Audit Report

OFFICE OF THE INSPECTOR GENERAL

THE NAVY DUAL SOURCE PROGRAM FOR THE DDG-51 AEGIS DESTROYER

Report Number 92-065

March 31, 1992

This special version of the report has been revised to omit contractor sensitive data.

Department of Defense

The following acronyms are used in this report.

BIW.....Bath Iron Works
DFARS.....Defense Federal Acquisition Regulation Supplement
GAO.....General Accounting Office
ISI.....Ingalls Shipbuilding, Incorporated
LHD.....Amphibious Assault Ship Landing Helicopter Dock
NAVSEA.....Naval Sea Systems Command
WIP.....Work-In-Process

INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
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ARLINGTON, VIRGINIA 22202-2884

March 31, 1992

MEMORANDUM FOR ASSISTANT SECRETARY OF THE NAVY (FINANCIAL MANAGEMENT)

SUBJECT: Audit Report on the Navy Dual Source Program for the DDG-51 Aegis Destroyer (Report No. 92-065)

We are providing this final report for your information and use. DoD Directive 7650.3 requires that all audit recommendations be resolved promptly. Therefore, the Assistant Secretary of the Navy (Research, Development and Acquisition) must provide final comments by June 1, 1992. See the "Status of Recommendations" section at the end of the finding for recommendations you must comment on and the specific requirements for your comments. We also ask that your comments indicate concurrence or nonconcurrence with the material internal control weakness highlighted in Part I.

The courtesies extended to the audit staff are appreciated. If you have any questions on this audit, please contact Mr. Russell A. Rau, Program Director, at (703) 693-0186 (DSN 223-0186) or Mr. Michael Welborn, Project Manager, at (703) 693-0402 (DSN 223-0402). The planned distribution of this report is listed in Appendix F.

Robert J. Lieberman
Assistant Inspector General
for Auditing

Enclosure
cc:
Secretary of the Navy

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Office of the Inspector General

AUDIT REPORT NO. March 31, 1992
(Project No. 0AE-0089)

THE NAVY DUAL SOURCE PROGRAM FOR THE DDG-51 AEGIS DESTROYER

EXECUTIVE SUMMARY

Introduction. The Navy has a requirement for a battle force surface combatant as a replacement for retiring battle force guided missile destroyers. To satisfy that requirement, the Navy established the DDG-51 Aegis Destroyer program in June 1981. The DDG-51 Destroyer will be able to perform simultaneous antiair, antistrike, antisurface, and antisubmarine missions. In addition, these Destroyers are expected to operate as units of carrier battle groups and surface action groups and in support of underway replenishment groups and amphibious task forces in multithreat environments. The DDG-51 Destroyer will be armed with the Aegis Weapon System, which provides antiair warfare capability on cruisers and destroyers acquired under the Aegis shipbuilding program. The Navy plans to acquire 49 DDG-51 Destroyers at an estimated cost of $46 billion (FY 1992 through FY 1999 dollars). Of the 49 Destroyers, 46 are to be acquired by competitive dual sourcing with competitive awards of 17 ships to the 2 contractors as of May 1991. The original program supported a 600-ship Navy. However, a total procurement objective of 62 DDG Class Destroyers and annual buys of 5 or more ships were subsequently determined to be unaffordable during the Major Warship Review conducted in FY 1990. This change in quantities and annual buys impacted the viability of a competitive dual source acquisition strategy. This strategy was originally designed to meet surge and mobilization production response requirements by qualifying Bath Iron Works in Bath, Maine, and Ingalls Shipbuilding, Incorporated, in Pascagoula, Mississippi, to produce, maintain, and repair DDG-51 Destroyers.

Objectives. Our audit objective was to evaluate the effectiveness of the Navy dual source acquisition program for the DDG-51 Aegis Destroyer.

Audit Results. The Navy acquisition strategy of continuing to competitively dual source the DDG-51 Aegis Destroyer has not been adequately justified. The Navy cannot achieve adequate price competition in the downsized program because annual contract awards are not possible across the full range of step quantities without severe risk of driving one or more vendors out of business. Lacking adequate price competition, the Navy will pay disguised mobilization premiums of $1.4 billion through FY 1999 (Appendix B).

Internal Controls. The audit identified a material internal control weakness in that controls were not effective to support and monitor the dual source decision. A discussion of the controls assessed is in Part I of the report.

Potential Benefits of Audit. The monetary benefits to be realized by implementing the recommendations were not readily quantifiable (Appendix D).

Summary of Recommendations. We recommended that competitive dual sourcing of the DDG-51 Aegis Destroyer be discontinued and that a cost analysis be performed to establish the reasonableness of contract prices for each of the two shipbuilders. We also recommended that an in-depth industrial base analysis be performed. Additionally, we recommended that a cost-benefit analysis be performed on continued noncompetitive dual sourcing of the DDG-51 program.

Management Comments. The Assistant Secretary of the Navy (Research, Development and Acquisition) and the Commander, Naval Sea Systems Command (NAVSEA), nonconcurred with our finding and recommendations. We request that the Assistant Secretary of the Navy (Research, Development and Acquisition) reconsider the Navy position and provide additional comments to the final report by June 1, 1992.

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This report was prepared by the Acquisition Management Directorate, Office of the Assistant Inspector General for Auditing, DoD. Copies of the report can be obtained from the Information Officer, Audit Planning and Technical Support Directorate, (703) 614-6303.

PART I - INTRODUCTION

Background

Over the past decade, there has been considerable congressional and DoD interest in lowering procurement costs through enhancing competition. The "Competition in Contracting Act of 1984," July 18, 1984, requires that DoD establish more than one source of supply if the alternative source increases or maintains competition and results in lower acquisition costs. Public Law 101-510, "Major Programs, Competitive Alternative Sources," November 5, 1990, requires competitive alternative sources for all major programs from the beginning of full-scale development through the end of production where "the establishment and maintenance of two or more sources would likely result in reduced costs for such program." Further, DoD Directive 5000.1, "Defense Acquisition," February 23, 1991, includes DoD policy previously covered by the now canceled DoD Directive 4245.9, "Competitive Acquisitions," which implemented U.S.C., title 10, sec. 2438. DoD Directive 5000.1 states, "Defense systems, subsystems, equipment, supplies and services shall be acquired on a competitive basis to the maximum extent practicable. . . ."

In dual sourcing, the Government awards the largest share of a contract requirement to the lowest bidder and awards the remaining share of the same requirement to a higher bidder. The objectives of dual sourcing are to lower overall DoD program costs by establishing price competition for high cost, technically complex items that are not normally competed and to maintain or enhance the industrial base.

The economic justification for dual sourcing is the Government's return on investment, which comes in the form of lower overall contract prices. For the Government to achieve lower overall contract prices, the original source must perceive the second source as a legitimate competitive threat and react to that threat by lowering its contract prices.

In competitive dual sourcing, the Government pays a premium to the high bidder by splitting requirements between two sources instead of awarding the entire quantity to one source. The premium payment is the difference between the lowest offered price, generally for award of the entire quantity to one source, and the combined price of the split awards. The objective of the competition is to reduce overall program acquisition costs by obtaining reductions in proposed prices that more than offset the premium paid to the high bidder to sustain a competitive environment. The initial dual source investment decision should consider the premium prices inherent in dual sourcing. Further,

the decision should be supported by projected lower overall and competitive dual source prices, even though premium payments are included in the prices.

In April 1984, the Navy decided to dual source the DDG-51 Aegis Destroyer. The lead ship was awarded to Bath Iron Works (BIW) Corporation on April 2, 1985. The follow ship was awarded to Ingalls Shipbuilding, Inc. (ISI), on May 26, 1987. A second ship was also awarded to BIW on May 26, 1987. The first dual source contract was awarded on December 13, 1988, for five ships, with three ships awarded to BIW and two ships awarded to ISI. The Navy awarded additional dual source contracts to BIW and ISI on February 22, 1990, for five ships (three to ISI and two to BIW) and on January 16, 1991, for four ships (two to each shipbuilder).

BIW and ISI depend on the DDG-51 Destroyer Program for future work in both shipyards. While BIW and ISI are building the CG-47 Cruiser, the last contract was awarded in FY 1988, and work will continue only through FY 1994. Additionally, ISI built the Navy Amphibious Assault Ship Landing Helicopter Dock (LHD), which was terminated after the FY 1991 buy because of affordability constraints. The final LHD will be delivered in FY 1996. The following schedule shows the total number of DDG-51 Class Destroyers, CG-47 Class Cruisers, and the LHD Class Ships awarded to BIW and ISI through FY 1991.

DDG-51 CLASS DESTROYERS, CG-47 CLASS CRUISERS, AND LHD CLASS SHIPS AWARDED TO BIW AND ISI

	BIW		ISI		
FY	DDG	CG	DDG	CG	LHD
1978-1981	0	0	0	4	0
1982	0	1	0	2	1
1983	0	0	0	3	0
1984	0	1	0	2	0
1985	1	2	0	1	0
1986	0	2	0	1	1
1987	1	1	1	2	0
1988	0	1	0	4	1
1989	3	0	2	0	1
1990	2	0	3	0	0
1991	2	0	2	0	0
Total	9	8	8	19	4

Objective

Our audit objective was to evaluate the effectiveness of the Navy's dual source acquisition program for the DDG-51 Aegis Destroyer. Specifically, we evaluated the Navy's basis for the dual source decision, the continued viability of the competitive dual source acquisition strategy as a result of major program changes, and the Navy's mobilization base requirements and industry capability to respond to those mobilization requirements. However, we determined that mobilization base issues were a subset of the broader issue of sustaining the industrial base. Therefore, we expanded the objective and evaluated Navy surface ship requirements and industry capacity. Further, we assessed the cost to maintain two shipbuilders and the rationale for competitive dual sourcing. The audit also evaluated the internal controls used in forming and monitoring the dual source decision.

Scope

To accomplish our objectives, we reviewed documentation and other evidence supporting the Navy's decision to proceed with a competitive dual source acquisition strategy. We analyzed the competitive aspects of the award process to determine whether contract prices were competitive. Additionally, with the assistance of the Quantitative Methods Division, we computed the premium paid for competitive dual sourcing to determine the cost oZ maintaining two sources and compared the costs to maintain the two sources with the ability of one source to meet the fleet requirements. Further, we obtained and evaluated mobilization base requirements and analyzed Navy surface ship requirements compared to existing shipyard capacity in order to evaluate industrial base considerations in the dual sourcing decision process.

The audit universe consisted of actual and planned dual source procurements and the lead and follow ship contracts of DDG-51 Aegis Destroyers. As of May 1991, the Navy had competitively dual sourced the acquisition of 14 of the 17 competitively awarded DDG-51 Destroyers at a cost of $3.5 billion (FY 1989 through FY 1991 dollars). The Navy plans to dual source the acquisition of an additional 32 destroyers at an estimated cost of $32.6 billion (FY 1992 through FY 1999 dollars).

We performed this economy and efficiency audit from August 21, 1990, through March 15, 1991, and reviewed records dated from June 1981 through January 1991. The audit was made in accordance with auditing standards issued by the Comptroller General of the United States as implemented by the Inspector General, DoD, and

accordingly, included such tests of internal controls as were considered necessary. Activities visited or contacted are listed in Appendix E.

Internal Controls

We evaluated internal controls for forming and monitoring dual source decisions and for determining the cost-effectiveness of dual-sourcing. The audit identified a material internal control weakness as defined by Public Law 97-255, Office of Management and Budget Circular A-123, and DoD Directive 5010.38. Internal controls were not established or effective to support and monitor the dual sourcing decision. The Navy did not comply with DoD policies and procedures for forming and monitoring dual source decisions and for determining the cost-effectiveness of dual sourcing. Recommendations 1., 2., and 3. in this report, if implemented, will correct the weaknesses. A copy of this report is being provided to the senior official responsible for internal controls within the Department of Navy.

Prior Audits and Other Reviews

The DoD Inspector General and the General Accounting Office (GAO) have issued two reports on dual sourcing and three reports on the DDG-51 over the last 5 years. All five reports are briefly discussed in Appendix A.

