Audit Report

OFFICE OF THE INSPECTOR GENERAL

ADMINISTRATIVE LEAD TIME AT NAVY INVENTORY CONTROL POINTS

Report No. 95-053 December 12, 1994

Department of Defense

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Acronyms

ASO	Navy Aviation Supply Office
SPCC	Navy Ships Parts Control Center

INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
400 ARMY NAVY DRIVE
ARLINGTON, VIRGINIA 22202-2884

December 12, 1994

MEMORANDUM FOR THE UNDER SECRETARY OF DEFENSE (COMPTROLLER)
ASSISTANT SECRETARY OF THE NAVY (FINANCIAL MANAGEMENT)

SUBJECT: Audit Report on Administrative Lead Time at Navy Inventory Control Points (Report No. 95-053)

We are providing this report for your review and comments. This report is the second in a series of audit reports on administrative lead time for contracts at DoD inventory control points. The report addresses the administrative lead time at the two Navy inventory control points: the Navy Aviation Supply Office and the Navy Ships Parts Control Center.

DoD Directive 7650.3 requires that all recommendations and potential monetary benefits be resolved promptly. The Under Secretary of Defense (Comptroller) and the Assistant Secretary of the Navy (Financial Management) did not comment on a draft of this report. Therefore, we request comments on the unresolved recommendations and potential monetary benefits by February 10, 1995.

The courtesies extended to the audit staff are appreciated. If you have any questions on this audit, please contact Mr. Wayne K. Million, Audit Program Director, at (703) 604-9312 (DSN 664-9312) or Ms. Macie J. Rubin, Audit Project Manager, at (703) 604-9275 (DSN 664-9275). See Appendix F for the distribution of this report. The audit team members are listed inside the back cover.

David K. Steensma

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Office of the Inspector General, DoD

Report No. 95-053 **December 12, 1994**
(Project No. 3CD-0043.01)

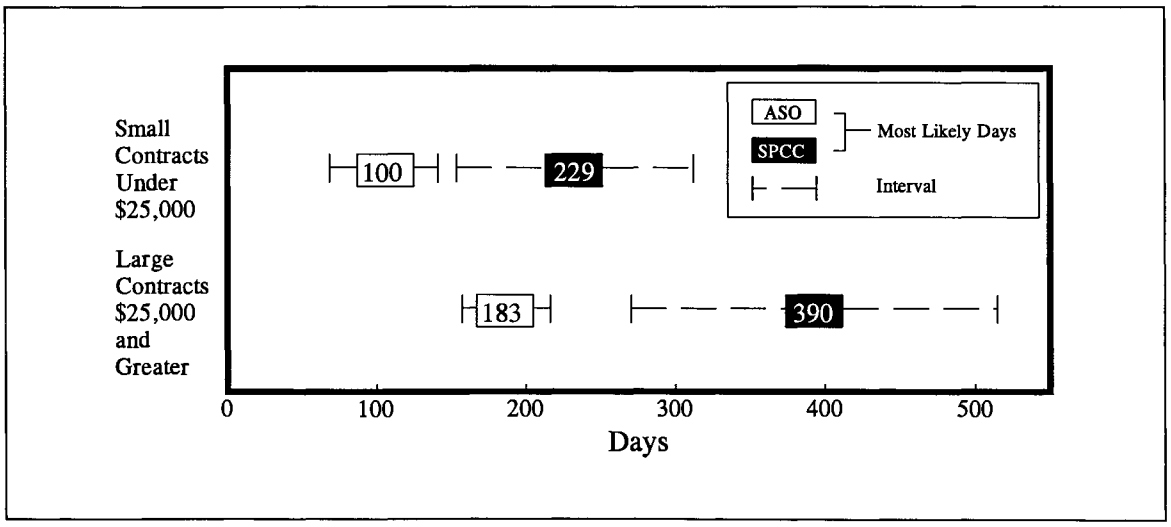
ADMINISTRATIVE LEAD TIME AT NAVY INVENTORY CONTROL POINTS

EXECUTIVE SUMMARY

Introduction. This report is the second in a series of reports on administrative lead time. This report addresses the time required to award spare parts contracts at the two Navy inventory control points: the Navy Aviation Supply Office and the Navy Ships Parts Control Center.

Administrative lead time is the time from the item reorder requirement to the award of the contract. Reducing administrative lead time reduces the required inventory and inventory holding costs, thus, freeing DoD funds for other uses. Navy supply system inventories as of September 30, 1993, were $16 billion. Navy Aviation Supply Office and Navy Ships Parts Control Center buy spare parts for the Navy supply system.

Audit Results. We commend the Navy Aviation Supply Office for their excellent administrative lead time. The Navy Aviation Supply Office awarded contracts much faster than the Navy Ships Parts Control Center, as shown in the figure below. For example, the Navy Ships Parts Control Center required an average of 229 days to award small purchase value contracts (under $25,000) and the Navy Aviation Supply Office required an average of 183 days to award large dollar value contracts ($25,000 and greater). The Navy Ships Parts Control Center could reduce administrative lead time, upgrade customer satisfaction, help readiness, and reduce inventory and inventory holding costs by $579 million by establishing performance measures similar to those used by the Navy Aviation Supply Office. Until performance measures are established and administrative lead time is reduced, the Navy Ships Parts Control Center will achieve little benefit from the new $100,000 small purchase threshold permitted by the Federal Acquisition Streamlining Act of 1994. See Part II.



