLA	0.23	$17.126	0.4	$6.850	1.300	$5.270	
			1H	0.09	$6.702	0.4	$2.681	1.270	$2.111	
			DLR (7 Cog)	0.68	$50.634	0.2	$10.127	1.238	$8.180	
										$15.560
1996	37	$56.632								
			DLA	0.23	$13.025	0.4	$5.210	1.300	$4.008	
			1H	0.09	$5.097	0.4	$2.039	1.270	$1.605	
			DLR (7 Cog)	0.68	$38.510	0.2	$7.702	1.238	$6.221	
										$11.834
1997	40	$45.802								
			DLA	0.23	$10.534	0.4	$4.214	1.300	$3.241	
			1H	0.09	$4.122	0.4	$1.649	1.270	$1.298	
			DLR (7 Cog)	0.68	$31.145	0.2	$6.229	1.238	$5.032	
										$9.571
1998	22	$28.248								
			DLA	0.23	$6.497	0.4	$2.599	1.300	$1.999	
			1H	0.09	$2.542	0.4	$1.017	1.270	$0.801	
			DLR (7 Cog)	0.68	$19.209	0.2	$3.842	1.238	$3.103	
										$5.903
1999	16	$30.006								
			DLA	0.23	$6.901	0.4	$2.760	1.300	$2.123	
			1H	0.09	$2.701	0.4	$1.080	1.270	$0.851	
			DLR (7 Cog)	0.68	$20.404	0.2	$4.081	1.238	$3.296	
										$6.270

Availability COSAL Data

Hull	Ship Class	Computation Method	Cost of SRI ($M)	Savings %	Total SRI Cost Savings	Hull	Ship Class	Computation Method	Cost of SRI ($M)	Savings %	Total SRI Cost Savings
AD-41	AD-37	MODFLSIP	$1.267	26.5%	$0.336	FFG-24	FFG-7	MODFLSIP	$6.036	26.5%	$1.600
AE-32	AE-26	MODFLSIP	$2.137	26.5%	$0.566	FFG-29	FFG-7	MODFLSIP	$6.036	26.5%	$1.600
AE-35	AE-26	MODFLSIP	$2.137	26.5%	$0.566	FFG-30	FFG-7	MODFLSIP	$6.036	26.5%	$1.600
AGF-3	LPD-1	MODFLSIP	$2.250	20.0%	$0.450	FFG-32	FFG-7	MODFLSIP	$6.036	26.5%	$1.600
AOE-4	AOE-1	MODFLSIP	$3.474	26.5%	$0.921	FFG-38	FFG-7	MODFLSIP	$6.036	26.5%	$1.600
ARDM-2	ARDM-1	MODFLSIP	$0.094	6.5%	$0.006	FFG-41	FFG-7	MODFLSIP	$6.036	26.5%	$1.600
ARS-38	ARS-38	MODFLSIP	$0.530	26.5%	$0.140	FFG-43	FFG-7	MODFLSIP	$6.036	26.5%	$1.600
ARS-42	ARS-38	MODFLSIP	$0.530	26.5%	$0.140	FFG-48	FFG-7	MODFLSIP	$6.036	26.5%	$1.600
AS-36	AS-336	MODFLSIP	$1.321	26.5%	$0.350	FFG-49	FFG-7	MODFLSIP	$6.036	26.5%	$1.600
ATS-2	ATS-1	MODFLSIP	$0.646	26.5%	$0.171	FFG-58	FFG-7	MODFLSIP	$6.036	26.5%	$1.600
CGN-39	CGN-38	MODFLSIP	$9.462	26.5%	$2.507	FFT-1089	FF-1052	MODFLSIP	$4.692	26.5%	$1.243
CGN-41	CGN-38	MODFLSIP	$9.462	26.5%	$2.507	FFT-1090	FF-1052	MODFLSIP	$4.692	26.5%	$1.243
CG-16	CG-16	MODFLSIP	$8.320	45.3%	$3.769	LCC-20	LCC-19	MODFLSIP	$5.521	26.5%	$1.463
CG-34	CG-26	MODFLSIP	$8.980	26.5%	$2.380	LHA-1	LHA-1	MODFLSIP	$6.912	26.5%	$1.832
CG-50	CG-47	MODFLSIP	$16.893	20.8%	$3.514	LPD-5	LPD-4	MODFLSIP	$2.187	20.0%	$0.437
DD-975	DD-963	MODFLSIP	$6.850	46.2%	$3.165	LSD-40	LSD-36	MODFLSIP	$1.815	26.5%	$0.481
DD-985	DD-963	MODFLSIP	$6.850	46.2%	$3.165	LST-1193	LST-1179	MODFLSIP	$2.161	26.5%	$0.573
DD-990	**DD-963**	**MODFLSIP**	**$6.850**	**46.2%**	$3.165	MTS-635	SSN-637	MODFLSIP	$5.611	26.5%	$1.487
DD-993	DD-963	MODFLSIP	$9.805	46.2%	$4.530	SSN-648	SSN-637	MODFLSIP	$5.611	26.5%	$1.487
FFG-11	FFG-7	MODFLSIP	$6.036	26.5%	$1.600	SSN-660	SSN-637	MODFLSIP	$5.611	26.5%	$1.487
FFG-12	FFG-7	MODFLSIP	$6.036	26.5%	$1.600	SSN-678	SSN-637	MODFLSIP	$5.611	26.5%	$1.487
FFG-15	FFG-7	MODFLSIP	$6.036	26.5%	$1.600	SSN-688	SSN-688	MODFLSIP	$4.386	26.5%	$1.162
FFG-16	FFG-7	MODFLSIP	$6.036	26.5%	$1.600	SSN-690	SSN-688	MODFLSIP	$4.386	26.5%	$1.162
FFG-20	FFG-7	MODFLSIP	$6.036	26.5%	$1.600	SSN-694	SSN-688	MODFLSIP	$4.386	26.5%	$1.162
FFG-21	FFG-7	MODFLSIP	$6.036	26.5%	$1.600	SSN-720	SSN-688	MODFLSIP	$4.386	26.5%	$1.162
						SSN-750	SSN-688	MODFLSIP	$11.989	15.6%	$1.870
									Total FY 93		**$77.681**