Other Matters of Interest

On March 6 and March 8, 1991, we briefed the program manager for the Aegis Shipbuilding Program and the Deputy Assistant Secretary of the Navy for Ship Programs, Office of the Assistant Secretary of the Navy (Research, Development and Acquisition), respectively, concerning the need for an in-depth industrial base analysis of surface combatants. On March 13, 1991, the Assistant Secretary of the Navy (Research, Development and Acquisition) announced the start of a detailed analysis of the Navy's ability to support the shipbuilding industrial base. In addition, the Assistant Secretary required that the Aegis program managers and the Deputy Assistant Secretary of the Navy for Ship Programs maximize the effectiveness of any industrial base decisions.

PART II-FINDING AND RECOMMENDATIONS

EFFECTIVENESS OF DUAL SOURCING DECISION

The cost-effectiveness of the Navy acquisition strategy of continuing to competitively dual source the DDG-51 Aegis Destroyer was not adequately justified, and the competition could adversely affect the shipbuilding industrial base for surface combatants. This condition occurred because:

o the Navy had not performed a cost-benefit analysis of the continued cost-effectiveness of dual sourcing; and

o the Navy relied on dual sourcing to support mobilization base requirements without adequately assessing the mobilization base requirements or the Navy's long-term ability to meet those requirements.

The Navy expended at least $407 million (FY 1991 dollars), through FY 1991 as mobilization premiums for maintaining competition between two sources for the DDG-51 Destroyer. If the dual source acquisition strategy is continued through FY 1999, we estimate that the Navy will expend an additional $1.4 billion in premium prices (Appendix B). The Navy could reduce the mobilization premium for FY's 1992 through 1999 by performing cost analyses on proposals received from the two shipbuilders and by relying on the results of the cost analyses to support the contract negotiation process.

DISCUSSION OF DETAILS

Background

An essential part of an effective dual source strategy is establishing and maintaining price competition. DoD Directive 5000.1, "Defense Acquisition," February 23, 1991, requires that the DoD Components explicitly address the feasibility, cost, and benefits of competition in each phase of program implementation, including the use of the competitive procedures that provide the greatest benefit to the Government. The cost-benefit analysis should consider several factors, such as nonrecurring setup cost, future value of money, effects of learning, and premium payments. After the two supply sources are established and are producing, it is important to monitor the production costs to determine if price competition is being maintained.

If price competition is not achieved, the contractors must submit certified cost or pricing data under U.S.C., title 10, sec. 2306a, "Cost or Pricing Data: Truth in Negotiations." Certified cost or pricing data used to perform cost analyses of

the contractors' proposals and the results of the cost analyses are used to support the contract negotiation process. Additionally, certified cost and pricing data are used to identify contractor cost efficiencies that can be realized in order to minimize the amount of premium associated with maintaining the industrial base. It is possible to have two suppliers and have competition for a product and still not have effective price competition. This occurs when alternative sources are established for reasons other than price, such as mobilization base concerns, and when contractors are either unwilling or unable to economically provide only a limited part of the total requirement.

The Navy decision to dual source the DDG-51 Destroyer was predicated on the assumption that dual sourcing would be cost-effective and on its desire to maintain an adequate shipbuilding industrial base. The Navy reported in the "Arleigh Burke Class (DDG-51) Industrial Base Study" that, over the last decade, the number of qualified surface combatant shipyards declined, leaving only the two Aegis shipbuilders. The study further stated that global shipbuilding market forces put the Navy in the position of being the only buyer in the U.S. market. According to the study, these two shipbuilders not only constituted a massive investment, but also a national resource of the best remaining people and equipment in a declining industry.

Basis for Evaluating Dual Sourcing the DDG-51 Destroyer

We reviewed the Navy acquisition strategy and business clearance memorandums to determine the overall Navy approach to the dual source competition and the results of the acquisition strategy. The DDG-51 acquisition strategy has been developed to respond to the need to replace multimission ships currently in service and, at the same time, recognize existing fiscal constraints. For example, 32 older class DDG Destroyers will be retired by FY 2000. In FY 1981, the Navy estimated a need for 62 new DDG-51 Destroyers. The projected size of the DDG-51 Destroyer program changed from 62 to 29 ships, from 29 to 32 ships, from 32 to 38 ships, from 38 to 29 ships, and from 29 to 49 ships. The projected award schedule changed from FYs 1985 through 1992 to FYs 1985 through 1994 and finally to FYs 1985 through 1999. Such instability has impaired the Navy's ability to adequately achieve cost efficiency and provide for the maintenance of the industrial base for surface combatants.

We determined that the Navy had not performed a separate cost-benefit analysis on competitive dual sourcing of the DDG-51 Destroyer. Instead, the Navy used the cost-benefit analysis for the CG-47 Aegis Cruiser to support the DDG-51 acquisition strategy. The Naval Center for Cost Analysis completed the CG-47

Aegis Cruiser analysis, "The Impact of Competition on a Navy Ship Construction Program," in August 1986. In the absence of a cost-benefit analysis, we used a quantitative approach to evaluate the dual source decision. The approach consisted of reviewing the lead and follow ship contracts as well as the dual source contracts for FYs 1989 through 1991. We focused on the reasonableness of the cost growth from one contract to the next. We also compared the Navy requirement for the DDG-51 Aegis Destroyer to the available industrial capacity and evaluated the total Naval force structure in regard to existing industrial capacity.

Cost-Effectiveness of DDG-51 Dual Source Program

Our review of the DDG-51 dual source program concluded that the cost-effectiveness of the DDG-51 competitive dual source acquisition strategy was not adequately justified, could potentially no longer achieve adequate price competition, and was not updated to reflect program changes.

Cost-benefit analysis. The Navy did not complete a cost-benefit analysis supporting the 1984 decision to competitively dual source the DDG-51, and no analyses were subsequently performed based on program changes. The projected size and award schedule of the DDG-51 Destroyer changed at least five times during FYs 1981 through 1991. The initial CG-47 Cruiser study in 1986 stated that, under existing economic conditions, the dual sourcing strategy was cost-effective for production of 30 or more ships, but the effects of competition should be individually assessed because applicable assumptions vary. For example, the ratio of start-up costs at the lead yard to the first unit cost can range from 5 to 50 percent, depending on the complexity of the new class of ships and the difference between the new class and an existing class. The learning curve for the CG-47 study was based on the norm for ship programs and not on the actual learning curve experienced by the shipyards building the CG-47 Cruisers.

The Navy indicated that it used the cost-benefit analysis of the CG-47 because the CG-47 and the DDG-51 were similar. Therefore, the Navy assumed that the same competitive savings achieved on the CG-47 would be achievable on the DDG-51. However, we question the appropriateness of the decision to use the CG-47 cost study in lieu of a separate DDG-51 cost study. The study specifically states that the effects of competition must be assessed individually for ship programs due to variations in assumptions, such as economic conditions. However, the Navy made no attempt to assess the continued applicability of the study results. Therefore, we concluded the Navy used the competition studies in a manner for which they were not originally intended,

that is, as justification for competitively dual sourcing the DDG-51 Destroyer program.

Additionally, the Navy did not consider premium costs in its analysis of the CG-47 program. This oversight disclosed a flaw in the CG-47 cost-benefit analysis methodology, which renders the CG-47 cost-benefit analysis ineffective in projecting DDG-51 savings from competitive dual sourcing. Our review disclosed that as of FY 1991, the Navy expended $407 million in premiums on the DDG-51 (Appendix B). Further, we project that if the competitive dual sourcing strategy is continued through FY 1999, an additional $1.4 billion will be expended in premium costs.

Competitive influence on price in the DDG-51 program. Although the DDG-51 program has been classified as a competitive acquisition, the degree of actual competition achieved in the lead ship, follow ship, and dual source contracts is questionable.

Lead ship contract. The lead ship (DDG-51) was competed among three shipyards and awarded to BIW under a fixed-price incentive contract on April 2, 1985, for a target price of $321.9 million. Since the award, the target price has risen 35 percent to $434.8 million. The current estimate at completion of * is projected to exceed the original target cost of $277.5 million by * ; the cost growth will exceed * , and the Government is liable for as much as * up to the ceiling price of $582.9 million because the share ratio was 80:20.

On March 24, 1989, BIW submitted engineering change proposal 51-760 to the Naval Sea Systems Command (NAVSEA) to recover the costs of performing additional work. Change proposal 51-760 was finalized on September 22, 1989, with target and ceiling prices of $34.7 million and $52.4 million, respectively.

BIW indicated that it had bid aggressively to obtain the contract. The aggressive bidding combined with the inherent risk associated with unproven ship design and new construction techniques led to cost growth on the lead ship design and production. BIW officials indicated that BIW had recommended a design, construction, and delivery schedule of about 62 months, and a ceiling of 68 months. According to BIW, the Navy opposed the recommendation and subsequently stipulated a 54-month delivery schedule, which BIW considered unrealistic "unless the basic design approach currently being used by NAVSEA is radically altered." The estimate at completion for the lead ship increased because of increases in engineering staff hours. Also, design correction notices on the DDG-51 were so extensive that BIW increased personnel to reduce the response time to resolve

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* Contractor confidential or proprietary data has been deleted.

construction problems. Additionally, engineering changes led to second and third shifts as well as overtime work at BIW in order to meet major milestone dates.

Follow ship contract. Our review of the May 21, 1987, fixed-price incentive follow ship (DDG-52) contract with ISI, which had a target price of $148.9 million, disclosed a pattern of events similar to those of the lead ship. The follow ship contract was competed and bid aggressively among six yards, including BIW. The winner, ISI, experienced cost growth similar to BIW's. The primary cause of ISI's cost growth was BIW's delay in providing data to the Navy because of BIW's engineering changes and schedule slippages on the lead ship. On October 25, 1989, ISI submitted engineering change proposal 51-860 to NAVSEA requesting an additional $90 million. Engineering change proposal 51-860 was finalized on March 8, 1991, with a target cost, target price, and ceiling price of $67 million, $77.4 million, and $96.4 million, respectively. As a result of the engineering change proposal, the target price for the DDG-52 was raised to $223.2 million, and the ceiling price was raised to $273.3 million. The estimate at completion of * represents a * increase over the original target cost of $121 million.

Dual source contracts. For competitive dual sourcing to be effective, both suppliers must perceive the other as a competitive threat. Our review of the dual source awards revealed little evidence that this was the case in the DDG-51 Program. First, in FYs 1989 and 1990, NAVSEA reversed the awards so that each shipbuilder received the same number of ships over the 2-year period. In the FY 1991 option on the FY 1990 contract, NAVSEA split the award so that each yard received two ships. This follows a predictable pattern that goes back to the CG-47 Cruiser program. For example, from FY 1984 through FY 1987, BIW and ISI were each awarded six CG-47 Cruisers. In 1988, when the CG-47 program was concluded and the first year the DDG-51 Destroyer was dual sourced, this award pattern was broken for 1 year with BIW receiving one CG-47 Cruiser and ISI receiving four. Additionally, because of the small number of ships involved in the process, the dual sourcing had not achieved adequate price competition, as the two shipbuilders bidding for four ships are familiar with the general scope of each other's organization, capacity, and limitations. Consequently, each yard could reasonably predict the number of ships it was most likely to be awarded.

Marginal Cost. Our analyses of marginal costs and profit lead us to believe that the Navy could potentially benefit from noncompetitive dual sourcing (multiple sole source awards) of the DDG-51 program because adequate price competition had not

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* Contractor confidential or proprietary data has been deleted.

been achieved across the full range of proposed quantities. Specifically, cost data on ships already awarded are sufficient to provide for meaningful negotiated awards that recognize realistic program costs and avoid overruns due to underbidding.

The following graphs depict the target cost of prices bid from FYs 1989 through 1991 by the two shipbuilders for constructing one to four ships.

*
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*

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*
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* Contractor confidential or proprietary data has been deleted.

