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

REPORT
NO. 91-057

February 27, 1991

MEMORANDUM FOR ASSISTANT SECRETARY OF THE NAVY
(FINANCIAL MANAGEMENT)

SUBJECT: Final Quick-Reaction Report on the Review of the Cost-Effectiveness of Dual Sourcing Major Components of the Aegis Weapon System (Project No. 0AE-5005.01)

## Introduction

During our Review of the Cost-Effectiveness of Dual Sourcing Major Components of the Aegis Weapon System, we reviewed contracts for major components of the Aegis Weapon System that were dual sourced as part of our overall objective, which was to evaluate the cost-effectiveness of the Navy's decision to dual source the components. The review identified procurement practices, which, if continued, could unnecessarily cost the Navy about $2.9 million in FY 1991 and about $20.4 million in the 6-year Defense planning period ending in FY 1997. Specifically, the Navy dual sourced acquisitions of the Fire Control System (FCS), a major component of the Aegis Weapon System (AWS), even though FCS dual source acquisitions had not been cost-effective. Although recent Navy cost-effectiveness studies concluded that dual sourcing the FCS was not cost-effective, the Navy continued to dual source the FCS. The Navy needs to take immediate action to cancel its planned dual source acquisitions of the FCS and to buy the FCS components from one source. Also, the Navy should cancel its dual source acquisition strategy included in the 6-year Defense program for the FCS.

## Background

Dual sourcing is a procurement practice in which the Government awards the larger share of a contract requirement to the lowest bidder and awards the smaller share of the same requirement to the highest bidder. The objectives of dual sourcing are to establish price competition for high cost, technically complex items that are not normally competed and to increase the industrial base.

The economic justification for dual sourcing is the Government's return on its investment. In a dual source acquisition, the Government usually makes a large up-front investment, which includes the costs to select and establish a

second source as a qualified producer and to administratively support a second source. The Government also incurs an effective interest cost on its investment because second source qualification and other investment costs are incurred early in a dual sourcing program, while the Government's return on its investment usually occurs later in a program. The Government's return on its investment 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 competition by reducing its contract prices.

The Government pays a premium in dual sourcing 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 and the total value of the split awards. The initial dual source investment decision should consider the premium prices inherent in dual sourcing, and the decision should be supported by projected lower overall competitive dual source prices even though premium payments are included in the prices.

In November 1984, the Navy decided to dual source major components of the AWS, and in December 1985, the Navy awarded a leader/follower qualification contract to develop a second source for the FCS. The Navy awarded annual dual source production contracts for the Continuous Wave Illuminator (CWI) Transmitter, one of two major components of the FCS, during FY's 1988 through 1990. The Navy also awarded annual dual source contracts for the Director/Director Controller, the other major component of the FCS, during FY's 1987 through 1990. The FY 1990 contracts included priced options for FY 1991 requirements. The Navy's investment cost to qualify second sources to produce the two major components of the FCS is about $50.3 million.

## Discussion

The Navy's practice of awarding dual source contracts for the FCS was not cost-effective. By using conventional learning curve techniques, we determined that the Navy's costs increased from $140.4 million to $178.8 million ($38.4 million) by dual sourcing the FCS. The increased costs included about $16.9 million in higher contract prices and about $21.5 million in unrecovered Government investment costs. Enclosure 1 shows the methodology we used to compute the cost-effectiveness of dual sourcing the FCS. The following schedule summarizes the differences, by FY, between projected sole source contract prices and dual source contract prices.

**COMPARISON OF PROJECTED SOLE SOURCE AND DUAL SOURCE PRICES**
(Dollars in Thousands)

CWI Transmitter

| Fiscal Year | Projected Sole Source | Dual Source | Difference |
|---|---|---|---|
| 1988 | $17,069 | $25,700 | $ (8,631) |
| 1989 | 12,659 | 20,550 | (7,891) |
| 1990 | 12,646 | 20,535 | (7,889) |
| Subtotal | $42,374 | $66,785 | $(24,411) |

Director/Director Controller

| Fiscal Year | Projected Sole Source | Dual Source | Difference |
|---|---|---|---|
| 1987 | $23,200 | $25,200 | $ (2,000) |
| 1988 | 21,853 | 24,327 | (2,474) |
| 1989 | 24,512 | 28,918 | (4,406) |
| 1990 | 28,446 | 33,528 | (5,082) |
| Subtotal | $98,011 | $111,973 | $(13,962) |
| Grand Total | $140,385 | $178,758 | $(38,373) |

Dual sourcing the CWI Transmitter resulted in higher prices of about $24.4 million. Similarly, dual sourcing the Director/Director Controller resulted in higher prices of about $14 million. The principal reasons why the dual source acquisition strategy did not work are as follows.