Availability COSAL Data

Hull	Ship Class	Computation Method	Cost of SRI ($M)	Savings %	Total SRI Cost Savings	Hull	Ship Class	Computation Method	Cost of SRI ($M)	Savings %	Total SRI Cost Savings
AD-37	AD-37	MODFLSIP	$1.267	26.5%	$0.336	FFG-39	FFG-7	MODFLSIP	$6.036	26.2%	$1.581
AD-44	AD-37	MODFLSIP	$1.267	26.5%	$0.336	FFG-40	FFG-7	MODFLSIP	$6.036	26.5%	$1.600
AE-33	AE-26	MODFLSIP	$2.137	26.5%	$0.566	FFG-45	FFG-7	MODFLSIP	$6.036	26.2%	$1.581
AOE-3	AOE-1	MODFLSIP	$3.474	26.5%	$0.921	FFG-47	FFG-7	MODFLSIP	$6.036	26.2%	$1.581
ARS-53	ARS-50	MODFLSIP	$1.066	26.5%	$0.282	FFG-53	FFG-7	MODFLSIP	$6.036	26.2%	$1.581
AS-31	AS-31	MODFLSIP	$1.611	26.5%	$0.427	FFG-54	FFG-7	MODFLSIP	$6.036	26.2%	$1.581
AS-33	AS-33	MODFLSIP	$1.648	26.5%	$0.437	FFG-55	FFG-7	MODFLSIP	$6.036	26.2%	$1.581
AS-39	AS-39	MODFLSIP	$1.096	26.5%	$0.290	FFG-56	FFG-7	MODFLSIP	$6.036	26.5%	$1.600
ATS-1	ATS-1	MODFLSIP	$0.646	26.5%	$0.171	FF-1079	FF-1052	MODFLSIP	$4.692	26.5%	$1.243
ATS-3	ATS-1	MODFLSIP	$0.646	26.5%	$0.171	FFT-1084	FF-1052	MODFLSIP	$4.692	26.5%	$1.243
CG-20	CG-16	MODFLSIP	$8.320	45.3%	$3.769	FFT-1085	FF-1052	MODFLSIP	$4.692	26.5%	$1.243
CG-51	CG-47	MODFLSIP	$16.893	20.8%	$3.514	FFT-1097	FF-1052	MODFLSIP	$4.692	26.5%	$1.243
CG-60	CG-47	MODFLSIP	$16.893	20.8%	$3.514	LCC-19	LCC-19	MODFLSIP	$5.521	26.5%	$1.463
CGN-38	CGN-38	MODFLSIP	$9.462	26.5%	$2.507	LHA-2	LHA-1	MODFLSIP	$6.912	26.5%	$1.832
CVN-68	CVN-68	MODFLSIP	$13.188	22.5%	$2.967	LPD-8	LPD-4	MODFLSIP	$2.187	20.0%	$0.437
DD-968	DD-963	MODFLSIP	$6.850	46.2%	$3.165	LPD-9	LPD-4	MODFLSIP	$2.187	20.0%	$0.437
DD-970	DD-963	MODFLSIP	$6.850	46.2%	$3.165	LST-1183	LST-1179	MODFLSIP	$2.161	26.5%	$0.573
DD-973	DD-963	MODFLSIP	$6.850	46.2%	$3.165	LST-1184	LST-1179	MODFLSIP	$2.161	26.5%	$0.573
DD-980	DD-963	MODFLSIP	$6.850	46.2%	$3.165	MCM-2	MCM-1	FLSIP	$1.389	6.5%	$0.090
DD-981	DD-963	MODFLSIP	$6.850	46.2%	$3.165	MCM-6	MCM-1	FLSIP	$1.389	6.5%	$0.090
DD-982	DD-963	MODFLSIP	$6.850	46.2%	$3.165	SSN-676	SSN-637	MODFLSIP	$5.611	26.5%	$1.487
DD-984	DD-963	MODFLSIP	$6.850	46.2%	$3.165	SSN-681	SSN-637	MODFLSIP	$5.611	26.5%	$1.487
DD-988	DD-963	MODFLSIP	$6.850	46.2%	$3.165	SSN-689	SSN-688	MODFLSIP	$4.386	26.5%	$1.162
DD-991	DD-963	MODFLSIP	$6.850	46.2%	$3.165	SSN-691	SSN-688	MODFLSIP	$4.386	26.5%	$1.162
DD-992	DD-963	MODFLSIP	$6.850	46.2%	$3.165	SSN-705	SSN-688	MODFLSIP	$4.386	26.5%	$1.162
DDG-994	DDG-993	MODFLSIP	$9.805	46.2%	$4.530	SSN-706	SSN-688	MODFLSIP	$4.386	26.5%	$1.162
DDG-996	DDG-993	MODFLSIP	$9.805	46.2%	$4.530	SSN-722	SSN-688	MODFLSIP	$4.386	26.5%	$1.162
FFG-27	FFG-7	MODFLSIP	$6.036	26.2%	$1.581	SSN-753	SSN-688	MODFLSIP	$11.989	15.6%	$1.870
						SSN-755	SSN-688	MODFLSIP	$11.989	15.6%	$1.870
									Total FY-94		$98.179