For example, our review of ISI's FY 1990 proposal indicates that marginal costs decreased to $208 million from the first to the second ship and to $79.2 million from the second to the third ship; however, the marginal cost increased to $170.2 million from the third to the fourth ship. Marginal costs from the third to the fourth ship represented a 115-percent increase. However, BIW's marginal costs in the same comparison increased by 30 percent. We expected the BIW marginal cost to increase at the three or four ship range because of capacity limitations identified in the Navy report, "Arleigh Burke Class (DDG-51) Industrial Base Study," April 30, 1990, but we did not expect the same trend with greater marginal cost increases for ISI because ISI can produce at least seven DDG-51 Destroyers annually. This pattern of consecutively higher marginal unit costs by ISI does not reflect cost trends associated with increasing production rates where excess capacity exists, as reported by ISI. This marginal cost analysis suggests that ISI is more cost efficient at three versus four ships annually; which contradicts information provided concerning their capacity. When asked to explain this trend, ISI officials stated that:

o ISI had the capacity to produce 7 to 10 DDG-51 Destroyers annually with increasing cost efficiency;

o efficiency had not influenced the changes in the marginal cost; and

o the manner by which ISI determines ship prices was driven by a strategy associated with making it desirable for the Navy to award the larger number of ships in a split award to ISI.

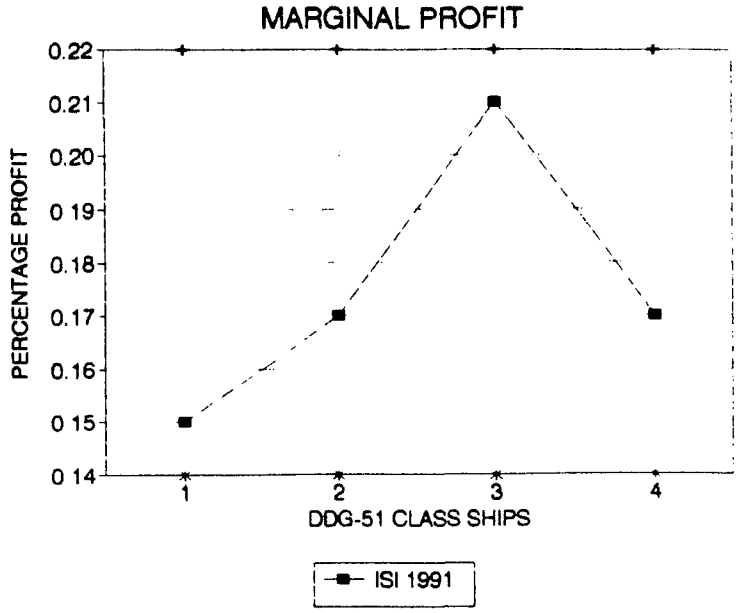
The contractors and NAVSEA stated that the high pricing for the first ship was attributed to overhead burden and a reasonable profit. However, because the Navy solicited contract prices with an understanding that each shipbuilder would be awarded at least one ship, both bidders, in our opinion, are provided little competitive incentive relative to pricing the first ship. In fact, each contractor has an incentive to ensure the low ship quantities are priced to offset any potential savings associated with a competitor's favorable high quantity prices.

We believe that the sharp decline in the marginal cost for the third ship can be attributed to an entirely different reason. The Navy industrial study, "Arleigh Burke Class (DDG-51) Industrial Base Study," April 1990, indicated the need to retain both specialized surface combatant shipbuilders and reported that the Navy must award each shipbuilder at least two ships to keep them in business. Therefore, we concluded that BIW and ISI believed that they would receive two ships each as a result of past award patterns and the Navy industrial study. Taking this into consideration, the two shipbuilders had little incentive to competitively bid at other than the three-ship quantity. We

believe this marginal cost analysis shows that contractor pricing strategies focused on winning the third ship in the five-ship requirement; therefore, the actual mobilization premium associated with a 4:1 or 5:0 split may be greater than what is identified in the business clearance memorandums. Additionally, proposed prices at other than the three-ship quantity are not necessarily the result of adequate price competition.

Profit Analysis. Prices submitted by contractors were based on a strategy to influence the Navy to make the larger part of the award to them. ISI officials stated that its strategy was to propose a high price for a single or a small number of ships to make it undesirable for the Navy to award ISI the smaller part of the contract. This tendency is also true for BIW, as illustrated in the examination of best and final prices in Appendix B. Therefore, the Navy potentially paid higher prices to ISI and BIW in FYs 1989 and 1990, respectively, for the five-ship competitions and to both in FY 1991 when the award was reduced to four ships, than were justified based on supporting costs of contract performance. However, the Navy did not request certified cost and pricing data and perform a cost analysis after indications that the acquisition strategy for the DDG-51 program needed to be modified. As a result, dual sourcing the DDG-51 Destroyers resulted in higher prices for certain quantities than would otherwise be offered based on performance costs. Further, because the Navy relied solely on competition and did not negotiate with these contractors, possible opportunities to further reduce contract prices were lost.

Our review of marginal profit indicated that profit for both contractors either increased in real terms or as a percentage of cost, or both, as the number of ships increased. For example, in the case of the FY 1991 proposal from ISI, marginal profit increased to 21 percent on the third ship compared to marginal profit of 17 percent on the second ship, as the following graph illustrates.



In addition to the increase in marginal profit, profit as bid increased 1 percent from the one-ship to the two-ship combination and an additional 1 percent from the two-ship to the three-ship combination. ISI officials provided a partial explanation for the increase in profit by stating that the manner in which ISI determined ship prices was a strategy associated with making it desirable for the Navy to award the larger number of ships to ISI and that the decision was not based on efficiency. Therefore, profit and the percentage of profit increased. We believe that if real competition existed, profit for the third ship would decrease.

In FYs 1990 and 1991, ISI proposed increasing total profit rates as ship quantities increased, starting at 15 percent for one ship and increasing to 17 percent for three or four ships. During the same period, BIW's total profit was 15 percent, also indicating no decline in total profit percentage. This pattern of increasing total profit percentages does not support the Navy's position that adequate price competition existed at the three-ship quantities because ISI would have been motivated to reduce total profit percentage for larger quantities if, in fact, they considered BIW a competitive threat.

In FY 1991, because of fiscal constraints, the Navy reduced the award quantity to four ships, two to each yard. Consequently, the Navy potentially did not receive the benefit of any real competitive influence on award prices because, as in the FY 1990 annual buy, the contractors had priced the one- and two-ship combinations for the FY 1991 options to make it desirable for the Navy to award one of them a three-ship award. The "Arleigh Burke Class (DDG-51) Industrial Base Study," April 30, 1990, states:

> The best case and most economic production rate of ARLEIGH BURKE Class DDG 51 destroyers is five ships per year competitively awarded to two qualified ship yards. A rate of four and a half ships per year is a feasible alternative because competitive procurement can continue. Reducing the annual buy to four results in the loss of a competitive acquisition strategy, increased unit cost, and the beginning of the erosion of the industrial base. Reducing the annual buy to three will result in the closure of one shipyard, damage to the vendor base, disruption and inefficiency in the AEGIS Weapon System production base, and erosion the combat system engineering base. Recovery will be at best difficult, costly and time consuming.

Except for FY 1992, in which five ships are expected to be awarded, the Navy plans to award four or less ships per year from FY 1992 through FY 1997.

Adequate price competition. The Navy did not meet the criteria for adequate price competition in a dual source program, as stated in Defense Federal Acquisition Regulation Supplement (DFARS), subpart 215.8, "Price Negotiation." Subpart 215.804-3(b)(S-70) states the criteria as follows.

> (i) In the case of dual source programs, adequate price competition normally exists when prices are solicited across a full range of step quantities, normally including a 0-100 per cent split from at least two offerors who are individually capable of producing the full quantity, and
>
> (A) the award is made to the offeror with the lowest evaluated price;
>
> (B) when the award is split, if the combined price of both awards is the lowest evaluated price in the range of offers submitted; or
>
> (C) when the combined price of both awards is not the lowest evaluated price in the range of offers submitted, if the price reasonableness of all prices awarded is clearly established on the basis of price analysis.

The Navy did not meet the four criteria for adequate price competition and therefore should have required that the contractors submit certified cost or pricing data, as required under the Truth in Negotiations Act.

Prices across a full range of quantities. The Navy did not solicit prices across a full range of quantities. Also, the Navy did not evaluate all of the bid prices. Specifically, the Navy did not solicit any 5:0 splits because of its concern that one of the two shipbuilders would go out of business if it did not receive an award in any given year. Additionally, the Navy solicited, but did not adequately evaluate, the 4:1 split bids because, as indicated in the Navy's industrial base study, BIW and ISI need at least two ships annually to maintain sufficient manning levels to sustain the dual source competition.

Offerors' capability to produce full quantities. Only one of the two shipbuilders was capable of producing the full quantity of required ships. ISI officials have stated that ISI can produce about seven Destroyers per year, well above the maximum solicited quantity of five ships per year. BIW officials stated that BIW can produce only 2.5 ships per year or an award of three ships every other year. Additionally, BIW officials

stated that BIW will not be able to increase capacity because of zoning, environmental, and geographic limitations.

Lowest price award. The Navy did not award the DDG-51 Destroyer contracts for FYs 1989 through 1991 to the individual shipyard with the lowest total price. Also, the Navy did not split the contract awards between the shipyards in a manner that resulted in the lowest combined price for each fiscal year. The Navy's reason for awarding contracts based on other than the lowest total price and lowest combined price was to satisfy the mobilization objective. As shown in the charts below, ISI offered the lowest total price of * in FY 1991. The lowest combined total prices were * (4:1 split) in FY 1989, * (1:4 split) in FY 1990, and * (1:3 split) in FY 1991.

AWARD COMBINATIONS
(dollars in millions)

FISCAL YEAR 1989

Ship Combination	BIW	ISI	Total	Action
4:1	*	*	*	Not Considered
3:2	$610.1	$466.5	$1,076.6	Award Price
2:3	*	*	*	Lower Combined Price
1:4	*	*	*	Not Considered

FISCAL YEAR 1990

Ship Combination	BIW	ISI	Total	Action
4:1	*	*	*	Not Considered
3:2	*	*	*	Higher Combined Price
2:3	$511.9	$614.2	$1,126.1	Award Price
1:4	*	*	*	Not Considered

FISCAL YEAR 1991

Ship Combination	BIW	ISI	Total	Action
4:0	*	*	*	Not Considered
3:1	*	*	*	Not Considered
2:2	$513.5	$500.9	$1,014.4	Award Price
1:3	*	*	*	Not Considered
0:4	*	*	*	Not Considered

* Contractor confidential or proprietary data has been deleted.

Specifically, the Navy could not award the Destroyer contracts in FYs 1989 and 1990 to the shipyard with the lowest total price because the Navy did not request that BIW and ISI submit bids for all five ships; therefore, the Navy did not plan to award the contracts to a single shipyard. In FY 1991, the Navy did not award the contract to the shipyard with the lowest total price (ISI) because of its concern that BIW needs to be awarded a minimum of two ships per year to stay in business. Since the Navy did not award the DDG-51 Destroyer contracts for FYs 1989 through 1991 to the shipyard with the lowest total price or to the shipyard with the lowest combined total prices, the Navy paid premium prices in each fiscal year.

Price analysis. Defense Federal Acquisition Regulation Supplement, subpart 215.804-3(b)(S-70), states that in the case of split awards when the combined price of both awards is not the lowest evaluated price in the range of offers submitted, the reasonableness of all prices awarded must be established based on a price analysis to ensure price competition exists. Federal Acquisition Regulation, part 15.804-3 (b)(3), states that a price is "based on" adequate price competition if it results directly from price competition or if a price analysis alone demonstrates that the proposed price is reasonable compared with recent prices for the same items purchased in comparable quantities, terms, and conditions.

The Navy performed price analyses, which entailed comparing total prices received from the suppliers and prior proposed prices and contract prices with current proposed prices for the same item. The Navy analyses concluded that the proposed prices for the quantities awarded were fair and reasonable. We do not consider the Navy's price analyses alone to be sufficient to ensure fair and reasonable prices because of the lack of a truly competitive environment as indicated by:

o actual profit increasing at an increasing rate;

o marginal analyses, which showed cost efficiency dropped on the fourth ship of the four-ship combination even though ISI could produce at least seven DDG-51's annually;

o the relatively low quantity of ships and the knowledge that BIW and ISI have of each other's operations; and

o mobilization premiums paid by the Navy to maintain the mobilization base.