- The prime source for the CWI Transmitter did not submit competitive contract prices.

- The prime source for the Director/Director Controller reacted to second source competition initially by lowering contract prices, but raised its prices in later dual source competitions.

- The second source prices were not competitive with the prime source and did not show the benefits of learning. However, the second source for the Director/Director Controller did submit marginally lower FY 1990/1991 prices.

We also determined that the Navy's return on its $50.3 million second source investment was negative for five of the seven dual source procurements. The Navy achieved positive returns on the FY 1987 and FY 1988 procurements of the Director/ Director Controller, but those returns were significantly less than required to break even. Enclosure 2 shows the methodology we used to determine the Navy's return on investment.

Ours was not the first evaluation to conclude that dual sourcing the FCS was not cost-effective: the Navy conducted two cost-effectiveness studies that reached the same conclusion. In February 1990, the Naval Surface Warfare Center made a cost-effectiveness study of the Navy's plan to dual source the AWS. The Center's study concluded that dual sourcing costs for the FCS would exceed single source costs by between $186 million and $201 million, based on acquisition of five systems per year through FY 2000. In July 1987, the Naval Center for Cost Analysis (NCA) made a cost-effectiveness study of the Navy's plan to dual source the AWS. The NCA study concluded that dual sourcing the FCS and the AN/SPY-1D Radar (another major component of the AWS) would result in a loss of between $5 million and $24 million, depending on when dual source competition started. On March 30, 1990, the Assistant Secretary of the Navy (Research, Development and Acquisition) directed the Aegis program manager to terminate the second source Radar program. However, the Navy had not taken action on the FCS second source program at the time of this audit.

## Conclusion

The Navy's decision to dual source the FCS has not proven to be cost-effective. In fact, contract prices have increased rather than decreased under dual sourcing. The Navy can substantially reduce contract prices by awarding production quantities to one source and canceling the dual source program, thereby avoiding the premium price inherent in splitting acquisitions between two sources. The Navy has already paid $27.3 million in premium prices by dual sourcing the FCS. By stopping the practice now, the Navy should be able to reduce future contract costs by about $23.3 million.

## Recommendations

1. We recommend that the Commander, Naval Sea Systems Command:

a. Award the Continuous Wave Illuminator Transmitter quantities for FY 1991 to one source if proposed contractor prices for FY 1991 base year and FY 1992 option year indicate downselection to one source in FY 1991 is the most cost-effective acquisition strategy.

b. Delay downselection of the Continuous Wave Illuminator Transmitter to one source until FY 1993 if the FY 1991/1992 proposed contractor prices indicate downselection to one source in FY 1993 is the most cost-effective acquisition strategy.

c. Award the Director/Director Controller quantities for FY 1992 and subsequent years to one source.

2. We recommend that the Secretary of the Navy cancel the Fire Control System dual source program after downselecting to one source.

## Management Comments

We provided a draft of this report to the Assistant Secretary of the Navy (Financial Management) on December 4, 1990, for comments. We received comments from the Deputy for Acquisition Policy, Integrity and Accountability in the Office of the Assistant Secretary of the Navy (Research, Development and Acquisition) on December 24, 1990. The complete text of management's comments is in Enclosure 3.

The Deputy for Acquisition Policy, Integrity and Accountability (the Deputy) agreed with our assessment that single source acquisition strategies for the Aegis Weapon System's CWI Transmitter and Director/Director Controller would probably be more cost-effective than continuing dual source strategies. The Deputy concurred, in part, with draft Recommendation 1., which provided for the Commander, Naval Sea Systems Command, to award the FY 1991 Fire Control System's quantities to one source. However, the Deputy proposed an alternative action for accomplishing the desired improvement.