Availability COSAL Data

Hull	Ship Class	Computation Method	Cost of SRI ($M)	Savings %	Total SRI Cost Savings	Hull	Ship Class	Computation Method	Cost of SRI ($M)	Savings %	Total SRI Cost Savings
AD-42	AD-37	MODFLSIP	$1.267	26.5%	$0.336	DD-979	DD-963	MODFLSIP	$6.850	46.2%	$3.165
AFDM-10	AFDM-1	MODFLSIP	$0.060	6.5%	$0.004	DD-989	DD-963	MODFLSIP	$6.850	46.2%	$3.165
AGF-11	LPD-4	MODFLSIP	$2.187	20.0%	$0.437	FFG-50	FFG-7	MODFLSIP	$6.036	26.2%	$1.581
AO-179	AO-177	MODFLSIP	$1.883	26.5%	$0.499	FFG-52	FFG-7	MODFLSIP	$6.036	26.2%	$1.581
AOE-2	AOE-1	MODFLSIP	$3.474	26.5%	$0.921	FFG-61	FFG-7	MODFLSIP	$6.036	26.2%	$1.581
AOR-6	AOR-1	MODFLSIP	$3.340	26.5%	$0.885	LKA-117	LKA-113	MODFLSIP	$6.068	26.5%	$1.608
ARS-50	ARS-50	MODFLSIP	$1.066	26.5%	$0.282	LPD-7	LPD-4	MODFLSIP	$2.187	20.0%	$0.437
ARS-52	ARS-50	MODFLSIP	$1.066	26.5%	$0.282	LPD-14	LPD-4	MODFLSIP	$2.187	20.0%	$0.437
AS-32	AS-31	MODFLSIP	$1.611	26.5%	$0.427	LSD-37	LSD-36	MODFLSIP	$1.815	26.5%	$0.481
AS-34	AS-33	MODFLSIP	$1.648	26.5%	$0.437	LSD-41	LSD-41	MODFLSIP	$3.169	34.4%	$1.090
AS-40	AS-39	MODFLSIP	$1.096	26.5%	$0.290	LSD-42	LSD-41	MODFLSIP	$3.169	34.4%	$1.090
ASR-22	ASR-21	MODFLSIP	$0.620	26.5%	$0.164	LSD-44	LSD-41	MODFLSIP	$3.169	34.4%	$1.090
CG-18	CG-16	MODFLSIP	$8.320	45.3%	$3.769	LSD-45	LSD-41	MODFLSIP	$3.169	34.4%	$1.090
CG-48	CG-47	MODFLSIP	$16.893	20.8%	$3.514	LSD-48	LSD-41	MODFLSIP	$3.169	34.4%	$1.090
CG-52	CG-47	MODFLSIP	$16.893	20.8%	$3.514	LST-1192	LST-1179	MODFLSIP	$2.161	26.5%	$0.573
CG-53	CG-47	MODFLSIP	$16.893	20.8%	$3.514	MCM-3	MCM-1	FLSIP	$1.389	6.5%	$0.090
CG-54	CG-47	MODFLSIP	$16.893	20.8%	$3.514	MCM-4	MCM-1	FLSIP	$1.389	6.5%	$0.090
DD-963	DD-963	MODFLSIP	$6.850	46.2%	$3.165	MCM-8	MCM-1	FLSIP	$1.389	6.5%	$0.090
DD-964	DD-963	MODFLSIP	$6.850	46.2%	$3.165	MHC-51	MHC-51	FLSIP	$1.389	6.5%	$0.090
DD-965	DD-963	MODFLSIP	$6.850	46.2%	$3.165	SSN-692	SSN-688	MODFLSIP	$4.386	26.5%	$1.162
DD-966	DD-963	MODFLSIP	$6.850	46.2%	$3.165	SSN-700	SSN-688	MODFLSIP	$4.386	26.5%	$1.162
DD-974	DD-963	MODFLSIP	$6.850	46.2%	$3.165	SSN-703	SSN-688	MODFLSIP	$4.386	26.5%	$1.162
DD-977	DD-963	MODFLSIP	$6.850	46.2%	$3.165	SSN-756	SSN-688	MODFLSIP	$11.989	15.6%	$1.870
DD-978	DD-963	MODFLSIP	$6.850	46.2%	$3.165	SSN-757	SSN-688	MODFLSIP	$11.989	15.6%	$1.870
						SSN-760	SSN-688	MODFLSIP	$11.989	15.6%	$1.870
									Total FY-95		$74.462