In our opinion, a cost analysis is essential to support the DDG-51 contract award process.

Survivability of Surface Combatant Yards

The continuation of the competitive dual source acquisition strategy may adversely affect the survivability of one or both shipyards. In the absence of commercial work or foreign military sales for ship construction, both yards are highly and increasingly dependent upon the DDG-51 program. BIW and ISI have indicated that they must make at least two DDG-51's annually to effectively remain in the competitive dual source program.

The original acquisition plan for the DDG-51 called for five ships per year as the optimum award pattern to preserve the industrial base while providing for price competition. However, in FY 1991, the award quantity was reduced to four. Navy plans call for about four ships annually.

TOTAL AWARDS EACH FISCAL YEAR

FY	91	92	93	94	95	96	97	98	99	Total
Number of Ships	4	5	4	3	3	4	3	5	5	36

This acquisition profile is not sufficient to sustain a truly competitive dual source acquisition strategy without damaging the vendor base. This problem has been worsened by the early cancellation of the Amphibious Assault Ship Landing Helicopter Dock (LHD) program at ISI. Originally, the Navy requested 11 LHD ships, but after many affordability issues, it reduced the request to 5. The last LHD, which was awarded in FY 1991, will be delivered in February 1996. Beginning in FY 1996, ISI will have excess production capacity because of the reduction in the LHD program. The impact of reduced buys of the DDG-51 on the industrial base was emphasized in "The Arleigh Burke Class (DDG-51) Industrial Base Study," April 30, 1990, which stated:

> Reducing the annual buy to three will result in the closure of one shipyard, damage to the vendor base, disruption and inefficiency in the AEGIS Weapon System production base, and erosion of the combat system engineering base. Recovery will be at best difficult, costly and time consuming.

Simply stated, the absence of commercial work and the lower buy quantity will reduce total work-in-process over the course of several years resulting in significant excess capacity.

WORK-IN-PROCESS (WIP FOR BIW AND ISI)

Fiscal Year	1991	1992	1993	1994	1995	1996	1997	1998	1999
WIP for BIW **	*	*	*	*	*	*	*	*	*
WIP for ISI **	*	*	*	*	*	*	*	*	*
WIP Combined	*	*	*	*	*	*	*	*	*
Cumulative Impact of Planned DDG-51 Awards	0	5	9	12	15	19	22	27	32
DDG-51 Estimated Deliveries From Planned Awards	0	0	0	0	0	(5)	(9)	(12)	(15)
Forecasted WIP Both Shipyards	*	*	*	*	*	*	*	*	*

** Estimated deliveries are included in WIP from FYs 1991 through 1995.

The lower programmed acquisition profile, especially in FYs 1994 through 1997, will effectively preclude price competition and potentially jeopardize the shipbuilding industrial base. For this reason, we consider separate sole source awards and obtaining insight into contractor costs as an imperative so that the Navy can effectively and efficiently manage the downsizing of this capacity. An analysis of the decline of the U.S. shipbuilding industrial base in Appendix C.

Guidance on cost-benefit analyses. Although DoD Directive 5000.1 requires a cost-benefit analysis of dual sourced programs, it does not address how to conduct the analysis. On June 8, 1990, the Under Secretary of Defense for Acquisition issued direction that all dual sourced programs will be reevaluated at all program reviews. The Assistant Secretary of the Navy (Research, Development and Acquisition) expanded the OSD guidance on July 19, 1990. The Navy guidance required that dual sourced programs be reevaluated at all future milestone reviews and Defense Acquisition Board meetings on major defense acquisition programs. We commend the Navy for amplifying OSD's guidance, and we agree that the directed analysis, when performed, will correct the problem of a lack of guidance. However, at the completion of the audit, the DDG-51 program office had not implemented the Assistant Secretary of the Navy's instructions.

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* Contractor confidential or proprietary data has been deleted.

Industrial base analysis. The competitive dual source acquisition strategy for the DDG-51 did not consider the impact of the decline from a 600-ship Navy to a 450-ship Navy. The eroding industrial base has been a matter of concern to Navy officials over the past decade. In a recent study, "United States Shipbuilding Industry, U.S. Shipbuilding Industrial Base 1980-1990," July 1990, the Navy concluded that:

o during the 1980's, the number of yards building complex surface combatants declined from four to two;

o the decline in the number of yards was directly related to the decline in commercial orders with the elimination of construction differential subsidies in 1981;

o only one commercial vessel is on order in any American yard; and

o expanded Navy ship programs in the 1980's were unable to protect the industrial base from the loss of commercial work.

A reduction to a 450-ship Navy may cause the industrial capacity to exceed requirements. Thus, the need may shift from maintaining existing capacity to preserving some of the industrial base for future use. As of the date of our review, the Navy had not addressed this issue in the DDG-51 acquisition strategy.

Effect of the Competitive Dual Sourcing Decision

The primary benefit of the competitive dual sourcing decision on the DDG-51 is that it has maintained the two surface combatant shipyards in the face of a rapidly eroding industrial base. When the initial decision to proceed with a competitive dual source acquisition strategy was made, the premiums early on in the program were considered necessary in order to achieve overall program savings on a relatively large quantity of ships at high annual buy levels. With the changes in both the overall program and the annual buys, the benefits of further competition are offset by the loss of economies of scale and stable production rates at each contractor coupled with the high risk associated with sustaining two competitors in an uncertain business environment. Through FY 1991, the Navy has expended approximately $407 million in stated mobilization premiums to make awards at other than the lowest evaluated split award price. Cost overruns occurring on existing contracts further diminish the indeterminate savings received by the Navy as a result of the dual source competition. We estimate that it could cost as much as an additional $1.4 billion to maintain dual source competition through FY 1999. While the initial $407 million in mobilization premiums may have been justified in order to achieve some competitive influence on prices, it does

not appear, based on quantity reductions, that the Navy will achieve a situation where contracts are awarded at the lowest evaluated price on a consistent basis. Therefore, the benefits of competition in lowering unit costs have already occurred, and further action is warranted to protect the Government's interests.

Actual historical and potential costs to maintain two shipbuilders are not readily quantifiable because proposals for award of the entire quantity to either yard were not solicited. For example, the Navy has never solicited either a 5:0 or a 4:0 proposal under this dual source program. Instead, the Navy solicited a maximum 4:1 split, which indicates to the contractors that they will receive an award for at least one ship. Additionally, our review of the marginal cost associated with the four-ship prices for each yard indicated that marginal cost for the fourth ship from both yards rose significantly. While the cost increase is understandable for BIW, which has limited facilities and therefore has the capacity to produce only about 2.5 DDG-51 Class Destroyers annually, we find it quite perplexing that ISI would experience a similar cost increase at 2.5 Destroyers annually as BIW. The impact of the increase in marginal cost for the fourth ship may potentially understate the real mobilization premium so that the actual premium may be higher than our estimate of $1.4 billion. Analyses of the calculation of the premium cost to date and of the projected future costs are in Appendix B.

Conclusion

We believe that the use of separate sole source contracts at each of the two shipyards would provide the Navy with an opportunity to achieve cost benefits through the use of contract negotiations and the production efficiencies associated with stable production rates. For example, although the FY 1987 follow ship contract was classified as competitive, the Navy considered the BIW proposed price of $269.6 million excessive. The Navy and the contractor negotiated a target price of $189.9 million on the fixed-price incentive contract, resulting in a reduction of about $79 million. However, the Navy did not assess whether this price was reasonable or whether the contractor could perform at that target price. Additionally, a stable production rate should lead to production efficiencies that potentially could reduce costs to the Navy. For example, a stable production could lead to leveling of personnel requirements and use of economic buy quantities. Both contractors emphasized the potential for cost savings on the DDG-51 if the production rates were stabilized versus the fluctuating award pattern that has characterized the program.

The DDG-51's acquisition strategy needs to be revised in light of decreasing Navy ship construction requirements. As previously

stated from "The Arleigh Burke Class (DDG-51) Industrial Base Study," April 30, 1990, a production rate of five ships per year is required to sustain price competition. A reduction to four ships eliminates price competition and begins the erosion of the industrial base. Further, the study concluded that reducing the annual buy to three ships will result in the closure of a shipyard. The Navy should, starting with the FY 1992 buy, balance affordability, cost-effectiveness, and industrial base concerns. The Navy must downsize surface combatant capacity by assigning work load through sole source awards to ensure cost-effective procurement at the reduced quantities commensurate with affordability and industrial base concerns. Under the current acquisition strategy, competition cannot be relied upon to obtain fair and reasonable prices due to the lack of true competition. In addition, downsizing would have a positive effect by providing a stable workload base and allowing the yard to plan effectively.

RECOMMENDATIONS FOR CORRECTIVE ACTION

We recommend that the Assistant Secretary of the Navy (Research, Development and Acquisition):

1. Discontinue competitive dual sourcing of the DDG-51 Aegis Destroyer, beginning with the FY 1992 buy, and proceed with separate sole source, negotiated contract awards.

2. Obtain certified cost or pricing data and perform thorough field pricing support and cost and price analyses to establish the reasonableness of contract prices. Should-cost analyses should also be performed as necessary.

3. Direct that a cost-benefit analysis be performed on continued noncompetitive dual sourcing of the downsized DDG-51 program in compliance with the direction provided by the Deputy Under Secretary of Defense for Acquisition and the Assistant Secretary of the Navy (Research, Development and Acquisition).

4. Perform an in-depth industrial base analysis matching known and projected surface combatant requirements with existing shipyard capabilities to determine if maintaining two surface combatant yards through the Future Years Defense Programs period is feasible and practical. If the analysis concludes that it is not economically feasible to maintain existing surface combatant capacity, the analysis should include steps to selectively downsize available capacity in a cost-effective manner.

MANAGEMENT COMMENTS

In addition to the comments received from the Assistant Secretary of the Navy (Research, Development and Acquisition), we received comments from the Naval Sea Systems Command. Both sets of

comments were essentially the same. Therefore, for the purpose of synopsizing management comments, we have summarized and responded only to the comments from the Assistant Secretary.

The Assistant Secretary nonconcurred with our finding that the Navy's acquisition strategy for the DDG-51 program was not cost-effective. The Assistant Secretary said that the Navy's acquisition strategy was cost-effective because:

o Navy budget estimates were consistently higher than actual payments;

o return costs/actual labor hours showed that the contracts were aggressively structured;

o no evidence exists of contractor inefficiency; and

o parametric comparison to the CG-47 Cruiser program shows the introduction of a second competitive source dramatically lowers bid prices for the incumbent and the competitor.

The Assistant Secretary also stated that the Navy's acquisition strategy has been sensitive to the industrial base concerns. The DDG-51 awards involved a competitive investment in order to sustain the remaining surface combatant shipbuilders as viable competitors.

The Assistant Secretary disagreed that the Navy was not performing cost-benefit analyses on its dual source programs, as required by the Under Secretary of Defense for Acquisition. Also, the Navy did not agree with the IG's computation of $674 million in premiums and $1.7 billion in potential additional costs. According to the Navy, the IG's computations were based on an acquisition strategy that assumed that the shipyards will propose, on a sole source basis, the same amounts that have been proposed in competitive dual source acquisitions. Additionally, the Assistant Secretary stated that the IG's expectation of an additional material expense reduction in the form of a cost decrement is flawed. The Navy nonconcurred with Recommendations 1. and 2. because it felt that the recommendations were based on faulty analysis and that Recommendation 1. was in conflict with the Competition in Contracting Act. The Assistant Secretary also nonconcurred with Recommendation 3. and stated that they were complying with the Under Secretary of Defense for Acquisition and their own guidance regarding cost benefit analysis. The Navy concurred with Recommendation 4. The complete texts of management's comments are included in Part IV of the report.