Specifically, the Deputy stated that the solicitation for the FY 1991/1992 CWI Transmitter contract will be structured to permit a downselection to one source, and downselection would be made in FY 1991 if downselection is the most cost-effective acquisition strategy. The Deputy added that downselection would be delayed until FY 1993 if additional savings can be achieved. The Deputy also indicated that downselection of the Director/Director Controller in FY 1991 would not make good business sense as the FY 1991 quantities were competed with the FY 1990 solicitation. However, the Deputy stated that the next solicitation (FY 1992) would include options that provide for downselection of the Director/Director Controller.

Further, draft Recommendation 2. provided for the Secretary of the Navy to cancel the Fire Control System's dual source program. The Deputy did not comment on draft Recommendation 2.

Although the Deputy agreed with our assessment, he did not agree with the potential savings of $50 million that we claimed in the draft report. The Deputy stated that Navy studies, based upon comparisons of projected dual source and single source costs, indicated lower cost savings that ranged from $13.4 million to $37.1 million. The different ranges were computed on the basis of different quantity splits if dual sourcing were continued.

**Audit Response to Management Comments**

We have accepted the Deputy's proposed alternative actions for draft Recommendation 1. and have revised the recommendation in this final report accordingly. Therefore, we request that the Deputy for Acquisition Policy, Integrity and Accountability in the Office of the Assistant Secretary of the Navy (Research, Development and Acquisition) provide final comments on Recommendation 1., including proposed corrective actions and completion dates.

Although the Deputy did not comment on draft Recommendation 2., we revised the recommendation because of the revision to Recommendation 1. Therefore, we request that the Deputy provide comments indicating concurrence or nonconcurrence in the recommendation. If you concur, describe the corrective actions taken or planned, the completion dates for actions already taken, and the estimated dates for completion of planned actions. If you nonconcur, please state your specific reasons. If appropriate, you may propose alternative methods for accomplishing the desired improvements.

As a result of the Deputy's comments, we also have revised our estimate of the potential monetary benefits of Recommendations 1. and 2. from $50 million to $23.3 million. We agreed with the Navy's estimate because it was based upon a comparison of projected dual source and single source costs. Our original estimate of potential monetary benefits was based on previous contract prices. We selected a specific dollar amount within the Navy's estimated range of savings because Navy officials told us that the specific dollar amount represented the most likely outcome.

DoD Directive 7650.3 requires that all audit recommendations be resolved promptly. Accordingly, the Deputy for Acquisition Policy, Integrity and Accountability in the Office of the Assistant Secretary of the Navy (Research, Development and Acquisition) should provide final comments on Recommendations 1. and 2. and the revised potential monetary benefits (Enclosure 4) within 15 days of the date of this report.

The cooperation and courtesies extended to the audit staff are appreciated. If you have any questions regarding this report or need additional information, please contact Mr. Rayburn H. Stricklin at (703) 614-3965 (AUTOVON 224-3965) or Mr. John M. Donnelly at (703) 693-0378 (AUTOVON 223-0378). A list of the audit team members is in Enclosure 5. Copies of the report will be distributed to the activities listed in Enclosure 6.

Robert J. Lieberman
Assistant Inspector General
for Auditing

Enclosures

cc:
Secretary of the Navy
Assistant Secretary of the Navy (Research, Development and Acquisition)
Program Manager, Aegis Weapon System

## COMPUTATION OF COST-EFFECTIVENESS OF DUAL SOURCING THE FIRE CONTROL SYSTEM

We used a cost analysis technique to determine the cost-effectiveness of dual sourcing the Fire Control System (FCS). Specifically, we determined projected sole source costs by using conventional learning curve techniques. The learning curve is a generally accepted statistical device used in predicting production costs and as an aid in planning and controlling production. We computed projected sole source costs by developing learning curves from historical contract cost data and then projecting future costs using the learning curves. In using historical costs, we adjusted contract cost data to eliminate the effects of economic changes. We also anticipated the effects of economic changes in projecting future sole source costs.