Availability COSAL Data

Hull	Ship Class	Computation Method	Cost of SRI ($M)	Savings %	Total SRI Cost Savings
AE-28	AE-26	MODFLSIP	$2.137	26.5%	$0.566
AE-29	AE-26	MODFLSIP	$2.137	26.5%	$0.566
AE-34	AE-26	MODFLSIP	$2.137	26.5%	$0.566
AFDB-8	AFDB-2	MODFLSIP	$0.125	6.5%	$0.008
AO-178	AO-177	MODFLSIP	$1.883	26.5%	$0.499
AOE-1	AOE-1	MODFLSIP	$3.474	26.5%	$0.921
AOR-4	AOR-1	MODFLSIP	$3.340	26.5%	$0.885
ARDM-1	ARDM-1	MODFLSIP	$0.094	6.5%	$0.006
ARDM-5	ARDM-5	MODFLSIP	$0.056	6.5%	$0.004
CG-21	CG-16	MODFLSIP	$8.320	45.3%	$3.769
CG-57	CG-47	MODFLSIP	$16.893	20.8%	$3.514
CG-62	CG-47	MODFLSIP	$16.893	20.8%	$3.514
CGN-40	CGN-38	MODFLSIP	$9.462	26.5%	$2.507
DD-967	DD-963	MODFLSIP	$6.850	46.2%	$3.165
DD-971	DD-963	MODFLSIP	$6.850	46.2%	$3.165
DD-983	DD-963	MODFLSIP	$6.850	46.2%	$3.165
DDG-997	DDG-997	MODFLSIP	$6.850	46.2%	$3.165
FFG-60	FFG-7	MODFLSIP	$6.036	26.2%	$1.581
LHD-1	LHD-1	MODFLSIP	$11.534	27.5%	$3.172
LHD-3	LHD-1	MODFLSIP	$11.534	27.5%	$3.172
LKA-115	LKA-113	MODFLSIP	$6.068	26.5%	$1.608
LSD-46	LSD-41	MODFLSIP	$3.169	34.4%	$1.090
LSD-47	LSD-41	MODFLSIP	$3.169	34.4%	$1.090
LST-1197	LST-1179	MODFLSIP	$2.161	26.5%	$0.573
MCM-1	MCM-1	FLSIP	$1.389	6.5%	$0.090
MCM-7	MCM-1	FLSIP	$1.389	6.5%	$0.090
MCM-10	MCM-1	FLSIP	$1.389	6.5%	$0.090
MHC-52	MHC-51	FLSIP	$1.389	6.5%	$0.090
SSN-693	SSN-688	MODFLSIP	$4.386	26.5%	$1.162
SSN-694	SSN-688	MODFLSIP	$11.989	15.6%	$1.870
SSN-710	SSN-688	MODFLSIP	$4.386	26.5%	$1.162
SSN-719	SSN-688	MODFLSIP	$4.386	26.5%	$1.162
SSN-723	SSN-688	MODFLSIP	$4.386	26.5%	$1.162
SSN-755	SSN-688	MODFLSIP	$11.989	15.6%	$1.870
SSN-761	SSN-688	MODFLSIP	$11.989	15.6%	$1.870
SSN-764	SSN-688	MODFLSIP	$11.989	15.6%	$1.870
SSN-765	SSN-688	MODFLSIP	$11.989	15.6%	$1.870
			Total FY-96		$56.632