Objectives. The primary audit objective was to determine whether measures were in place to monitor and, where appropriate, reduce administrative lead time for spare parts contracts. We also evaluated the internal controls established for administrative lead time and the adequacy of management's implementation of the DoD Internal Management Control Program for monitoring administrative lead time. For this report, we compared the administrative lead time and evaluated internal controls at the Navy inventory control points. Subsequent reports will discuss administrative lead time and internal controls at other DoD inventory control points and actions needed to reduce administrative lead time.

Internal Controls. Internal controls and the implementation of the DoD Internal Management Control Program were not adequate to keep management at the Navy Ships Parts Control Center aware of problems with administrative lead time. We reviewed the Internal Management Control Program at SPCC and determined that administrative lead time was not included in their Internal Management Control Program. We consider the failure to identify administrative lead time and areas needing improving to be a material weakness at the Navy Ships Parts Control Center. Compared with the Navy Aviation Supply Office, the longer time used to award contracts at Navy Ships Parts Control Center results in significant increased costs and impairs readiness. See Part I for internal controls reviewed and Part II for details on the weakness identified.

Potential Benefits of Audit. The implementation of the recommendations could result in $579 million put to better use from FYs 1996 through 2001 by the Navy Ships Parts Control Center by reducing inventory and safety levels and the cost to maintain inventory and safety levels needed to cover administrative lead time. Also, readiness will be improved when administrative lead time is reduced and when the Navy Ships Parts Control Center knows how long it takes to award a contract. See Appendix D for a summary of the potential benefits resulting from the audit.

Summary of Recommendations. We recommend that the Under Secretary of Defense (Comptroller) initiate appropriate adjustments during the budget review process to reflect reduced administrative lead time. We recommend that the Navy Ships Parts Control Center establish a performance measurement system and goals for administrative lead time. In addition, we recommend that the Navy Ships Parts Control Center include administrative lead time as part of its Internal Management Control Program.

Management Comments. The Under Secretary of Defense (Comptroller) and the Assistant Secretary of the Navy (Financial Management) did not comment on a draft of this report. We request written comments by February 10, 1995.

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This report was prepared by the Contract Management Directorate, Office of the Assistant Inspector General for Auditing, DoD.

Part I - Introduction

Background

This report is the second in a series of reports on administrative lead time for contracts at DoD inventory control points. This report addresses the administrative lead time for spare parts contracts at the two Navy inventory control points: the Navy Aviation Supply Office (ASO) and the Navy Ships Parts Control Center (SPCC). Reducing administrative lead time reduces the required inventory and inventory holding costs, thus freeing DoD funds for other uses. Navy supply system inventories as of September 30, 1993, were $16 billion. ASO and SPCC buy spare parts for the Navy supply system. In FY 1993, ASO awarded contracts for $1.2 billion and SPCC awarded contracts for $0.79 billion.

Performance Measures to Assess Program Results. Public Law 103-62, "Government Performance Results Acts of 1993," August 3, 1993, provides for the establishment of strategic planning and performance measurement in the Federal Government. To effectively improve program efficiency and effectiveness, program goals must be established and adequate information on program performance must be available.

Materiel Management by Navy Inventory Control Points. Inventory control points have primary responsibility for materiel management within the Navy. To properly manage materiel such as spare parts, the inventory control points forecast when to reorder spare parts to meet the needs of the users of those spare parts.

Administrative Lead Time as a Management Tool. Administrative lead time is one factor used to forecast when to reorder inventoried items. Administrative lead time is defined as the period from the item reorder requirement until the contract is awarded. Longer administrative lead time requires more inventoried items to be on hand to maintain inventory levels.

Administrative Lead Time Process. Administrative lead time is composed of various segments of time requiring discrete actions by different people and offices. See Appendix A for details of the administrative lead time process.

Effect of Administrative Lead Time on Inventory. Inventory levels decrease with the daily use of spare parts. For every day of administrative lead time, spare parts inventory must be maintained to satisfy daily use of spare parts.

Effect of Administrative Lead Time on Inventory Safety Levels. Inventory safety levels allow for fluctuations in estimated lead time and estimated daily use of spare parts. In 1989, the Office of the Assistant Secretary of Defense (Production and Logistics), now part of the Office of the Under Secretary of Defense for Acquisition and Technology, conducted a study of consumable and repairable items at wholesale inventory control points. The 1989 study revealed that, as the number of days of lead time decreases, the

number of days of safety level decreases proportionally at an 8-to-1 ratio. Therefore, for every 8 days that lead time is reduced, the safety level is reduced by 1 day.

Regulation on Administrative Lead Time. DoD Regulation 4140.1-R, "DoD Materiel Management Regulation," January 1993, formerly DoD Instruction 4140.55," "Procurement Lead Time for Secondary Items," December 1985, establishes policy, assigns responsibility, and provides guidelines for defining and developing administrative lead time.

Reducing Cycle Times. A September 14, 1994, memorandum from the Secretary of Defense challenges the Military Departments and the Defense Agencies to establish performance agreements that will reduce DoD cycle times by at least 50 percent by the year 2000. Cycle time is a term used to describe the period of time to accomplish a repetitive process. Administrative lead time for procurement is an example of cycle time. The memorandum states that, by reducing cycle time, the Government can achieve the goals of the Vice-President's National Performance Review: reducing infrastructure cost, streamlining processes, and improving customer service.