### COMPUTATION OF SOLE SOURCE COSTS

FCS Continuous Wave Illuminator Transmitter (Dollars in Thousands)

| FY | Units Procured | Projected Unit Cost 1/ | Projected Sole Source Price | Projected Inflated Sole Source Price |
|---|---|---|---|---|
| 1988 | 20 | $823 | $16,460 | $17,069 |
| 1989 | 15 | $784 | $11,760 | $12,659 |
| 1990 | 15 | $756 | $11,340 | $12,646 |

FCS Director/Director Controller (Dollars in Thousands)

| FY | Units Procured | Projected Unit Cost 1/ | Projected Sole Source Price | Projected Inflated Sole Source Price |
|---|---|---|---|---|
| 1987 | 18 | $1,255 | $22,590 | $23,200 |
| 1988 | 17 | $1,207 | $20,519 | $21,853 |
| 1989 | 19 | $1,167 | $22,173 | $24,512 |
| 1990 | 22 | $1,129 | $24,838 | $28,446 |

See footnotes on last page of Enclosure.

## COMPUTATION OF COST-EFFECTIVENESS OF DUAL SOURCING THE FIRE CONTROL SYSTEM (continued)

We made two computations to determine the cost-effectiveness of dual source acquisitions. First, we determined the Navy's investment cost to establish a second source. We then divided the investment cost by the total number of dual source FCS units to determine the investment cost per unit.

COMPUTATION OF UNIT INVESTMENT COST (Dollars in Thousands) [2]

| | |
|---|---|
| Cost to qualify second source | $30,400 |
| Navy Support Cost | 19,856 |
| Total Investment Cost [3] | $50,256 |
| Divided by FCS Transmitters and Director/ Director Controllers - Program Quantity [4] | 294 |
| Investment Cost Per Unit | $ 171 |

Second, we added the actual dual source costs from FY's 1987 through 1990 and the prorated investment cost to determine the cost-effectiveness of dual sourcing the FCS.

COMPUTATION OF ADJUSTED DUAL SOURCE COST

Continuous Wave Illuminator Transmitter
(Dollars in Thousands)

| FY | Units Procured | Unit Cost [5] | Total Cost |
|---|---|---|---|
| 1988 | 20 | $1,285 | $25,700 |
| 1989 | 15 | $1,370 | $20,550 |
| 1990 | 15 | $1,369 | $20,535 |

Director/Director Controller (Dollars in Thousands)

| FY | Units Procured | Unit Cost [5] | Total Cost |
|---|---|---|---|
| 1987 | 18 | $1,400 | $25,200 |
| 1988 | 17 | $1,431 | $24,327 |
| 1989 | 19 | $1,522 | $28,918 |
| 1990 | 22 | $1,524 | $33,528 |

See footnotes on last page of Enclosure.

1/ For the Continuous Wave Illuminator Transmitter, we computed a learning curve of about 80.1 percent and a first unit cost of about $3,675. For the Director/Director Controller, we computed a learning curve of about 86 percent and a first unit cost of about $3,353. We then projected the average unit cost at the given level of production to determine sole source unit costs. The projected unit costs for the CWI Transmitter and the Director/Director Controller are stated in 1987 and 1986 dollars, respectively.

2/ We excluded cost of money as an investment cost. Although we believe cost of money is a legitimate investment cost, we excluded it because Navy and other independent cost estimators did not consider cost of money in their analyses of dual source investment decisions. We plan to pursue this issue during the overall audit.

3/ We did not segregate investment cost by FCS component because the data were not readily available.

4/ We determined the total dual source program quantity by adding the dual source units procured through FY 1990 and the planned dual source unit acquisitions.

5/ Unit costs include a $171,000 investment cost from the previous computation. The total investment cost for the units acquired was $21,546,000 (126 units at $171,000 per unit).

## COMPUTATION OF RETURN ON INVESTMENT

We determined that the Navy's decision to dual source the FCS was not cost-effective by computing the Navy's return on investment (ROI). To determine the Navy's ROI, we compared the net value of both dual source and projected sole source contract prices at the time of the dual source investment decision. The results of the comparison show that the Navy's ROI was negative for five of the seven dual source procurements. The Navy needed to realize an annual average rate of return of about $4.6 million (9 percent) on its $50.3 million investment to break even by FY 1997.