AUDIT RESPONSE TO MANAGEMENT COMMENTS

We have carefully considered the Assistant Secretary of the Navy's comments to the draft report and have revised our report to reflect a premium of at least $407 million that the Navy expended for maintaining two sources (Appendix B). The revised premium was derived by deleting the premiums associated with the FY 1985 and FY 1987 buys. We also revised our projections of potential costs for out years from $1.7 billion to $1.4 billion by eliminating cost associated with an additional material decrement factor (Appendix B). However, we disagree with the Navy's position that it is inappropriate to predetermine the quantity split to be placed with each firm and issue separate sole source contracts. Our position is not based on industrial base factors alone. Rather, we concluded that the competition was not controlling eventual ship costs, and the Navy relied on competition in order to avoid addressing the pressing need for an industrial base policy for the shipbuilding industry.

Competitive influence. The Navy's competitive acquisition strategy for the award of fixed-price incentive fee contracts provides little alternative but for contractors to underbid the target prices on competitive proposals. Subsequently, the contractors obtain Government reimbursement for cost overruns, along the share line between target and ceiling prices and through engineering changes that effectively increase contract price. This situation exists because:

- the DDG-51 program represents the primary projected source of future revenue for these firms with only limited potential for additional Navy work in the present fiscal environment;

- the DDG-51 program is being reduced from a total buy and an annual procurement perspective, although the prices previously bid have become the baseline for Navy price analyses; and

- price analyses alone are insufficient and do not consider the reasonableness of the proposed target prices.

Advantages and disadvantages of competition. Competition is an internal control to protect the Government from excessive contract prices but provides neither protection against underbidding target prices nor control of subsequent cost overruns. The Government's interest is not protected by awarding contracts at underbid target prices or so called "aggressive pricing" by the Navy, and subsequently expecting satisfactory cost performance to occur. There is a consistent pattern of cost overruns relative to these target prices being borne by the Government. These cost overruns must be addressed in a sole source environment with the contractor possessing significant

negotiating leverage due to the magnitude of the work-in-process inventory. Congress recognized this problem in the FY 1992 DoD Appropriations Act, concluding that:

o insufficient attention was being directed toward restricting prior and current shipbuilding cost growth by the Navy,

o reliance was being placed on external funds to resolve funding problems, and

o an apparent lack of fiscal discipline existed.

The appropriation provided a net additional amount of $81.9 million to cover cost growth on competitive DDG-51 awards. We believe that a substantial portion of this cost growth is associated with contractor underbidding as a result of the competition and the Navy not establishing the fairness and reasonableness of contract target prices. The result is a delay in the recognition of the actual costs to perform under the contract rather than a true price reduction based on competition.

Also, competition provides no control of mobilization premiums of $1.4 billion forecasted to be paid by the Navy. These premiums are based on selection of other than the combination of contract awards with the lowest evaluated price based on target prices, where a zero award option to one firm is evaluated. The benefits of competition are offset by awards at other than the lowest evaluated price. A pattern of such awards, as is the case with the DDG-51 program, minimizes or eliminates any competitive influence on contract prices. This situation occurs because the competitors recognize that factors other than price are entering the contract award decision.

The Navy acquisition strategy has led to placing more ships on contract than can be fully funded because of the "aggressive pricing" of the contract target prices. This situation occurs because the contract price at the time of award is the target price. Therefore, while the contracts were fully funded at the time of award, subsequent additional funding must be obtained to fund cost overruns above the target price. The Navy has made no provisions to fund these contracts to the ceiling prices. Such provisions would be appropriate in situations where the conditions of "aggressive pricing" coupled with a history of cost overruns above target price are present. Also, our position is consistent with the DoD policy that contracts should be fully funded.

The lack of contractor certified cost or pricing data, and Government cost analyses and technical evaluations of the contractor proposals, both of which are established internal controls when adequate price competition is lacking, has in this

case impaired the ability of the Government to determine the fairness and reasonableness of the contract target prices. Without such a determination regarding the target prices, funding up to only the target prices could permit contracting for additional ships by understating budget projections of ship costs.

Separate sole source contracts. Our recommendations would not result in a conflict with the Competition in Contracting Act. The Act never intended that competition be used or continued in situations where there is compelling justification to use negotiated sole source contracts. For instance, it states that procedures other than competition may be used when a contract needs to be awarded a particular source or sources to maintain a facility or manufacturer available for furnishing property or services in case of a national emergency or to achieve industrial mobilization.

The Assistant Secretary states in his response that separate sole source, negotiated contracts should not be implemented unless it can be factually demonstrated that competitive dual sources result in higher costs to the Navy and do unacceptable harm to the industrial base. We have demonstrated that the Navy is incurring substantial mobilization premiums to sustain the two shipbuilders in the competitive dual source program. The Navy contention that elimination of the competition, while retaining both sources, will result in price increases greater than the efficiencies associated with stable production rates is not substantiated by any analysis made available to us. We consider the only controls over such premiums paid to sustain two sources for industrial base purposes to be those established for award and administration of sole source contracts. Concerning harm to the industrial base, establishment of an environment of overly "aggressive pricing" can result in the financial inability of a contractor to perform under the contract as well as jeopardize their viability as a going concern. In either case, we question whether the Navy can hold shipbuilding contractors to fixed-price contracts where work-in-process critical to national defense would be placed at substantial risk. There is false economy to the Government in this competitive strategy, because the Government will likely assume the financial risk that would otherwise normally rest with the contractor on a fixed-price type contract.

The Navy position is based on savings estimated to have been achieved when a competitive dual source acquisition strategy is introduced to a previously sole source procurement. This situation is not comparable to an analysis of discontinuing a competitive dual source acquisition strategy after competition has been introduced when faced with both a significant decline in the overall business base for the contractors involved as well as reductions in the annual buys of the program under discussion.

In our opinion, the perceived initial beneficial effect of the DDG-51 competition on target prices is primarily a "buy-in" that cannot be expected to continue into the future as evidenced by these target prices not being achieved presently. The Navy position is also premised on awarding contracts based on the lowest evaluated price of the various combinations of contract awards, and the contractors achieving satisfactory cost performance. Neither of these conditions has occurred. The recommended industrial base analysis and overt shipbuilding industrial base policy should not, in our opinion, be postponed by using price competition as an allocation process, then subsequently awarding contracts at other than the lowest evaluated price based on undisclosed factors external to the competition. Competition is not intended to be used as an instrument for administration of a defacto industrial base policy without the oversight such a policy would otherwise require. In our opinion, the Navy needs to determine the best approach to supporting the two presently inconsistent goals of sustaining the surface combatant industrial base and obtaining the lowest overall contract prices for DDG-51 destroyers.

Cost-benefit analysis. The Assistant Secretary believes that the Navy has complied with guidance on cost-benefit analyses and therefore nonconcurred with Recommendation 3. The Navy did not provide any evidence that it complied with the Deputy Under Secretary of Defense for Acquisition and the Assistant Secretary of the Navy (Research, Development and Acquisition) memorandums on the cost-effectiveness of continuing its second source strategy. Treating dual sources noncompetitively is not contrary to the intent of the memorandums. The purpose of the cost-effectiveness analysis is to determine whether there is a continued benefit to maintaining two sources. If the Navy can prove a continued need for two sources, the IG recommends that each source be treated as a noncompetitive sole source, and that certified cost or pricing data be requested by the Navy and used in the negotiation of ship contracts.

Naval Center for Cost Analysis Study. We disagree that studies already performed support continuation of the DDG-51 dual source competition and that a cost-benefit analysis is not needed. The Naval Center for Cost Analysis stated in its study, "The Impact of Competition on a Navy Ship Construction Program," August 1986, that the effects of competition should be individually assessed because applicable assumptions vary. By using the Naval Center for Cost Analysis Study, "NCA [Naval Center for Cost Analysis] Competition Case Study, CG-47 Experience," February 1988, as the basis for justifying the dual source acquisition strategy of the DDG-51 program, the Navy used the study in a manner for which it was not originally intended. In addition, the cruiser study did not consider dual source premiums. DFARS, subpart 215.804-3, states that contracting officers must make a determination of adequate price competition

on a case-by-case basis in the case of dual source programs. Finally, the Regulation states that even in those cases where adequate price competition exists, certain cases may require that some data be obtained in support of the price analysis performed.

In-depth industrial base analysis. The Assistant Secretary concurred with Recommendation 4. but failed to provide a completion date for the action.

STATUS OF RECOMMENDATIONS

		Response Should Cover:		
Number	Addressee	Concur/ Nonconcur	Proposed Action	Completion Date
1.	ASN (RDA)	X	X	X
2.	ASN (RDA)	X	X	X
3.	ASN (RDA)	X	X	X
4.	ASN (RDA)			X

PART III - ADDITIONAL INFORMATION

Appendix A - Synopses of Prior Audit Reports
Appendix B - Effect of Dual Source Decision
Appendix C - Erosion of U.S. Shipbuilding Industrial Base
Appendix D - Summary of Potential Benefits Resulting from Audit
Appendix E - Activities Visited or Contacted
Appendix F - Report Distribution

APPENDIX A: SYNOPSES OF PRIOR AUDIT REPORTS

Office of the Inspector General, Report No. 87-167, "Final Report on the Survey of the DDG-51 Class Guided Missile Destroyer," June 9, 1987, concluded that the DDG-51 program was not yet mature, had critical milestones forthcoming, and had program decisions that remained to be made. Additionally, the report disclosed that critical subsystems were not available for testing and evaluation and a fully integrated ship was several years away from the report date. There were no recommendations on the program.

Office of the Inspector General, Report No. 88-163, "Dual-Source Procurement Techniques," June 7, 1988, disclosed that dual source procurement techniques usually did not result in adequate price competition. The report recommended that the Military Departments obtain certified cost or pricing data and include the defective pricing recovery clause in all pricing actions where the award may be split between the offerors. OSD and the Services nonconcurred with this recommendation stating that the application of certified cost and pricing data should be continued on a case-by-case basis and the decision should be made by the contracting officer. DFARS 215.804-3 had been revised to clarify the guidance on what is considered adequate price competition in the case of dual source programs. The Office of the Assistant Secretary of Defense (Production and Logistics) also issued a policy memorandum to clarify to DoD contracting officers that dual source procurement does not automatically ensure that adequate price competition exists.

In addition, the report disclosed that the Military Departments used methods to perform cost-benefit analyses of dual sourcing that did not consider all pertinent costs and overstated potential savings to the Government. The report recommended that the Assistant Secretary of Defense (Production and Logistics) issue a dual source policy statement that establishes standard procedures for performing cost-benefit analyses and for monitoring and controlling dual source procurement costs. OSD concurred with the recommendation and the Assistant Secretary of Defense (Production and Logistics) issued a policy memorandum on April 28, 1988, that addressed dual sourcing of major programs with a list of specific elements to be considered in determining the merits of introducing alternative sources. The report also recommended that DoD expand the DFARS, part 17, to include a special subpart awarding contracts for dual source acquisitions. OSD concurred and indicated that it planned to review the

coverage of dual source competition in the DFARS and ensure that proper attention and guidance is provided.

General Accounting Office, Report No. GAO/NSIAD-89-181 (OSD Case No. 8153), "Contract Pricing: Dual Source Contract Prices," September 26, 1989, disclosed that on four of the eight contracts reviewed, contracting officers accepted contractor proposed prices because they believed adequate price competition existed. GAO recommended that the Secretary of Defense direct appropriate personnel to revise the DFARS to provide contracting officers guidance for determining when adequate price competition exists in dual source contracts. The DFARS was subsequently revised. GAO stated that the revision did not provide adequate guidance to contracting officers for ensuring fair and reasonable prices in dual source contracts.

General Accounting Office, Report No. GAO/NSIAD-90-84 (OSD Case No. 8149), "Navy Shipbuilding: Cost and Schedule Problems on the DDG-51 AEGIS Destroyer Program," January 17, 1990, reported that the program experienced design delays. GAO recommended that the Secretary of Defense ensure sufficient information exists to justify the award of contracts for follow ships beyond the seven then under contract. DoD nonconcurred and stated that the probability of a major problem affecting follow ships is minimal.

Office of the Inspector General, Report No. 91-036, "Report on the Audit of the DDG-51 Aegis Destroyer Program as Part of the Audit of the Effectiveness of the Defense Acquisition Board Process," January 29, 1991, disclosed that the DDG-51 Combat System's capability to accomplish its combat missions will not be fully determined until at-sea operational test and evaluation is performed in August 1991. The report concluded that the program acquisition risk, while uncertain, had been alleviated by the Navy's land-based tests and corrections of associated problems and the Secretary of Defense's reduction in the annual buy. The report made no recommendations but did state that because of the large investment, the Inspector General will consider auditing the at-sea operational test results before the full-rate production decision.