In his memorandum, the Secretary of Defense states that reducing cycle time is important because time is money. By consuming personnel's time with lengthy processes, the Government pays enormous and unnecessary infrastructure costs that limit the Government's ability to fund warfighting requirements.

Objectives

The primary audit objective was to determine whether measures were in place to monitor and, where appropriate, reduce administrative lead time. We also evaluated the internal controls concerned with measurement of administrative lead time. This report discusses the administrative lead time for spare parts at ASO and SPCC.

Subsequent reports will discuss administrative lead time and internal controls at other DoD inventory control points and the overall actions needed throughout DoD to reduce administrative lead time.

Scope and Methodology

Audit Locations. We reviewed the process for monitoring administrative lead time at ASO and SPCC. See Appendix E for a list of organizations visited or contacted.

Universe. We took stratified samples from a universe of 23,522 contracts, valued at $542 million, awarded by ASO and SPCC from July 1, 1992, through June 30, 1993. Of the 23,522 contracts, ASO awarded

12,270 contracts, valued at $323 million, and SPCC awarded 11,252 contracts, valued at $219 million. The universe excluded delivery orders and requirement contracts, except for the base-year contracts.

Statistical Projection Estimates. Statistical projections were based on average values as units of measure for testing whether SPCC took significantly more days than ASO to award contracts. Appendix B explains the statistical sampling and the method used to calculate the average values.

Data Reviewed. We reviewed documentation for contracts awarded from July 1, 1992, through June 30, 1993, to determine the actual administrative lead time for the 100 sampled contracts at ASO and SPCC. We measured the time elapsed from the date of requirement to the award of the contract. Specifically, we reviewed purchase requests, supply demand reviews, and contract files to identify the time taken to award contracts. In addition, we interviewed item managers, buyers, and contracting officers.

Use of Technical Staff. Analysts from the Quantitative Methods Division, Audit Planning and Technical Support Directorate, Office of the Assistant Inspector General for Auditing, DoD, assisted in this audit. Analysts helped formulate a statistical sampling plan and computed the statistical projection. Using the audit results, the analysts estimated the difference in administrative lead time between SPCC and ASO.

Use of Computer-Processed Data. We relied on computer-processed data from the DoD Contract Action Reporting System to determine which contracting activities to visit and to determine audit sample selection. Although we did not perform a formal reliability assessment of the computer-processed data, we determined that contract numbers, award dates, contractors, and Federal supply codes on the contracts reviewed generally agreed with the information on the computer-processed data. We did not find errors that would preclude use of the computer-processed data to meet the objectives of the audit or that would change the conclusions in this report.

Audit Period and Standards. We performed this economy and efficiency audit from March 1993 through August 1994. The audit was performed according to auditing standards issued by the Comptroller General of the United States as carried out by the Inspector General, DoD. Accordingly, we included tests of internal controls as were considered necessary.

Internal Controls

Internal Controls Reviewed. We reviewed the internal controls established to monitor the administrative lead time that occurred during the contract award process. Specifically, we evaluated the policies and the guidance issued by ASO and SPCC used to measure administrative lead time. We also evaluated the implementation of the DoD Internal Management Control Program at ASO and SPCC concerned with monitoring and measuring administrative lead time.

Adequacy of Internal Controls. Internal controls at ASO were adequate to keep management informed of all administrative lead time. Therefore, ASO knew exactly how long it took to award a contract and was aware of problems early in the contract award process. The audit identified a material internal control weakness at SPCC as defined by DoD Directive 5010.38, "Internal Management Control Program," April 14, 1987. Internal controls were not adequate to keep management at SPCC aware of problems with administrative lead time. Also, SPCC implementation of the DoD Internal Management Control Program did not identify administrative lead time as an assessable unit. We consider this lack of identification to be a material weakness at SPCC because of the longer time to award contracts compared with ASO and the significant cost of the administrative lead time. Recommendation 2.b. in this report, if implemented, will correct the weakness. We calculated $579 million of funds that could be put to better use by implementing the recommendation. See Part II for a discussion of the material internal control weakness and Appendix D for a summary of potential benefits resulting from correcting the weakness. A copy of this report will be provided to the senior official responsible for internal controls in the Department of the Navy.

Prior Audits and Other Reviews

Inspector General, DoD, Report No. 94-102, "Administrative Lead Time at the Procurement Law Division, Army Aviation and Troop Command," May 17, 1994, identifies a potential 6-day reduction in administrative lead time by improving internal controls over the final legal review process of contract actions. The report recommended establishing controls to monitor the final legal review process for contract actions and implementing a performance measurement system for the Procurement Law Division. The Commander, Army Aviation and Troop Command, Army Materiel Command, agreed to establish a better tracking system for contract actions while in the Procurement Law Division and to establish a performance measurement system.

Inspector General, DoD, Report No. 93-049, "Navy Requirements for Currently Procured Wholesale Inventories of Repairable Items," February 1, 1993, identifies premature or unnecessary purchases because of inadequate requirement identification. The report recommended additional guidance be issued and that internal controls over supervisory approval of purchase decisions be strengthened. The Assistant Secretary of the Navy (Research, Development, and Acquisition) concurred with the recommendations.