Availability COSAL Data

Hull	Ship Class	Computation Method	Cost of SRI ($M)	Savings %	Total SRI Cost Savings	Hull	Ship Class	Computation Method	Cost of SRI ($M)	Savings %	Total SRI Cost Savings
AD-38	AD-37	MODFLSIP	$1.267	26.5%	$0.336	LPD-13	LPD-4	MODFLSIP	$2.187	20.0%	$0.437
AD-43	AD-37	MODFLSIP	$1.267	26.5%	$0.336	LPD-15	LPD-4	MODFLSIP	$2.187	20.0%	$0.437
AE-27	AE-26	MODFLSIP	$2.137	26.5%	$0.566	LSD-36	LSD-36	MODFLSIP	$1.815	26.5%	$0.481
AO-177	AO-177	MODFLSIP	$1.883	26.5%	$0.499	LSD-38	LSD-36	MODFLSIP	$1.815	26.5%	$0.481
AO-180	AO-177	MODFLSIP	$1.883	26.5%	$0.499	LSD-43	LSD-36	MODFLSIP	$1.815	26.5%	$0.481
AO-186	AO-177	MODFLSIP	$1.883	26.5%	$0.499	LST-1188	LST-1179	MODFLSIP	$2.161	26.5%	$0.573
AOR-3	AOR-1	MODFLSIP	$3.340	26.5%	$0.885	LST-1189	LST-1179	MODFLSIP	$2.161	26.5%	$0.573
AOR-7	AOR-1	MODFLSIP	$3.340	26.5%	$0.885	LST-1194	LST-1179	MODFLSIP	$2.161	26.5%	$0.573
ARDM-4	ARDM-1	FLSIP	$0.094	6.5%	$0.006	MCM-5	MCM-1	FLSIP	$1.389	6.5%	$0.090
CG-19	CG-16	MODFLSIP	$8.320	45.3%	$3.769	MCM-9	MCM-1	FLSIP	$1.389	6.5%	$0.090
CG-55	CG-47	MODFLSIP	$16.893	20.8%	$3.514	MHC-53	MHC-51	FLSIP	$1.389	6.5%	$0.090
CG-56	CG-47	MODFLSIP	$16.893	20.8%	$3.514	MHC-54	MHC-51	FLSIP	$1.389	6.5%	$0.090
CGN-37	CGN-36	MODFLSIP	$8.689	26.5%	$2.303	MHC-55	MHC-51	FLSIP	$1.389	6.5%	$0.090
CGN-39	CGN-38	MODFLSIP	$9.462	26.5%	$2.507	MHC-56	MHC-51	FLSIP	$1.389	6.5%	$0.090
DD-986	DD-963	MODFLSIP	$6.850	46.2%	$3.165	SSN-695	SSN-688	MODFLSIP	$4.386	26.5%	$1.162
DDG-995	DDG-993	MODFLSIP	$9.805	46.2%	$4.530	SSN-696	SSN-688	MODFLSIP	$4.386	26.5%	$1.162
LHA-3	LHA-1	MODFLSIP	$6.912	26.5%	$1.832	SSN-699	SSN-688	MODFLSIP	$4.386	26.5%	$1.162
LKA-114	LKA-113	MODFLSIP	$6.068	26.5%	$1.608	SSN-751	SSN-688	MODFLSIP	$11.989	15.6%	$1.870
LPD-10	LPD-4	MODFLSIP	$2.187	20.0%	$0.437	SSN-763	SSN-688	MODFLSIP	$11.989	15.6%	$1.870
LPD-12	LPD-4	MODFLSIP	$2.187	20.0%	$0.437	SSN-767	SSN-688	MODFLSIP	$11.989	15.6%	$1.870
									Total FY-97		$45.802