APPENDIX B: EFFECT OF DUAL SOURCE DECISION

Premiums

During FYs 1985 through 1991, the Navy expended at least $407 million (1991 dollars) as a premium for maintaining two sources for the DDG-51 Destroyer. If the Navy continues the competitive dual source acquisition strategy from FY 1992 through FY 1999, it will expend an additional $1.4 billion in premiums. An additional premium reduction can be realized if the Navy negotiates award prices with BIW and ISI based on the full range of Government cost, price, and technical analysis of contractor proposals, involving field pricing support and reliance on certified cost and pricing data during this process.

Computation of premiums. The premium is the difference between the total awarded price and the lowest overall evaluated price (the best price) offered by the two shipbuilders. The following charts depict how the premiums that were paid during FYs 1989 through 1991 and potential premiums between FY 1992 and FY 1999 were calculated.

PREMIUM BASED ON TARGET PRICE USING REGRESSION ANALYSIS
(dollars in millions)

FY	Award Price 1/	Best Price 2/	Premium (In 1986 dollars)
1991	$ 835	*	*
1990	959	*	*
1989	952	*	*
TOTAL	$2,746	$2,411	$335
PREMIUM (In 1991 dollars)			$407 3/

1/ Award prices for FYs 1987 through 1991 were deescalated to 1986 dollars.

2/ Estimated sole source prices in 1986 dollars.

3/ Premium of $335 million in FY 1986 dollars was escalated to FY 1991 dollars.

* Contractor confidential or proprietary data has been deleted.

Potential premiums. The following chart illustrates how we determined potential premiums for each year from FY 1992 through FY 1999.

POTENTIAL PREMIUMS
(dollars in millions)

FY	Number of Ships	Premium Cost $44.3 Per Ship **
1992	5	$ 221.7
1993	4	177.3
1994	3	133.0
1995	3	133.0
1996	4	177.3
1997	3	133.0
1998	5	221.7
1999	5	221.7
Total	32	$1,418.7

** We used the actual premium ($177.3 million) that the Navy incurred in FY 1991 as the base to estimate the premium that will be incurred per ship for FYs 1992 through 1999. *

* To determine the estimated potential premium, we computed an average premium per ship. The average premium of $44.3 million per ship equals the FY 1991 premium for $177.3 million divided by the four Destroyers awarded in FY 1991.

* Contractor confidential or proprietary data has been deleted.

APPENDIX C: EROSION OF U.S. SHIPBUILDING INDUSTRIAL BASE

According to Navy report, "United States Shipbuilding Industry, U.S. Shipbuilding Industrial Base 1980-1990," July 1990, during the 1980's, commercial work in American ship yards ended because of the elimination of shipbuilding subsidies. Although expanded Navy orders existed in the 1980's to meet the planned 600-ship requirement, these orders were insufficient to compensate for the loss of commercial work. During the 1980's, the shipbuilding industry lost more than 40,000 jobs from the shipbuilding and repair programs. This equates to over 100,000 lost jobs from industries supporting the shipbuilding and repair industry.

Based on this study, in 1978 the U.S. shipbuilders had 48 Navy and commercial ships on order of which the Navy had ordered 18 ships representing one-third of the total order. In 1990, the Navy also ordered 18 ships, which made up 95 percent of the U.S. shipbuilders business. Although, through FY 1990, the total number of Navy ships on order had not changed the mix of ships had changed. The number of submarines, carriers, and surface combatants under construction had decreased, while the number of auxiliary amphibious and surveillance ships under construction had increased.

These Navy developed statistics indicate that the U.S. shipbuilding industry is now heavily dependent on Navy orders, and that movement toward a 450-ship Navy, as programmed by DoD, potentially further reduces Navy orders. A 450-ship fleet requires acquisition at an average of 15 ships per year. Consequently, the U.S. shipbuilding industrial base will decline by about 38,000 jobs. This conclusion was reinforced when the Navy, issued a study entitled, "Report of the Effects of the Five-Year Navy Shipbuilding, Conversion and Repair Program on Peacetime and Mobilization Manpower Facilities and Readiness of Public and Private Shipyards and the Supporting Industrial Base," January 1990, which stated in part that:

> Navy shipwork alone will not sustain the U.S. Shipbuilding Industrial Base. Out-year budget reductions are expected to reduce Navy shipwork, further jeopardizing long term viability of some private shipyards and supporting equipment manufacturers.

APPENDIX D: SUMMARY OF POTENTIAL BENEFITS RESULTING FROM AUDIT

Recommendation Reference	Description of Benefit	Type of Benefit
1.	Economy and Efficiency. Discontinue competitive dual sourcing of the DDG-51 Aegis Destroyer beginning with the FY 1992 buy.	Undeterminable monetary benefit because the effect that competition has on competitive dual source pricing is undeterminable.
2.	Compliance with Regulations. Ensure that certified cost or pricing data are obtained. Also, ensure that through field pricing support and cost and price analyses are performed to establish reasonableness of contract prices. Additional emphasis should be placed on contracting officer reliance on certified cost and pricing data in the negotiation process.	Undeterminable monetary benefit because benefits of obtaining data are not readily quantifiable.
3.	Compliance with Regulations. Cost-benefit analysis be performed on the DDG-51 program in compliance with direction provided by the Deputy Under Secretary of Defense for Acquisition.	Undeterminable direct monetary benefit because benefits of performing cost-benefit analysis are not readily quantifiable.

APPENDIX D: SUMMARY OF POTENTIAL BENEFITS RESULTING FROM AUDIT (cont'd)

Recommendation Reference	Description of Benefit	Type of Benefit
4.	Internal Control. Perform in-depth industrial base analysis to realistically determine if maintaining current surface combatant capacity is feasible and practical. If it is not economically feasible or practical to maintain the present capacity at the two surface combatants, devise steps to selectively downsize the available capacity in a cost-effective manner.	Nonmonetary.

APPENDIX E: ACTIVITIES VISITED OR CONTACTED

Office of the Secretary of Defense

Office of the Under Secretary of Defense for Acquisition, Washington, DC
Office of the Assistant Secretary of Defense (Production and Logistics), Washington, DC
Office of the Assistant Secretary of Defense (Program Analysis and Evaluation), Washington, DC
Director, Research and Development, Procurement Cost Analysis Division, Washington, DC

Department of the Navy

Office of the Assistant Secretary of the Navy (Research, Development and Acquisition), Washington, DC
Assistant Chief of Naval Operations for Surface Warfare, Surface Warfare Division, Surface Warfare Plans and Requirements Branch, Washington, DC
Assistant Chief of Naval Operations for Surface Warfare, Surface Warfare Division, Ship Conversion Manager, Washington, DC
Assistant Chief of Naval Operations for Surface Warfare, Surface Combat Systems Division, Head of Aegis Cruiser Destroyer Branch, Washington, DC
Commander, Naval Sea Systems Command, Arlington, VA
Commander, Naval Sea Systems Command, Contracting Policy, Arlington, VA
Commanding Officer, Supervisor of Shipbuilding, Conversion and Repairs, Bath, ME
Commanding Officer, Supervisor of Shipbuilding, Pascagoula, MS
Head, Naval Center for Cost Analysis, Washington, DC
Supervisor of Shipbuilding Management Group, Washington, DC
Supervisor of Shipbuilding, Bath Iron Works, Bath, ME
Supervisor of Shipbuilding, Ingalls Shipbuilding Incorporated, Pascagoula, MS
Naval Sea Systems Command Shipbuilding Support Office, Philadelphia Naval Shipyard, Philadelphia, PA
Deputy Chief of Naval Operations for Plans, Policy, and Operations, Mobilization Policy, Arlington, VA

APPENDIX E: ACTIVITIES VISITED OR CONTACTED (cont'd)

Defense Agencies

Defense Contract Audit Agency, Bath Iron Works, Bath, ME
Defense Contract Audit Agency, Ingalls Shipbuilding Incorporated, Pascagoula, MS
Defense Logistics Agency, Alexandria, VA

Non-Government Activities

Bath Iron Works, Bath, ME
Ingalls Shipbuilding Incorporated, Pascagoula, MS

APPENDIX F: REPORT DISTRIBUTION

Office of the Secretary of Defense

Under Secretary of Defense for Acquisition
Under Secretary of Defense for Policy, Assistant for Administration
Assistant Secretary of Defense (Production and Logistics)
Assistant Secretary of Defense (Program Analysis and Evaluation)
Comptroller of the Department of Defense, Deputy Comptroller for Management Systems
Director, Defense Research and Engineering

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, Naval Sea Systems Command
Comptroller of the Navy

Non-DoD Activities

Office of Management and Budget
U. S. General Accounting Office, NSIAD Technical Information Center

Congressional Committees:
- Senate Subcommittee on Defense, Committee on Appropriations
- Senate Committee on Armed Services
- Senate Committee on Governmental Affairs
- Ranking Minority Member, Senate Committee on Armed Services
- House Committee on Appropriations
- House Subcommittee on Defense, Committee on Appropriations
- Ranking Minority Member, House Committee on Appropriations
- House Committee on Armed Services
- House Committee on Government Operations
- House Subcommittee on Legislation and National Security, Committee on Government Operations

PART IV - MANAGEMENT COMMENTS

Secretary of the Navy

MANAGEMENT COMMENTS FROM THE DEPARTMENT OF THE NAVY

THE ASSISTANT SECRETARY OF THE NAVY
(Research, Development and Acquisition)
WASHINGTON, D C 20350-1000

OCT 25 1991

MEMORANDUM FOR THE DEPARTMENT OF DEFENSE ASSISTANT INSPECTOR GENERAL FOR AUDITING

Subj: DRAFT REPORT ON THE NAVY DUAL SOURCE PROGRAM FOR THE DDG-51 AEGIS DESTROYER (PROJECT NO. OAE-0089) - ACTION MEMORANDUM

Ref: (a) DODIG memo of 24 Jun 91

Encl: (1) DON Response to Draft Audit Report
(2) COMNAVSEASYSCOM comments to Draft Audit Report

I am responding to the draft audit report forwarded by reference (a), concerning the Navy dual source program for the DDG-51 Aegis Destroyer.

Department of the Navy comments are provided in enclosure (1). We are concerned that your draft report finds that the Navy's competitive dual sourcing acquisition strategy for the DDG-51 Aegis Destroyer was not cost effective and could adversely affect the shipbuilding industrial base for surface combatants. The suggestion that the Navy may not have effectively used ship construction funds is disturbing. We have examined your findings and recommendations in detail and have determined that we disagree with your report.

We recognize that conditions are rapidly changing and decreasing Defense budgets demand greater vigilance. Our acquisition strategies are sensitive to these market conditions. We firmly believe our bias toward competitive contracting, as required by law, with our readiness to obtain and use cost or pricing data as needed, is the proper acquisition approach. Your method, whereby the Navy would predetermine the quantity split to be placed with each firm and issue sole source contracts based merely on industrial mobilization factors is inappropriate.

Specifically, we believe our documented records support findings that the DDG-51 Aegis Destroyer program was cost effective and at the same time adequately considered the surface shipbuilding industrial base.

Naval Sea Systems Command comments are provided in enclosure (2).

Gerald A. Cann

Copy to:
NCB-53
NAVINSGEN

DEPARTMENT OF THE NAVY RESPONSE

TO

DODIG DRAFT AUDIT REPORT ON THE NAVY DUAL SOURCE PROGRAM FOR THE DDG-51 AEGIS DESTROYER PROGRAM PROJECT 0AE-0089

FINDING A:

THE NAVY'S ACQUISITION STRATEGY OF COMPETITIVELY DUAL SOURCING THE DDG-51 AEGIS DESTROYER WAS NOT COST EFFECTIVE AND COULD ADVERSELY AFFECT THE SHIPBUILDING INDUSTRIAL BASE FOR SURFACE COMBATANTS. This condition occurred because:

- The Navy did not have adequate guidance on how to perform a cost-benefit analysis to support the initial dual sourcing decision.