Part II - Finding and Recommendations

Comparison of Administrative Lead Time at Navy Inventory Control Points

ASO was significantly faster than SPCC in awarding contracts for spare parts. ASO took less time to award contracts because:

- ASO set goals and monitored administrative lead time for all segments of the contract award process,

- ASO management was involved and aware of problems associated with all segments of administrative lead time, and

- ASO internal controls were adequate to keep management aware of all significant administrative lead time.

As a result, ASO identified problems early in the process, which helped ASO meet its administrative lead time goals and reduced ASO administrative lead time by about 64 percent over the past 6 years. We estimated that SPCC could reduce administrative lead time by adopting the performance measurement system used by ASO. By reducing administrative lead time by about 50 percent over the next 6 years, SPCC could realize benefits for improved readiness of $579 million.

Similarities at Navy Inventory Control Points

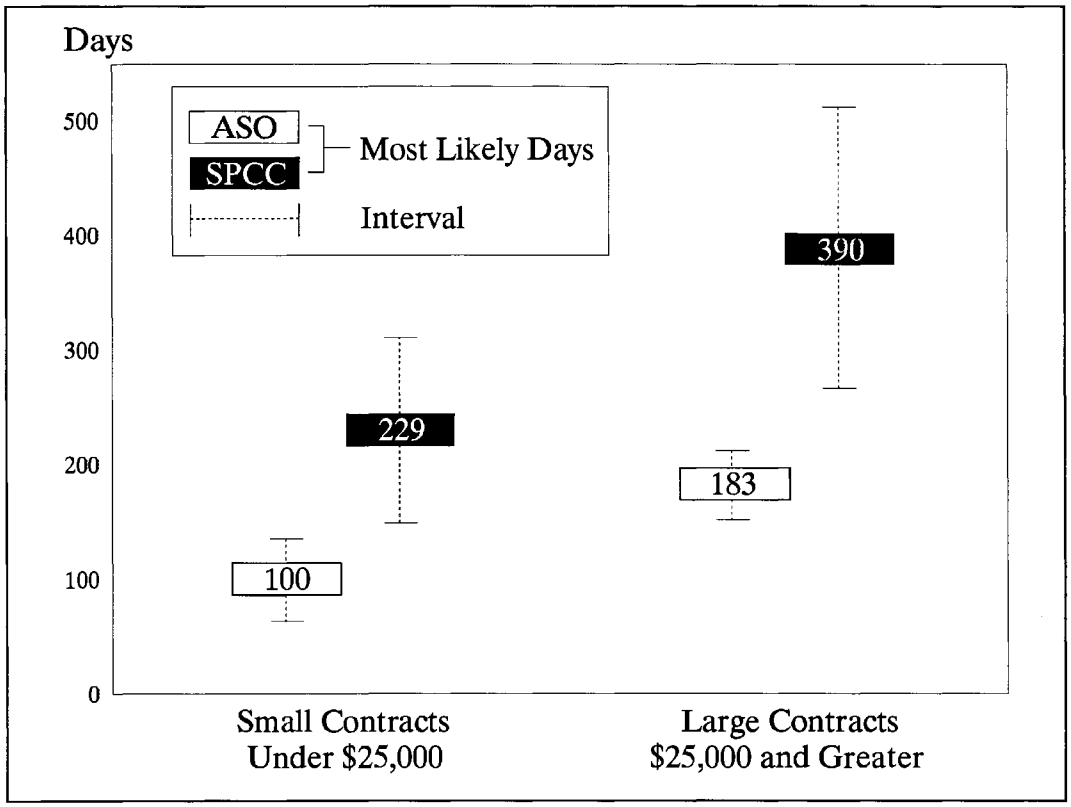
Inventory Control Point Mission. A function of an inventory control point is to maintain operational readiness and supply availability while minimizing the investment in inventory. To accomplish this, the inventory control point must accurately forecast when procurement actions should be initiated and how much material should be processed.

Standards for Inventory Control Points. Navy Supply Systems Command set standards of 190 days for large contracts (contracts of $25,000 and more) and 90 days for small contracts (contracts less than $25,000) for the buyer to prepare solicitations, evaluate proposals and award a contract. These standards are the same for both ASO and SPCC. Navy Supply Systems Command did not set standard times for the item managers to process the purchase requests.

Differences at Navy Inventory Control Points

Comparison of Administrative Lead Time. Our sample showed that ASO performed the same function as SPCC in about half the time with about the same resources. For example, SPCC required an average of 229 days to award

small purchase value contracts (under $25,000) and ASO required an average of 183 days to award large dollar value contracts ($25,000 and greater). This comparison clearly demonstrates the need for improvement by SPCC in awarding contracts. The figure shows that the contracts awarded by ASO were processed much faster than the contracts awarded by SPCC. See Appendix B for an explanation for the ranges of uncertainties for the projections.



ASO Awarded Contracts Significantly Faster Than SPCC

ASO Efforts to Reduce Administrative Lead Time

Performance Measures are Needed to Assess Program Results. Public Law 103-62 "Government Performance Results Acts of 1993," August 3, 1993, establishes strategic planning and performance measurement in the Federal Government. Program goals must be established and adequate program performance information must be available to improve program efficiency and effectiveness.