RETURN ON INVESTMENT [1]
(Dollars in Thousands, FY 1985 Dollars)

Continuous Wave Illuminator Transmitter

| FY | Projected Sole Source | Dual Source [2] | Net Present Value Difference | ROI [1] |
|---|---|---|---|---|
| 1988 | $12,824 | $16,739 | ($ 3,915) | (7.8%) |
| 1989 | $ 8,646 | $12,284 | ( 3,638) | (7.2%) |
| 1990 | $ 7,852 | $11,158 | ( 3,306) | (6.6%) |
| | | Subtotal | ($10,859) | |

Director/Director Controller

| FY | Projected Sole Source | Dual Source [2] | Net Present Value Difference | ROI [1] |
|---|---|---|---|---|
| 1987 | $19,172 | $18,282 | $890 | 1.8% |
| 1988 | $16,417 | $16,093 | 324 | .6% |
| 1989 | $16,742 | $17,532 | ( 790) | (1.6%) |
| 1990 | $17,662 | $18,482 | ( 820) | (1.6%) |
| | | Subtotal | ($396) | |
| | | Total | $(11,255) [3] | |

1/ We computed ROI by dividing the appropriate contract price difference by the total investment cost of $50.3 million.

2/ Dual source contract prices exclude investment costs.

3/ The total is significantly different from the total in the report (negative $38.4 million), which we also computed by comparing dual source and projected sole source prices. The reasons for the differences are that the ROI table discounts all prices to the date of the investment decision, and the dual source prices in the ROI table exclude investment costs.

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

DEC 2 4 1990

7500

FIRST ENDORSEMENT on AEGIS Program Manager ltr 7500 OPR 400G Ser 400/485 of 18 Dec 90

From: Assistant Secretary of the Navy (Research, Development and Acquisition)
To: Office of the Inspector General, Department of Defense

Subj: SECOND SOURCING AEGIS WEAPON SYSTEM FIRE CONTROL SYSTEM EQUIPMENTS

1. The Department of Defense Inspector General (DODIG) draft quick-reaction audit on dual sourcing the AEGIS Weapon System CWI Transmitter and Director/Director Controller, reference (a), recommends in both programs immediately downselection to one source based on a determination that continuing the second source efforts is not cost effective. The Navy agrees in part with your assessment and recommendations.

2. Our analyses agree with yours that single source acquisition strategies for these programs probably would be more cost effective than continuing dual source strategies. However, our studies indicate lower cost savings than are predicted by the DODIG audit. The differences between our analyses have been articulated in the attached AEGIS Program Manager letter and during two meetings held last month between members of our staffs.

3. The solicitation for the FY 1991/1992 CWI Transmitter contract will be structured to permit a downselection. It will call for competitive proposals for various production quantity mixes in FY 1991 and FY 1992 from both sources including a 100%/0% mix. If the current pricing trends continue, the low-cost alternative to the Navy would be to downselect. In the event there is no appreciable savings from a downselection, this solicitation scheme will allow a split award and continuation of the competition for two more years.

4. Downselection of the Director/Director Controller in FY 1991 would be unwise. Failure to exercise the FY 1991 option would not make good business sense and would compromise the integrity of that competition. The FY 1991 quantities were competed with the FY 1990 solicitation. A slight premium was paid for the FY 1990 quantities to obtain significantly lower pricing for the FY 1991 systems. The next solicitation will be structured for several years of requirements and will include options that provide for downselection, if current pricing trends continue. If there is no appreciable savings from a downselection, the Navy can choose to continue the dual source arrangement. The FY 1991

option expires 31 December 1990 and the Navy plans to exercise the option on that date.

5. My points of contact for this program are Commander Jerry Nielsen (602-2798) and Mr. Frank Ford (602-2839).

W. J. HAUENSTEIN
RADM, SC, USN
Deputy for Acquisition Policy,
Integrity and Accountability

Copy to:
ASN(FM)
AEGIS Program Manager

DEPARTMENT OF THE NAVY
AEGIS PROGRAM MANAGER
WASHINGTON, DC 20362-5102

IN REPLY REFER TO

7500
OPR 400G
Ser 400/485
18 Dec 90

From: AEGIS PROGRAM MANAGER
To: Office of the Inspector General, Department of Defense, 400 Army Navy Drive, Arlington, Va. 22202-2884
ATTN: Acquisition Management
Via: Assistant Secretary of the Navy (Research, Development and and Acquisition), APIA