- The Navy had not performed a cost-benefit analysis of the continued cost-effectiveness of dual sourcing.

- The Navy did not revise the competitive dual source acquisition strategy.

- The Navy relied on dual sourcing to support mobilization base requirements without adequately assessing the mobilization base requirements or the Navy's long-term ability to meet those requirements.

As a result, the Navy expended at least $674 million (1991 dollars), through FY 1991 as a premium for maintaining two sources for the DDG-51 Destroyer. If the dual source acquisition strategy is continued through FY 1999, the Navy will expend an additional $1.7 billion in premium prices. The Navy could reduce the mobilization premium by about $262.4 million from FY's 1992 through 1999 by performing cost analyses on proposals received from the two shipbuilders and by relying on the results of these cost analyses to support the contract negotiation process.

NAVY RESPONSE:

NONCONCUR. The DoDIG contention that the Navy's acquisition strategy is not cost-effective must rest on the belief that contract award prices are higher than what should have been paid. Analysis of cost performance on these contracts by any measure does not support this position. The Navy believes the prices paid under each DDG contract were fair and reasonable because, (1) Navy budget estimates were consistently higher than actual payments, (2) return costs/actual labor hours show the contracts are aggressively structured, (3) no evidence exists of contractor

Enclosure (1)

inefficiency, and (4) parametric comparison to the CG-47 Cruiser program shows the introduction of a second competitive source into shipbuilding dramatically lowers bid prices for the incumbent and the competitor. To imply it is possible to further reduce through negotiations an aggressively priced competitive bid like a non-competitive offer is inconsistent with actual experience.

In addition to being cost-effective, the Navy's acquisition strategy has also been sensitive to industrial base concerns on the DDG-51 program. In addressing this issue, the Navy has relied on the competitive market place. During the bid evaluation phase of each procurement, emphasis was placed on the lowest overall total cost to the Government. However, because of national defense and industrial mobilization needs, the Government reserved the right to make any award combination to the two sources. By exercising its discretion in the evaluation process, the Government made a determination each year as to the impact of various award combinations on the shipbuilding industrial base for surface combatants while at the same time it used the competitive process to maintain controls on the prices offered. Any resulting award involved a competitive investment in that specific contract in order to sustain the remaining surface combatant shipbuilders as viable competitors.

The Navy is following the direction of the Under Secretary of Defense for Acquisition and performing cost benefit analyses on all dual source programs. Detailed Navy guidance requiring reevaluation of the cost effectiveness of dual sourcing on an ongoing basis at regularly scheduled program reviews is provided in Assistant Secretary of the Navy (Research, Development and Acquisition) Memoranda of 19 July and 31 August 1990. Whether the Navy strategy was cost effective or not for the DDG-51 program requires a comparison between results actually achieved and some other approach such as prices based on sole source negotiations with a single shipyard or negotiations with two or more shipyards. A consideration in the decision to initiate competition with a second source on the DDG-51 program was the parametric comparison to the CG-47 Aegis Cruiser program which showed that the introduction of a second competitive source into shipbuilding dramatically lowers bid prices for both the incumbent and the competitor. The comparison relates sole source to competitive prices and clearly demonstrates the correctness of the approach followed on the DDG-51 program. The Navy regularly updates the costs and benefits of its strategy on this program through cost analyses that are performed as part of its independent proposal analysis and business clearance documentation.

The DoDIG attempts to demonstrate the Navy's approach was not cost effective by concluding the Navy spent $674 million more than it might have through the 1991 DDG procurement and that if it continues its strategy, it will spend another $1.7 billion more than necessary between FY's 1992 and 1999. These figures

are based on the mistaken assumption that Navy would save money if it selected the lowest priced dual source competitive alternative each year and further decremented that competitively established price by an additional 3.9% which the DoDIG believes represents overstated material costs. No consideration is given to the fact that these prices were established under competitive conditions or what might be the future cost or industrial base impacts of those choices. This line of comparison lacks an understanding of the long term commitment which is inherent in an effective dual source program. Furthermore, the DoDIG report is factually in error for the procurements in FY's 1985 and 1987. In those years, full and open competitions were conducted and the lowest price was paid. Dual awards were made in 1989, 1990, and 1991. However, to contend that the difference in cost between the actual award price combination and the lowest offered price is a premium takes a very short-sighted view of the shipbuilding industry. The likely result of this approach in 1989 would have been to make the other shipbuilder non-competitive in 1990 or not be in a position to submit a responsible proposal. Both situations do irreparable harm to the shipbuilding industrial base and appear to be in direct conflict with the DoDIG's concern. Further, it can be shown by numerous studies that the absence of competition results in increased costs on future purchases. Thus, it is likely that contract costs would have increased in 1990 and 1991. Therefore, to sum yearly deltas between actual award price combinations and lowest offered price is not logical given the probability there would be no dual source.

The DoDIG's future projection of additional costs attributed to the quantity distribution between the two shipbuilders is also erroneous since the underlying basis of that projection, higher historic costs, has been shown to be inappropriate. Furthermore, the conclusion that the Navy could reduce this DoDIG estimated mobilization premium by about $262.4 million from FY's 1992 through 1999 by performing cost analyses on shipbuilder proposals and using the results in the contract negotiation process to decrement bill of material expense by 9% is also flawed. It presumes that the shipyards will propose on a sole source basis the same amounts that have been proposed in competitive dual source acquisitions. This is not reasonable nor has support for such a contention been provided. On the other hand, a review of CG-47 cost history provides clear and convincing parametric evidence that this is not the case. Furthermore, on the DDG program, it is known that in the past, both shipyards have taken significant management reductions, including decrements to their bills of materials, to achieve their lowest proposed costs due to competitive pressures. At a minimum, both shipyards will reinstate these reductions.

RECOMMENDATION A-1:

Discontinue competitive dual sourcing of the DDG-51 Aegis Destroyer, beginning with the FY 1992 buy, and proceed with

separate sole source, negotiated contract awards.

DON POSITION:

NONCONCUR. This recommendation is based on faulty analysis and should not be implemented unless it can be factually demonstrated that competitive dual sources result in higher costs to the Navy and do unacceptable harm to the industrial base. The recommendation is considered in the case of the DDG-51 to conflict with the Competition in Contracting Act.

RECOMMENDATION A-2:

Obtain certified cost and pricing data and perform thorough field pricing support and cost and price analyses to establish the reasonableness of contract prices. Should-cost analyses should also be performed as necessary.

DON POSITION:

NONCONCUR. The recommendation is based on faulty analysis. As part of the solicitation, Navy reserves the right to require certified cost and pricing data in the event a proposed price is not considered reasonable. After proposal receipt, a determination is made concerning the need for this data. The technique was necessary on one DDG-51 and one CG-47 program procurement.

RECOMMENDATION A-3:

Direct that a cost-benefit analysis be performed on continued noncompetitive dual sourcing of the DDG-51 program in compliance with the direction provided by the Deputy Under Secretary of Defense for Acquisition (DUSD(A)) and the Assistant Secretary of the Navy (Research, Development and Acquisition) (ASN(RD&A)).

DON POSITION:

NONCONCUR. Navy is complying with the cited DUSD(A) and ASN (RD&A) memoranda. The DoDIG interpretation is inconsistent with the intent of these documents. Both the draft report and discussions with the DoDIG note the issue is not dual sourcing the DDG program, but rather it is the allegation that competitive dual sourcing is not cost effective and may damage the industrial base. The DUSD(A) and ASN(RD&A) memoranda are concerned with the cost effectiveness of establishing or maintaining a second source. In fact, justification for the second source should flow from projected competitive savings. To treat dual sources non-competitively as suggested by the DoDIG is contrary to the intent of the memoranda.

RECOMMENDATION A-4:

Perform an in-depth industrial base analysis matching known and projected surface combatant requirements with existing

shipyard capabilities to determine if maintaining two surface combatant yards through the Future Years Defense Programs period is feasible and practical. If the analysis concludes that it is not economically feasible to maintain existing surface combatant capacity, the analysis should include steps to selectively downsize available capacity in a cost-effective manner.

DON POSITION:

CONCUR. ASN (RD&A) will perform the analysis at an appropriate time.

DEPARTMENT OF THE NAVY

NAVAL SEA SYSTEMS COMMAND
WASHINGTON D.C. 20362-5101

IN REPLY REFER TO
4200
OPR 022E
Ser 02B/558
30 September 1991

From: Commander, Naval Sea Systems Command
To: Office of Assistant Secretary of the Navy
RD&A, APIA-PP, Washington, DC 20350

Subj: NAVSEA COMMENTS TO DODIG REPORT ON THE NAVY DUAL SOURCE PROGRAM FOR THE DDG 51 AEGIS DESTROYER (PROJECT NO. 0AE-0089)

Ref: (a) Inspector General ltr dtd June 24, 1991

Encl: (1) NAVSEA Comments to DODIG Draft Report

By reference (a), the Inspector General forwarded the subject report for comment. NAVSEA has been working informally with your office and Inspector General personnel in providing detailed draft comments and criticism of the report. NAVSEA strongly disagrees with the rationale used in developing the findings and recommendations. NAVSEA comments are provided in enclosure (1).

Fred L. Sheridan
Assistant Deputy Commander for Contracts

NAVSEA COMMENTS TO DODIG DRAFT REPORT
"NAVY DUAL SOURCE PROGRAM FOR THE
DDG-51 AEGIS DESTROYERS"
(DODIG PROJECT NO. 0AE-0089)

The Navy's fundamental responsibility is to obtain fair and reasonable prices consistent with the preservation of the industrial base. The Navy has employed a competition procurement process for the lead (FY 85) and follow (FY 87) ship builder selections. Subsequently, the Navy has conducted dual source competition with price and mobilization base considerations determining the actual numbers of ships awarded to the lead and follow yard builders. This cost effective acquisition strategy has enabled the Navy to maintain two sources of supply for the DDG 51 Class AEGIS Destroyers. The Navy is reducing costs by maintaining two sources.

The DODIG Draft Report findings and recommendations are misleading and are based on inaccurate assumptions and analysis. The DODIG provides absolutely no evidence that supports their recommended positions. The Navy strongly disagrees with this Draft Report.

Specific comments against the DODIG Findings and Recommendations are provided as follows:

FINDING A: The Navy's acquisition strategy of competitively dual sourcing the DDG-51 Aegis Destroyer was not cost-effective and could adversely affect the shipbuilding industrial base for surface combatants.

NAVSEA COMMENT: NAVSEA does not concur. The Navy's acquisition strategy has been cost-effective on the competitive DDG 51 Class program. Emphasis on the evaluation for awards was placed on the lowest overall total cost to the Government, however, in the interests of national defense and industrial mobilization, the Government reserved the right to make any award combination to the two sources. Therefore, the Government through the evaluation process made a determination every year on the effects of various award combinations on the shipbuilding industrial base for surface combatants. Any resulting award involved a price premium for that specific contract for maintaining the remaining surface combatants as viable shipbuilders and competitors. The cost to the Government of terminating existing shipbuilding contracts and closing a shipyard would have far outweighed the cost of the premiums paid.

ENCLOSURE(1)

FINDING B: The Navy did not have adequate guidance on how to perform a cost-benefit analysis to support the initial dual sourcing decision.

NAVSEA COMMENT: NAVSEA does not concur. The Navy did not require that a detailed cost-benefit analysis be performed on the DDG 51 Class AEGIS Destroyer shipbuilding program because the correctness of this approach was confirmed by the CG 47 Class AEGIS Cruiser shipbuilding program. Further, with each award, the Navy performs a cost analysis that is part of its business clearance approval documentation. NAVSEA also contends that, even if this finding were true, it does not, in itself, establish that the decision to dual source the DDG 51 program was not cost effective or not in the best interest of the industrial base.

FINDING C: The Navy had not performed a cost-benefit analysis of the continued cost-effectiveness of dual sourcing.

NAVSEA COMMENT: NAVSEA does not concur. Starting with the FY 89 award, the Navy performed a cost analysis on the reasonableness of the proposed pricing, the results of which form a part of the business clearance approval documentation.