ASO Administrative Lead Time History. ASO administrative lead times have decreased considerably. For example, in FY 1987, the administrative lead time averaged 418 days. In December 1988, the ASO commanding officer set administrative lead time goals at 270 days. The goals were set by the ASO commanding officer. ASO planned to achieve these goals by:

- establishing a monitoring system to track the performance of inventory managers and contracting personnel;
- performing some functions concurrently instead of sequentially;
- using more flexible contractual processes, such as including option clauses to purchase larger quantities; and
- adjusting the workloads of contracting personnel so that they are only given the number of purchase requests that can be realistically handled.

ASO Continues to Reduce Administrative Lead Time

ASO Administrative Lead Time Goals Continue To Improve. ASO goals are now 150 days, an improvement in administrative lead time by about 64 percent since FY 1987 (268 days divided by 418 days--418 days less 150 days equals 268 days of improvement). This improvement occurred primarily because ASO successfully achieved and improved on the contract award process. In addition, ASO established interim goals for key processes of the contract award process.

Goals for Key Processes Important for Reducing Administrative Lead Time. ASO identified key processes within the overall contract award process and established goals for the key processes. For example, the item manager had a goal of 15 days to process the purchase request. Also, the buyer had a goal of 5 days to prepare bid solicitations and 6 days to prepare bid summaries.

Management Was Involved at ASO. ASO management was continuously involved in the contract award process. ASO monitored the contract award process and compared actual administrative lead time against established goals. If a goal was not met, management required a justification. ASO managers monitored the contract award process continuously. When a contract action experienced a problem or delay, managers were aware early and resolved problems. Identifying problems early in the process helped ASO meet its goals.

Internal Controls Helped ASO Identify Opportunities To Improve Administrative Lead Time. ASO measured administrative lead time according to DoD instructions. ASO started from the beginning (the spare part reorder point). Also, ASO monitored administrative lead time closely. These internal controls were adequate to keep management aware of the administrative lead times. Therefore, ASO was able to reduce administrative lead time.

Extent of SPCC Management Involvement in Administrative Lead Time

SPCC management did not have the opportunity to reduce administrative lead time because management did not set performance goals and did not continuously monitor the contract award process. For example, management:

- set standards, not goals, based on the previous year, regardless of whether or not the standards showed improvement;
- did not compare actual administrative lead time with the standards to gauge the efficiency of the contract award process;
- did not require explanation and justifications when standards were not met;
- reviewed administrative lead time only once a year instead of continuously; and
- were not involved with problems at the time of occurrence, thus, missing opportunities to correct or improve advanced lead time.

Internal Controls Over Administrative Lead Time at SPCC

Criteria for Measuring Administrative Lead Time. DoD Regulation 4140.1-R, "Materiel Management Regulation" requires that administrative lead time begin at the spare part reorder point. Administrative lead time includes the purchase request review and approval, the technical data review, and ends at the contract award.

SPCC Application of Administrative Lead Time Criteria. SPCC did not measure administrative time according to DoD instructions. SPCC did not measure administrative lead time from the beginning (the spare part reorder point). Instead, SPCC started measuring administrative lead time from the purchase request date, not accounting for an average of 24 days of the total administrative lead time for each purchase that occurred before the purchase request date. SPCC internal controls were not adequate to keep management aware of the significance of the unaccounted administrative lead time. Therefore, SPCC should include administrative lead time as an assessable unit in its Internal Management Control Program.

Minimizing Administrative Lead Time Improves Operational Readiness and Reduces Investment in Inventory

If SPCC accurately measures administrative lead time, the estimated delivery dates of spare parts will be more accurate, and readiness will be improved. Operational readiness would also be improved with savings realized from reducing administrative lead time. By reducing administrative lead time, funds could be used to purchase additional needed spare parts.

Inventory Investment and Inventory Holding Costs. Decreases in administrative lead time decrease the investment in inventory required to cover daily demand during administrative lead time. Also, as administrative lead time decreases, required safety levels decrease. Inventory holding costs, applicable to both inventory and inventory safety levels, are reduced when inventory is reduced.

Daily Demand. Inventory level decreases, depending on the daily use of spare parts. For every day of administrative lead time, spare parts inventory must be maintained to satisfy daily use of spare parts.

Safety Levels. As administrative lead time increases or decreases, the required safety level also increases or decreases. For every 8 days that administrative lead time increases or decreases, the required safety level increases or decreases by 1 day. Accordingly, the investment in inventory for the required safety level is directly affected by the administrative lead time.

Inventory Holding Costs. Inventory holding costs are expenses incurred to keep inventory for future use. These expenses include cost of capital invested in inventory, cost of losses due to obsolescence, cost of other losses, and cost of storage. The greater the administrative lead time, the greater will be each of these costs.

Forecasting Errors. As administrative lead time increases, the risk of forecasting errors increases, thus, resulting in possible increases in inventory. Associated with an increase in inventory is the probability of inapplicable inventory, defined as obsolete or in excess of requirements.

Potential Monetary Benefits of Reduced Administrative Lead Time at SPCC

Potential monetary benefits are achievable for the Navy if SPCC can reduce its administrative lead time to a level equal to the ASO administrative lead time. The details of our calculations are contained in Appendix C.