Subj: SECOND SOURCING AEGIS WEAPON SYSTEM FIRE CONTROL SYSTEM EQUIPMENTS

Ref: (a) DODIG memorandum for Assistant Secretary of the Navy (Financial Management) of 4 Dec 1990; Draft Quick Reaction Report on the Review of the Cost Effectiveness of Dual Sourcing Major Components of the AEGIS Weapon System (Project No. OAE-5005.01)

Encl: (1) Exceptions to DODIG Draft of a Proposed Audit Report Project No. OAE-5005.01 on the Cost-Effectiveness of Dual Sourcing Major Components of the AEGIS Weapon System dated 11 Dec 1990

1. The AEGIS Program Manager does not concur with the DoDIG recommendations for immediate downselection. To make the downselection now is to ignore several factors arguing for a more thoughtful timing in this process. The Navy was directed in FY 85 Appropriations Bill Language to establish dual sources for the SPY-1 RADAR and AEGIS combat system components. The Navy had reviewed the various cost analysis studies and concluded that the results were typical of most studies; however, actual case histories resulted in a much more positive benefit (ASN (Shipbuilding and Logistics) letter to the Chairman, House Armed Services Committee of 24 Jul 1987). The Navy's decision was a result of the then anticipated annual rate procurement (higher than the currently authorized DDG 51 Program) such that some cost benefit as well as an increased industrial base capability, would ultimately justify the second source program.

2. In determining a course of action, it is important to consider the stage of the competitive process. In the AEGIS Weapon System director/director control competitions, the second source has now "arrived," i.e., he has managed for the first time to take the majority share in the FY 90/91 competition. This means that there are more savings to be realized if the Navy structures the next competition in terms of a requirement for several years - perhaps four or five, such that any downselection maximizes the savings now being realized in the director

competitions. This would take advantage of the competitive pressure which now exists for the first time. While the decision to second source the AEGIS Weapon System Fire Control System may prove not to be cost beneficial, we can take this opportunity to mitigate the costs. Further, it is important to exercise the FY 91 option because that competition, which resulted in the FY 91 option, was evaluated on the total of the two years of systems competed. The Navy paid a premium in FY 90 in order to take advantage of savings in FY 91 which far exceeds the FY 90 premium. Such action maintains the integrity of the procurement process while obtaining favorable pricing.

3. As for the transmitter competitions, we believe we are approaching the point at which the second source will achieve a competitive stature and will be able to exert pricing pressure on the original source. However, the transmitter is more technically complex than the director/director control. Consequently, until we have shipboard experience with the second source equipment, we could not conduct a competitive downselection covering several years' requirements with confidence that the second source would not present the Navy with long term technical problems. The best course of action is to maintain the competitive pressure on the original source until we can conduct a truly competitive downselection unless we find that sufficient competitive pressure now exists such that the original source has lowered his pricing to the point where downslection makes sense. We should conduct a two year competition as before and then, structure a competition in terms of a requirement for several years. This latter approach should recoup savings well in excess of the premium paid to maintain the second source while the shipboard worthiness of its equipment is proven.

4. The AEGIS Program does not concur with the estimated monetary benefits of $50 million over FYs 91 through FY 97 identified in reference (a), enclosure (4), resulting from immediate cancellation of the second source program. Our worst case estimate is $37.1 million. However, the amount of cost avoidance is dependent on the assumptions made in the cost analysis. For example, our cost analysis used actual contract pricing through FY 91, and the DODIG analysis used cost reduction curves beginning with FY 88, which are not congruent with the empirical data. Whatever method is used, it remains clear that there have been no cost savings to date related to the development of a second source for AEGIS Weapon System Fire Control System. However, the second source is now at the point in its cost reduction curves where it can exercise considerable pressure on the original source. Therefore, downselection should occur in

competitive cycle in which the engineering base is not threatened and in which competitive pressures are brought to bear against the maximum quantity.

5. Additional comments are at enclosure (1). My point of contact for dual sourcing AEGIS Weapon System equipment is Mr. D. Hollister. He can be reached on (703) 602-7141.

J. T. HOOD

Copy to:
ASN (RD&A), Ships Programs
COMNAVSEASYSCOM, SEA 025
COMNAVSEASYSCOM, SEA 00L24

11 Dec 1990

Exceptions to DODIG Draft of a Proposed Audit Report Project No. OAE-5005.01 on the Cost-Effectiveness of Dual Sourcing Major Components of the AEGIS Weapon System

Under "Background", after "The economic justification for dual sourcing is the Government's return on its investment", insert: "The economic justification for dual sourcing is achieving lower costs through competitive procurements vice sole source contracting. Additionally, for programs with high rates of production, expansion of the industrial base requirements may drive the need for dual sources even when the economic returns may not be favorable."