Availability COSAL Data

Hull	Ship Class	Computation Method	Cost of SRI ($M)	Savings %	Total SRI Cost Savings	Hull	Ship Class	Computation Method	Cost of SRI ($M)	Savings %	Total SRI Cost Savings
AFDM-7	AFDM-1	FLSIP	$0.060	6.5%	$0.004	LST-1193	LST-1179	MODFLSIP	$2.161	26.5%	$0.573
AOE-6	AOE-1	MODFLSIP	$3.474	26.5%	$0.921	LST-1198	LST-1179	MODFLSIP	$2.161	26.5%	$0.573
CG-17	CG-16	MODFLSIP	$8.320	45.3%	$3.769	MCM-12	MCM-1	FLSIP	$1.389	6.5%	$0.090
CG-65	CG-47	MODFLSIP	$16.893	20.8%	$3.514	MCM-13	MCM-1	FLSIP	$1.389	6.5%	$0.090
DDG-56	DDG-51	RBS	$12.260	0.0%	$0.000	MHC-57	MHC-51	FLSIP	$1.389	6.5%	$0.090
FFG-36	FFG-7	MODFLSIP	$6.036	26.2%	$1.581	MHC-58	MHC-51	FLSIP	$1.389	6.5%	$0.090
FFG-59	FFG-7	MODFLSIP	$6.036	26.2%	$1.581	SSN-702	SSN-688	MODFLSIP	$4.386	26.5%	$1.162
FFT-1090	FF-1052	MODFLSIP	$4.692	26.5%	$1.243	SSN-752	SSN-688	MODFLSIP	$11.989	15.6%	$1.870
LHA-5	LHA-1	MODFLSIP	$6.912	26.5%	$1.832	SSN-754	SSN-688	MODFLSIP	$11.989	15.6%	$1.870
LHD-2	LHD-1	MODFLSIP	$11.534	27.5%	$3.172	SSN-768	SSN-688	MODFLSIP	$11.989	15.6%	$1.870
LSD-39	LSD-36	MODFLSIP	$1.815	26.5%	$0.481	SSN-769	SSN-688	MODFLSIP	$11.989	15.6%	$1.870
									Total FY-98		**$28.248**

Availability COSAL Data

Hull	Ship Class	Computation Method	Cost of SRI ($M)	Savings %	Total SRI Cost Savings	Hull	Ship Class	Computation Method	Cost of SRI ($M)	Savings %	Total SRI Cost Savings
AOE-7	AOE-1	MODFLSIP	$3.474	26.5%	$0.921	DDG-52	DDG-51	MODFLSIP	$12.260	6.5%	$0.797
CG-58	CG-47	MODFLSIP	$16.893	20.8%	$3.514	FFG-46	FFG-7	MODFLSIP	$6.036	26.2%	$1.581
CG-59	CG-47	MODFLSIP	$16.893	20.8%	$3.514	FFG-52	FFG-7	MODFLSIP	$6.036	26.2%	$1.581
CG-61	CG-47	MODFLSIP	$16.893	20.8%	$3.514	LSD-49	LSD-41	MODFLSIP	$3.169	34.4%	$1.090
CG-64	CG-47	MODFLSIP	$16.893	20.8%	$3.514	MHC-59	MHC-51	FLSIP	$1.389	6.5%	$0.090
CG-66	CG-47	MODFLSIP	$16.893	20.8%	$3.514	MHC-60	MHC-51	FLSIP	$1.389	6.5%	$0.090
DD-972	DD-963	MODFLSIP	$6.850	46.2%	$3.165	SSN-711	SSN-688	MODFLSIP	$4.386	26.5%	$1.162
DDG-51	DDG-51	MODFLSIP	$12.260	6.5%	$0.797	SSN-712	SSN-688	MODFLSIP	$4.386	26.5%	$1.162
									Total FY-98		**$30.006**

EXTENSION PROGRAM

Purpose of Program: Multiply the computed allowance quantity of each stock number by its associated unit price.

File Definitions: PT5PLUS - database file

Field Definitions: NIIN - stock number
ALLOW_QTY - computed allowance quantity
UNIT_PRICE - unit price associated with the stock number
Temporary holding locations for data are indicated by a V preceding the field name.

Since field names vary depending upon the structure of the database file in use, they will be presented in bold letters. The database filename will also be presented in bold.

```
STORE SPACE(9) TO VNIIN
STORE 0 TO VALLOW_QTY
STORE 0 TO VUNIT_PRICE
STORE 0 TO VEXT_PRICE

USE PT5PLUS
INDEX ON NIIN TO EXTNIIN
GO TOP

DO WHILE .NOT. EOF ()
     IF EOF()
          CLOSE ALL DATABASES
          EXIT
     ENDIF
     STORE NIIN TO VNIIN
     STORE ALLOW_QTY TO VALLOW_QTY
     STORE UNIT_PRICE TO VUNIT_PRICE
     STORE EXT_PRICE TO VEXT_PRICE
          VEXT_PRICE = VUNIT_PRICE * VALLOW_QTY
     REPLACE EXT_PRICE WITH VEXT_PRICE
     SKIP
     LOOP
ENDDO
```

ACCUMULATION PROGRAM

Purpose of Program: To aggregate the allowance quantities of like stock numbers in a database without compromising the original database.

File Definitions: ALLREQN - Parent database file
NETREQN - Temporary database file

Field Definitions: NIIN - stock number
QTY - requisition quantity
UNIT_PRICE - unit price associated with the stock number
Temporary holding locations for data are indicated by a V preceding the field name.