Potential Monetary Benefits in Large Contracts. Based on average administrative lead time at ASO, SPCC could reduce administrative lead time by 207 days (390 days minus 183 days) with a corresponding reduction in

required stock safety levels of 26 days (207 days divided by 8 days). To quantify the potential cost reductions from reduced administrative lead time, potential monetary benefits were quantified in terms of reduced inventory of 207 days plus a corresponding 26 days of required safety level inventory, for a total of 233 days. The inventory benefit of reducing administrative lead time by 233 days is $288 million. In addition, DoD can save the cost to hold or maintain the inventory. The potential monetary benefits associated with inventory holding cost is $234 million.

Potential Monetary Benefits in Small Contracts. Based on average administrative lead time at ASO, SPCC could reduce administrative lead time by 129 days (229 days minus 100 days) with a corresponding reduction in required safety levels of 16 days (129 days divided by 8 days). To quantify the potential cost reductions from reduced administrative lead time, potential monetary benefits were quantified in terms of reduced inventory of 129 days plus a corresponding 16 days of required safety level inventory, for a total of 145 days. The inventory benefit of reducing administrative lead time by 145 days is $32 million. In addition, DoD can reduce the cost to hold or maintain the inventory. The potential monetary benefits associated with inventory holding cost is $25 million.

Total benefits in reduced inventories and inventory holding costs for all contracts are $579 million. After SPCC improves the contract award process, the Under Secretary of Defense (Comptroller) should reduce the budget accordingly to reflect the reduced administrative lead time.

Methodology for Calculating Potential Monetary Benefits of Reducing Administrative Lead Time. The Joint Logistics Systems Center report, "The Joint Logistics Systems Center Materiel Management, Corporate Information Management, Business Process Improvement Project," June 25, 1993, identified ways to improve administrative lead time and also provided a methodology to calculate the monetary benefits from reduced administrative lead time. We calculated monetary benefits from reduced administrative lead time using the same methodology in the Joint Logistics Systems Center report. The details of our calculations are contained in Appendix C.

Conclusion

If SPCC can reduce administrative lead time, thereby reducing cycle time for awarding contracts, the Navy will realize improved customer service while reducing the cost of providing spare parts. By reducing SPCC cycle times to that of ASO using performance measurements, as recommended in this audit, SPCC cycle times will be reduced by 50 percent by FY 2001 and will exceed the Secretary of Defense challenge for reducing cycle time.

Recommendations for Corrective Action

1. We recommend that the Under Secretary of Defense (Comptroller) initiate appropriate adjustments during the Navy budget review process to reflect reduced Navy Ships Parts Control Center administrative lead time.

2. We recommend that the Commander, Navy Ships Parts Control Center, Navy Supply Systems Command:

a. Implement a performance measurement system for the contract award process that:

(1) Establishes goals for completion of key processes of the contract award process.

(2) Monitors actual administrative lead time by key processes to assess program results.

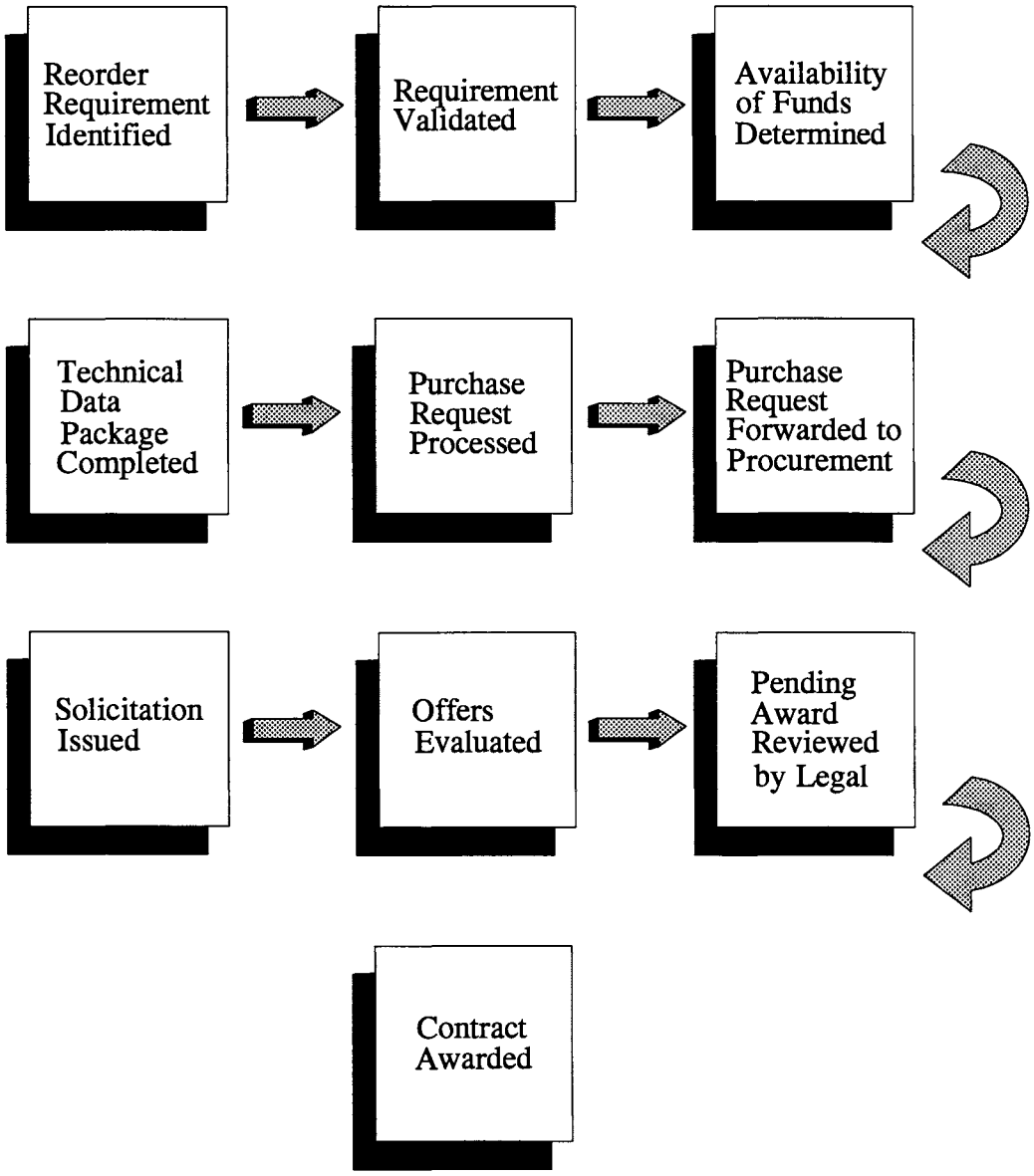
b. Includes administrative lead time as an assessable unit within the Navy Ships Parts Control Center Internal Management Control Program.