FINDING D: The Navy did not revise the competitive dual source acquisition strategy.

NAVSEA COMMENT: NAVSEA concurs. The Navy competitive dual source acquisition strategy did not require revisions. The objectives of maintaining a competitive program and sustaining an industrial mobilization base were achieved. For each fiscal year procurement, the Navy reviews its procurement strategy and will continue this process due to potential quantity changes.

FINDING E: The Navy relied on dual sourcing to support mobilization base requirements without adequately assessing the mobilization base requirements or the Navy's long-term ability to meet those requirements.

NAVSEA COMMENT: NAVSEA does not concur. With each contract award in FY 89 thru FY 91, the Navy performed a shipyard production manpower review as part of its evaluation. The evaluation of known production manning and projected production manning at both shipyards clearly permitted the Navy to make a industrial mobilization based award decision on the long-term industrial mobilization needs of the Navy.

FINDING F: The Navy expended at least $674 million (1991 dollars), through FY 1991 as a premium for maintaining two sources for the DDG-51 Destroyer. If the dual source acquisition strategy is continued through FY 1999, the Navy will expend an additional $1.7 billion in premium prices.

NAVSEA COMMENT: NAVSEA does not concur. The actual premium, if any, the Navy will pay to maintain two shipyards should be based on a comparison of the projected cost outcomes to the Navy with projected sole-source cost outcomes. Further, the inclusion of the FY 85 and FY 87 awards as part of a premium calculation is erroneous.

In FY 85, the Navy conducted a full and open competition with a detailed technical evaluation which resulted in award of the lead ship to Bath Iron Works. The claim that the competitively established price ($321.9M FPI target price) for the DDG 51 could have been further reduced by $9M is not reasonable. The contract was bid very aggressively due to competitive pressures (fully recognized by the Navy at the time) and has grown substantially since then in part due to possible underbidding. To remove an additional $9M would have made matters worse. The historic facts prove that the Navy could not and should not have reduced the price further than was already accomplished through the competitive process. Appendix B to the report also states that an additional $75M could have been saved by selecting the "best price" offer. The business clearance indicates the lowest overall evaluated price award was made.

In FY 87, again, the Navy conducted a full and open competition with a detailed technical evaluation which brought on the second source on the program, Ingalls Shipbuilding. No cost premiums were paid in FY 85 and FY 87. Hence, any projections on the associated premiums for the continuance of the DDG 51 Class dual source acquisition strategy is mere conjecture and is grossly inaccurate.

The balance of the historic savings the report claims could have been realized is based on (i) award of quantities without regard to mobilization considerations and (ii) a presumed further reduction due to the use of current cost or pricing data and negotiations (the estimate of savings is generated by applying a 9% decrement factor to the estimated bill of materials portion of the competitive price). This approach involves a high probability that the second source would have ceased to exist the year following implementation of the recommended strategy. Subsequently, it is likely that prices from the remaining sole source would have increased dramatically and the Navy would have possessed no competitive leverage for downward negotiations. With respect to the decrement factor, it is not reasonable to assume competitively established prices could, or should, be further lowered through negotiations.

Therefore, the basis and calculations for the estimated cost of an additional $1.7 billion to maintain existing shipyard capacity through FY 1999 is grossly inaccurate.

FINDING G: **The Navy could reduce the mobilization premium by about $262.4 million from FY's 1992 through 1999 by performing cost analyses on proposals received from the two shipbuilders and by relying on the results of the cost analyses to support the contract negotiation process.**

NAVSEA COMMENT: NAVSEA does not concur. The analysis that derived the conclusion is seriously flawed. It presumes that the shipyards will propose on a sole source basis the same amounts that have been proposed on the competitive dual source acquisitions. This is incorrect. A review of CG cost history provides clear and convincing documentation that shows the assumptions are, in fact, erroneous. Historically, on the DDG program, both shipyards have taken significant management reductions to achieve the lowest proposed cost for the three and four ship proposals. At a minimum, both shipyards will at least reinstate these reductions in their proposals. For a sole source bid, on top of these proposed costs, both shipyards would likely include contingency factors that would significantly increase their proposed costs. Further, the shipyards through their management reductions have already accounted for a material decrement factor, learning curve efficiencies, labor rate differences and quantity discounts by providing a projected proposed cost that requires tight management cost controls. The DOD IG analysis is not substantiated. This approach, like the historic analysis, fails to take into account mobilization base considerations and is likely to result in the failure of one of the two sources and be followed by substantially higher priced sole source procurements.

RECOMMENDATION 1: **Discontinue competitive dual sourcing of the DDG-51 Aegis Destroyer, beginning with the FY 1992 buy, and proceed with separate sole source, negotiated contract awards.**

NAVSEA COMMENT: NAVSEA does not concur. This recommendation is based on faulty analysis as discussed above. The shipbuilding industry, on a whole, has seen significant changes over the past several years. Consequently, ASN (RD&A) has commissioned a surface shipbuilding industrial base study. One of the fallouts of this study will be the determination on whether ships should be allocated to maintain the industrial base. If this is the case, then the Navy may discontinue competitive dual sourcing of the DDG-51 Class Destroyers. The other circumstance under which this change in strategy would be made is if it is shown that competitive strategies result in higher prices than negotiated strategies. Regardless, the Navy reserves its rights in all competitions to require the shipbuilders to provide cost and pricing data, if necessary to negotiate a fair and reasonable price. On the DDG 51 Class program, this has only been required to establish the competitive price for the DDG 53.

RECOMMENDATION 2: Obtain certified cost and pricing data and perform thorough field pricing support and cost and price analyses to establish the reasonableness of contract prices. Should-cost analyses should also be performed as necessary.

NAVSEA COMMENT: NAVSEA does not concur. This recommendation is based on faulty analysis as discussed above. As part of the solicitation, the Navy reserves the right to require the shipbuilders to provide cost and pricing data, if necessary to negotiate a fair and reasonable price. After receipt of the proposals, a determination will be made concerning whether to obtain certified cost or pricing data.

RECOMMENDATION 3: Direct that a cost-benefit analysis be performed on continued noncompetitive dual sourcing of the DDG-51 program in compliance with the direction provided by the Deputy Under Secretary of Defense for Acquisition and the Assistant Secretary of the Navy (Research, Development and Acquisition).

NAVSEA COMMENT: NAVSEA does not concur. The Navy, as part of its business clearance documentation, performs a cost analysis to determine the reasonableness of the proposed pricing.

RECOMMENDATION 4: Perform an in-depth industrial base analysis matching known and projected surface combatant requirements with existing shipyard capabilities to determine if maintaining two surface combatant yards through the Future Years Defense Programs period is feasible and practical. If the analysis concludes that it is not economically feasible to maintain existing surface combatant capacity, the analysis should include steps to selectively downsize available capacity in a cost-effective manner.

NAVSEA COMMENT: NAVSEA concurs. ASN (RD&A) has commissioned that a surface shipbuilding industrial base study be performed. This study is presently ongoing.

Final Report Reference

NAVSEA COMMENTS TO DODIG DRAFT REPORT
"NAVY DUAL SOURCE PROGRAM FOR THE
DDG-51 AEGIS DESTROYERS"
(DODIG PROJECT NO. 0AE-0089)

Specific comments against the DODIG Draft Report are as follows:

1 Page 2 The premium referred to in the report is the difference between two competitive prices. This premium is paid under a specific contract to accomplish one or more program objectives, such as to permit continued competition, to further industrial mobilization, or to provide a more productive award pattern. The report treats the premium as if it's the difference between a competitive price and a sole source price. This is wrong.

3 Page 5 The report never computes the cost to maintain two sources. It merely discusses the difference between two competitive prices.

4 Page 6 The Navy disagrees that the internal controls were not established or effective.

5 Page 9 The report never defines "cost-effective".

If the report's contention that DDG-51 dual sourcing was not cost-effective means that the DDG-51 Class contract prices are too high, it offers absolutely no evidence to support this contention. Analysis of all initial contract prices and contract performance to date indicates that not one target price for any ship is overstated. If the DODIG disagrees, the report should indicate which ships or contracts are overpriced and provide support for this conclusion.

If "not cost-effective" means the contracts are not being performed efficiently, the report should identify the contracts or ships and provide information to support this charge.

If "not cost-effective" means prices paid under the DDG-51 dual source program are higher than those which would have been paid under a sole source program, then the report completely ignores all experience under the DOD's competitive programs in general and the CG and DDG programs in particular.

The Navy disagrees with Page 9.

Final Report Reference		
5	Page 10	The Navy disagrees that a premium can be measured for more than one specific contract. The DODIG report is measuring the wrong thing. The premium for maintaining two sources is the difference between dual source prices and what would have been paid without dual sources - that is, with a sole source. The overwhelming experience is that this premium amount is a negative number (that is, that dual sourcing reduces prices). The DODIG contention that the "mobilization premium" (that is, the alleged additional amount paid to maintain two sources) could be reduced by abandoning competition and dealing with two sole sources is unfounded. NAVSEA strongly disagrees with this entire line of reasoning.
6	Page 12	The report provides no support that award schedules have impaired cost efficiency.
7	Page 13	See comments for Pages 2 and 9.
7	Page 14	The report should describe a DDG-51 cost study which would not rely almost exclusively, on past experience. It is the Navy's understanding that competitive acquisition is the preferred method.
8	Page 15	The Navy disagrees with the DODIG analysis of the premium.
8-12	Pages 15-22	If, as DODIG alleges, competitive pressures were not sufficient to assure that contract prices were reasonable, the report should identify which prices were unreasonable and provide support. NAVSEA can find absolutely no evidence that contract prices would have been lower had they been negotiated using certified cost or pricing data. Higher prices would have been likely.
12	Page 22	The report should provide evidence that the FY 1989 and 1990 prices were higher than justified based on supporting costs of contract performance. The Navy's conclusion is the reverse.
13	Page 23	There is no evidence that these ships are overpriced or that negotiations would have resulted in lower prices.

Final Report Reference		
13-14	Page 24	The Navy disagrees with the report's profit analysis. (The report should refer to "proposed target profit" if this is what it means). The report alleges that the Contractor increased the target profit because there were no competitive pressures. The Navy believes the reverse is true. The report ignores the fact that this is a cost incentive contract. The Contractor increased his proposed target profit because the competitive pressures drove him to severely reduce his target cost and he wished to maintain some contract profitability (or reduce contract losses). Until he reaches ceiling price, the Contractor can tradeoff two dollars decrease in target cost with one dollar increase in target profit thus decreasing target price by one dollar, thereby enhancing his competitive position. Real competition resulted in an increase in proposed target profit. The report fails to recognize the impact of the "Compensation Adjustments" (Escalation) clause on target profit rates.
14-18	Pages 25-30	It is the Navy's strong belief that all of the target prices for all of the ships awarded under all of the DDG contracts are reasonable (that is that none of the prices are overstated or higher than prices which would have been negotiated on the basis of analysis of cost or pricing data) and that these prices are reasonable because of the competitive pressures on the Contractors at the time of proposal and award. The Navy recognizes that a program reduced to four ships per year, or less, for an extended period, may not continue to support effective competition; however, competition should be abandoned only when it has been demonstrated that competition is no longer effective. The report provides no such demonstration.
19-20	Page 33	The acquisition strategy for the DDG-51 has not been ineffective.
20	Page 36	The Navy disagrees with the entire "Effect" analysis for reasons set forth above.

Final Report Reference	
20-21	Pages 37, 38 The Navy agrees that each future procurement must be carefully analyzed to balance the advantages of competition with the Navy's shipbuilding and industrial base requirements. The Navy will not abandon its competitive strategy until a more effective method can be demonstrated, or until it's obvious that the competitive strategy is ineffective. The DODIG report does neither of these. The Navy can find no evidence that it would have been beneficial to reduce the DDG competitive contract prices. To allege potential cost reductions by applying a historical negotiation decrement factor to competitive price is misleading.
21-22	Page 39 To conclude that adopting a strategy of cost negotiations with two sole sources would result in lower target prices is not supported by any NAVSEA experience. The report should provide reasons for its conclusions. In its awards, NAVSEA attempts to maximize stable production while awarding at competitive prices. The DDG award patterns confirm this.

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