Since field names vary depending upon the structure of the database file in use, they will be presented in bold letters. The database filename will also be presented in bold.

```
STORE SPACE (9) TO VNIIN
STORE 0 TO VQTY
STORE 0 TO VUNIT_PRICE

SELECT A
USE ALLREQN
INDEX ON NIIN TO NIINREQN
COPY STRUCTURE TO NETREQN
GO TOP

SELECT B
USE NETREQN
INDEX ON NIIN TO NIINNET
REPLACE QTY WITH VQTY
REPLACE UNIT_PRICE WITH VUNIT_PRICE
REPLACE NIIN WITH VNIIN

SELECT A
DO WHILE .T.
     IF EOF()
          EXIT
     ENDIF
     STORE NIIN TO VNIIN
     STORE QTY TO VQTY
     STORE UNIT_PRICE TO VUNIT_PRICE
     DO WHILE .T.
          SKIP
          IF EOF()
               EXIT
          ENDIF
          IF NIIN = VNIIN
```

```
            VQTY = VQTY + QTY
        ELSE
            EXIT
        ENDIF
        LOOP
    ENDDO
    IF EOF()
        EXIT
    ENDIF
    SELECT B
    GO BOTTOM
    APPEND BLANK
    REPLACE QTY WITH VQTY
    REPLACE NIIN WITH VNIIN
    REPLACE UNIT_PRICE WITH VUNIT_PRICE
    SELECT A
    IF EOF()
        CLOSE ALL DATABASES
        EXIT
    ENDIF
    LOOP
ENDDO
```

COMPARISON PROGRAM

Purpose of Program: To compare the quantities associated with like stock numbers in two databases and subtract the quantities in one database from those in another.

File Definitions:

MODFLSIP - Master database file (quantities will be reduced by those in the transaction database file)
PT5PLUS - Transaction database file (quantities will not be effected)

Field Definitions:

NIIN - stock number
ALLOW_QTY - computed allowance quantity
UNIT_PRICE - unit price associated with the stock number
Temporary holding locations for data are indicated by a V preceding the field name.

Since field names vary depending upon the structure of the database file in use, they will be presented in bold letters. The database filename will also be presented in bold.

```
SELECT A
     USE MODFLSIP
     INDEX ON NIIN TO NIINA

SELECT B
     USE PT5PLUS
     INDEX ON NIIN TO NIINB

SELECT A
     UPDATE ON NIIN FROM PT5PLUS;
          REPLACE ALLOW_QTY WITH ALLOW_QTY - B->ALLOW_QTY
```

Appendix D: Acronyms

TERM/ACRONYM	DEFINITION
3M	Maintenance, Material, and Management
ADP	Automated Data Processing
APL	Allowance Parts List
ASI	Automated Shore Interface
BRF	Best Replacement Factor
CASREP	Casualty Reporting
CNO	Chief of Naval Operations
CO	Commanding Officer
COG	Cognizance Symbol
COSAL	Coordinated Shipboard Allowance Listing
CSA	COSAL Spares Ashore
DLA	Defense Logistics Agency
DMR	Defense Management Report
DMRD	Defense Management Report Decision
DOD	Department of Defense
DRMO	Defense Reutilization and Marketing Office
EOH	End of Overhaul
FISC	Fleet Industrial Support Center
FLSIP	Fleet Logistics Support Improvement Program
FMSO	Fleet Material Support Office
FY	Fiscal Year
ICP	Inventory Control Point
ILO	Integrated Logistics Overhaul
LMA	Logistics Management Assessment

MODFLSIP	Modified Fleet Logistics Support Improvement Program
MTIS	Material Turned Into Store
NAVSEA	Naval Sea Systems Command
NAVSUP	Naval Supply Systems Command
NC	Not Carried
NRFI	Not Ready For Issue
NSLC	Naval Sea Logistics Center
OIC	Officer-in-Charge
OSI	Operating Space Item
POA&M	Plan of Action and Milestones
POP	Installed Population
QA	Quality Assurance
RFI	Ready For Issue
SCLSI	Ship's Configuration and Logistics Support Index
SCLSIS	Ship's Configuration and Logistics Support Information System
SFM	Supply and Financial Management
SIM	Selected Item Management
SNAP II	Shipboard Nontactical Automated Data Processing Program II
SNSL	Stock Number Sequence List
SOH	Start of Overhaul
SPAWAR	Space and Naval Warfare Systems Command
SPCC	Ships Parts Control Center
SRI	Storeroom Items
TM	Technical Manual

TOB	Technical Operating Budget
WSF	Weapon Systems File
UR	Usage Rate

LIST OF REFERENCES

1. "Defense Management Report Savings Initiatives." General Accounting Office Defense Management Report NSIADD 91-11.

2. "Revised COSAL Allowance for Storeroom Items (SRI)", Point Paper of 14 February 1992, Ships Parts Control Center, Code 05, Mechanicsburg, PA.