Management Comments

The Under Secretary of Defense (Comptroller) and the Assistant Secretary of the Navy (Financial Management) did not respond to the draft of this report in time for comments to be incorporated in the final report. If comments are received, we will consider them as comments on the final report.

Part III - Additional Information

Appendix A. Administrative Lead Time Process



Appendix B. Statistical Sampling Projection Methodology

Purpose. We performed statistical sampling during this audit to project the total administrative lead time days for the contract award process of spare parts at the two Navy inventory control points. We also projected the number of administrative lead time days not measured by SPCC. Because different criteria apply, separate projections were made for contracts less than $25,000 and contracts $25,000 and greater. We also performed statistical tests of significant difference between the two projections for each dollar range.

Sample Designs and Sizes. Simple random samples of 20 contracts each were selected from the two groups of contracts less than $25,000. We employed stratified sampling methodology for the two groups of contracts $25,000 or greater. We divided the large dollar contracts for each inventory control point into two strata: $25,000 to $100,000 and more than $100,000. We then randomly selected contracts from within each of the strata. A total of 50 contracts from each inventory control point were sampled. Statistical projections of the sample data are as follows:

SPCC Took Significantly Longer to Award Contracts Than ASO and Did Not Measure All Administrative Lead Time

	90 Percent Confidence Intervals		
	Lower Bound	Point Estimate	Upper Bound
Contracts Less Than $25,000			
Average Days at SPCC	148.7	229.2	309.6
Average Days at ASO	64.1	100.4	136.8
Contracts $25,000 and Greater			
Average Days at SPCC	265.9	389.7	513.5
Average Days at ASO	152.9	182.9	212.8
Average Days Not Measured at SPCC for all Contracts	13.2	23.8	34.4

With 90 percent confidence, SPCC personnel average from 148.7 to 309.6 days of total administrative lead time for contracts less than $25,000, and from 265.9 to 513.5 days of total administrative lead time for contracts $25,000 and greater. The unbiased point estimates, 229.2 days for the smaller dollar contracts and 389.7 days for the larger dollar contracts, are the most likely single values for the average numbers of total administrative lead time days required at SPCC.

Also, with 90-percent confidence, ASO personnel average from 64.1 to 136.8 days of total administrative lead time for contracts less than $25,000, and from 152.9 to 212.8 days of total administrative lead time for contracts $25,000 and greater. The unbiased point estimates, 100.4 days for the smaller dollar contracts and 182.9 days for the larger dollar contracts, are the most likely single values for the average numbers of total administrative lead time days required at ASO.

Each of the upper bounds of the statistical projections for ASO, 136.8 and 212.8 total administrative lead time days respectively, is less than the corresponding lower bounds of the projections for SPCC, 148.7 and 265.9 total administrative lead time days. Therefore, with 90-percent confidence, SPCC personnel take significantly longer than ASO personnel to award spare parts contracts for both dollar ranges of contracts.

Finally, with 90-percent confidence, SPCC personnel averaged from 13.2 to 34.4 days of administrative lead time between the spare part reorder point and the purchase request date. This time was not included in SPCC measurement of administrative lead time. The unbiased point estimate, 23.8 days is the most likely single value for the average number of total administrative lead time days not included by SPCC.

The audit determined that 3 of the 100 sampled contracts should not have been included on the audit universe lists. Also, seven other ASO sampled contracts in the larger dollar range could not be evaluated in their appropriate strata. These seven missing data values were imputed using hot-deck methodology. Also, the original ASO stratified sample size was restored by randomly selecting 10 additional alternative contracts.

Scope. The audit universe consisted of all contracts awarded by the Navy inventory control points from July 1, 1992 to June 30, 1993. We identified 9,703 contracts less than $25,000 and 1,549 contracts $25,000 and greater awarded by SPCC, and 10,841 contracts less than $25,000 and 1,429 contracts $25,000 and greater awarded by ASO. Information was collected for the two Navy inventory control points from the sampled contracts.

Appendix C. Potential Monetary Benefits of Improved Administrative Lead Time

Contracts $25,000 or Greater

Fiscal Year	Potential Improvement (days)[1]	Daily Demand[2]	Inventory Benefits[3]	Cost to Hold Ratio[4]	Cumulative Potential Improvement (days)[5]	Total Holding Cost Benefits[6]
1996	40	$1,234,153	$49,366,120	0.23	40	$11,354,208
1997	40	1,234,153	49,366,120	0.23	80	22,708,415
1998	39	1,234,153	48,131,967	0.23	119	33,778,768
1999	38	1,234,153	46,897,814	0.23	157	44,565,265
2000	38	1,234,153	46,897,814	0.23	195	55,351,762
2001	38	1,234,153	46,897,814	0.23	233	66,138,259
Total	233		$287,557,649			$233,896,677

See footnotes at end of appendix.

Contracts Below $25,000

Fiscal Year	Potential Improvement (days)[1]	Daily Demand[2]	Inventory Benefits[3]	Cost to Hold Ratio[4]	Cumulative Potential Improvement (days)[5]	Total Holding Cost Benefits[6]
1996	25	$217,791	$5,444,775	0.23	25	1,252,298
1997	25	217,791	5,444,775	0.23	49	2,454,505
1998	24	217,791	5,226,984	0.23	74	3,706,803
1999	24	217,791	5,226,984	0.23	98	4,909,009
2000	24	217,791	5,226,984	0.23	121	6,061,124
2001	23	217,791	5,009,193	0.23	145	7,263,330
Total	145		$31,579,695			$25,647,069

[1]Improvement will be achieved over 6 years--233 days for large contracts and 145 days for small contracts.

[2]Daily demand was calculated by dividing SPCC FY 1995 budget data for consumables and repairable divided by 360 days.

[3]Potential improvement (days) times daily demand.

[4]Represents the cost of holding inventory which includes cost of money (10 percent), obsolescence (12 percent), and storage (1 percent).

[5]Represents the total days inventory can be reduced over 6 years.

[6]Represents the total benefits from reduced inventory over 6 years.

Appendix D. Summary Of Potential Benefits Resulting From Audit

Recommendation Reference	Description of Benefit	Amount of Benefit
1.	Economy and Efficiency. Reduces administrative lead time, inventory, and inventory maintenance.	Monetary benefits are included in Recommendation 2.a.
2.a.	Program Results. Improves the oversight of the spare parts procurement process and helps reduce administrative lead time.	Funds put to better use of $579 million over 6 years Revolving fund.*
2.b.	Internal Controls. Reduces administrative lead time, which could result in potential cost avoidance by reducing inventory levels.	Funds put to better use. Monetary benefits are included in Recommendation 2.a.

*$579 million can be put to better use by reducing inventory, and the cost to maintain that inventory, needed to cover the administrative lead time. The monetary benefits may be spread over more than 1 year as administrative lead time is reduced and inventory requirements are adjusted correspondingly, as follows:

Monetary Benefits By Fiscal Year
(millions)

	1996	1997	1998	1999	2000	2001	Total
Inventory	$55	$55	$53	$ 52	$ 52	$ 53	$320
Holding Costs	13	25	37	49	62	73	259
Total	$68	$80	$90	$101	$114	$126	$579

Appendix E. Organizations Visited or Contacted

Office of the Secretary of Defense

Deputy Under Secretary of Defense (Logistics), Washington, DC
  Joint Logistics Systems Center, Dayton, OH
Deputy Under Secretary of Defense (Acquisition Reform), Washington, DC

Department of the Navy

Secretary of the Navy (Research, Development, and Acquisition), Arlington, VA
Navy Supply Systems Command, Arlington, VA
  Navy Aviation Supply Center, Philadelphia, PA
  Navy Ships Parts Control Center, Mechanicsburg, PA

Appendix F. Report Distribution

Office of the Secretary of Defense

Under Secretary of Defense for Acquisition and Technology
Under Secretary of Defense (Comptroller)
Director, Defense Procurement
Deputy Under Secretary of Defense (Acquisition Reform)
Deputy Under Secretary of Defense (Logistics)

Department of the Navy

Secretary of the Navy
Assistant Secretary of the Navy (Financial Management)
Assistant Secretary of the Navy (Research, Development, and Acquisition)
Commander, Navy Supply Systems Command
  Commander, Navy Aviation Supply Office
  Commander, Navy Ships Parts Control Center

Non-Defense Federal Organizations

Office of Management and Budget
Technical Information Center, National Security and International Affairs Division, General Accounting Office
Chairman and Ranking Minority Member of Each of the Following Congressional Committees and Subcommittees:
  Senate Committee on Appropriation
  Senate Subcommittee on Defense, Committee on Appropriations
  Senate Committee on Armed Services
  Senate Committee on Governmental Affairs
  House Committee on Appropriations
  House Subcommittee on Defense, Committee on Appropriations
  House Committee on Armed Services
  House Committee on Government Operations
  House Subcommittee on Legislation and National Security, Committee on Government Operations

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