3. Naval Supply Systems Command, NAVSUPINST 4442.14A, Readiness Based Sparing.

4. Office of the Chief of Naval Operations, OPNAVINST 4441.12B, Retail Supply Support of Naval Activities and Operating Forces.

5. "Revised COSAL Allowance For Storeroom Items (Infrastructure .5 FLSIP Plus COSAL)," Draft DBOF 'Flex' Initiative of April 1993, Ships Parts Control Center, Code 05, Mechanicsburg, PA.

6. Ships Parts Control Center, SPCCINST 4441.170A, COSAL Use and Maintenance Manual.

7. "Revised COSAL Allowance For Storeroom Items (Infrastructure .5 FLSIP Plus COSAL)," Draft DBOF 'Flex' Initiative of 5 January 1993, Ships Parts Control Center, Code 05, Mechanicsburg, PA.

8. Ibid.

9. ".5 FLSIP Plus COSAL Reduction Initiative," Briefing Slides of Captain Ron T. Johnson, SC, USN, Ships Parts Control Center, Code 05, Mechanicsburg, PA.

10. Commander, Naval Supply Systems Command ltr 4400 ser 4124/3-0075 of 12 Jul 93.

11. Commander, Naval Supply Systems Command ltr 4400 ser 4124/3-0074 of 8 Jul 93.

12. "Revised COSAL Allowance For Storeroom Items (Infrastructure .5 FLSIP Plus COSAL)," Draft DBOF 'Flex' Initiative of April 1993, Ships Parts Control Center, Code 05, Mechanicsburg, PA.

13. Ibid.

14. Ibid.

15. ".5 FLSIP Plus 'Flex' Initiative," Investment Costs Worksheets provided by CDR Paul Masters, Code 05, Ships Parts Control Center, Mechanicsburg, PA.

16. "Revised COSAL Allowance For Storeroom Items (Infrastructure .5 FLSIP Plus COSAL)," Draft DBOF 'Flex' Initiative of April 1993, Ships Parts Control Center, Code 05, Mechanicsburg, PA.

17. Phone Interview with Mr. Vince Walls, (NAVSUP 41242, Washington D. C.), 15 October 1993.

18. Phone Interview with Mr. David J. Brogan, (Director, ISSOT, Pearl Harbor, HI), 11 August 1993.

19. Office of the Chief of Naval Operations, OPNAVINST 4441.12B, Retail Supply Support of Naval Activities and Operating Forces.

20. ILO Policy and Procedures Manual, Volume 1, Introduction, Section 1, pp. 1-4.

21. Ibid., Section 2, pp. 17-18.

22. Ibid., Section 5, pp. 47-58.

23. Ibid., Section 6, pp. 61-66.

24. Ibid., Section 6, p. 66.

25. Phone Interview with Mr. Dean I. Hazama, (Assistant OIC, Integrated Logistics Overhaul Team, Pearl Harbor), 27 January 1994.

26. Naval Supply Systems Command, NAVSUP Publication 485, Afloat Supply Procedures, para 6168-9.

27. ".5 FLSIP Plus COSAL Reduction Initiative," Briefing Slides of Captain Ron T. Johnson, SC, USN, Ships Parts Control Center, Code 05, Mechanicsburg, PA.

28. Naval Supply Systems Command, NAVSUP Publication 485, Afloat Supply Procedures, para 3366.

29. ILO Policy and Procedures Manual, Volume 1, Introduction, Section 6, pp. 61-66.

30. Phone Interview with Mr. Dean I. Hazama (Assistant OIC, Integrated Logistics Overhaul Team, Pearl Harbor), 17 December 1993.

31. Naval Sea Systems Command, SNAP II Desk Top Guides, "ASI Processing Procedures," Vol 5, June 1993.

32. Navy Supply Corps School, Student Guide for SNAP II Operating Procedures, Unit 9, Supply Officer Department Head Course, June 1991.

33. Naval Supply Systems Command, SNAP II Desk Top Guides, "Supply Control Procedures," Vol 7, June 1993.

34. Navy Supply Corps School, Student Guide for SNAP II Operating Procedures, Unit 9, Supply Officer Department Head Course, June 1991.

35. Ibid.

36. Naval Supply Systems Command, SNAP II Desk Top Guides, "Supply-Financial Management Reports," Vol 15, June 1993.

37. Phone Interview with Mr. Vince Walls, (NAVSUP 41242) Washington D. C., 15 October 1993.

38. Naval Supply Systems Command, SNAP II Desk Top Guides, "Inventory/Issues/Receipts Status Processing Procedures," Vol 10, June 1993.

39. Phone Interview with Mr. David J. Brogan (Director, ISSOT, Pearl Harbor, HI), 7 July 1993.

40. Phone Interview with SKCS Cadiz, (Leading SK, LMA Team, ATG Middle Pacific, Pearl Harbor, HI) 2 February 1994.

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