Under "Background", fourth paragraph, insert: "The Navy was directed in FY 85 Appropriations Bill Language to establish dual sources for the SPY-1 RADAR and AEGIS combat system components.", in lieu of "In November 1984... and in" new sentence beginning with "In December 1985..."

Under "Discussion, Comparison of Dual Source and Projected Sole Source Prices by Component (Dollars in Thousands), CWI Transmitter", the AEGIS Program does not concur with the DoDIG's use of "Projected Sole Source." Delete the column title and prices and insert "Actual Cost (total lot)" and add the following in a column format,"FY 1988 $20,800, 1989 $14,700, 1990 $14,400

Under "Discussion, Comparison of Dual Source and Projected Sole Source Prices by Component (Dollars in Thousands), Director/Director Control", the AEGIS Program does not concur with the DoDIG's use of "Projected Sole Source." Delete the column title and prices and insert "Actual Cost (total lot)" and add the following in a column format, "FY 1987 $19,300, 1988 $17,700, FY 1989 $23,400, FY 1990 $25,300"

Under "Discussion," "- The prime source did not...contract prices (CWI Transmitter)", the following comments apply:

o The method reflects unrealistic sole source unit prices, i.e., $823K/Unit. (displayed in enclosure (1) page 1 of 3). The actual contract price (for 14 systems with option of 11) is $1,030K unit.

o It does not consider the sole source cost was "covered" and, starting in FY 1988, learning curve represents actuals. The investment costs presented in enclosure (3), page 1 of 2, represent amortized investment costs through 1997 at $171K per unit. These are "sunk costs" and should not be considered in the yearly premium calculation.

ENCLOSURE (1)

Under "Discussion", - "The prime source reacted... (Director/Director Control)... FY 91 options prices weren't included in the audit, however, these prices now show the benefits of quantity and learning curve incurred by the second source.

Under "Discussion", insert after "The Navy had not taken...time of the audit", "In 1984, the Navy was directed by Congress to develop second sources for AEGIS Weapon System equipments. The Navy then decided to proceed with the second source programs despite economic cost analyses which predicted little or no cost benefit for the overall program. The Navy's decision was a result of anticipated annual rate of procurement (higher than the currently authorized DDG 51 program) such that some cost benefit as well as an increased industrial base capability, would justify the second source program.

Under "Recommendations," delete recommendations 1 and 2 in their entirety and insert, "We recommend the Navy Acquisition Executive downselect to single sources for the fire control system components at the optimum points in the acquisition cycle. This downselection should consider maintenance of the engineering base and achievement of maximum competitive pressure such that the lowest pricing prior to going to sole source status has been reached."

Under Enclosure (4), "SUMMARY OF POTENTIAL MONETARY AND OTHER BENEFITS RESULTING FROM THE AUDIT," "Recommendation reference, Amount and/or Type of Benefit", delete "$7.3 million of...better use." and insert "$1.8 million (best) or $2.9 million (worst)." . Delete "$42.7 million of...better use." and insert $34.2 million (worst case) or $11.7 million (best case)."

Under "DRAFT REPORT DISTRIBUTION, Department of the Navy," add "AEGIS Program Manager"

## SUMMARY OF POTENTIAL MONETARY AND OTHER BENEFITS RESULTING FROM THE AUDIT

| Recommendation Reference | Description of Benefit | Amount and/or Type of Benefit * |
|---|---|---|
| 1. | Economy and Efficiency. Will result in more economical FY 1991 acquisition and contract administration costs for the Aegis Weapon System. | $2.9 million of funds put to better use. |
| 2. | Economy and Efficiency. Will result in more economical acquisition and contract administration costs during FY's 1992 through 1997 for the Aegis Weapon System. | $20.4 million of funds put to better use. |

* The appropriation that will benefit from our recommendations is the Navy's Shipbuilding and Conversion Appropriation Number 17X1611.

## AUDIT TEAM MEMBERS

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Assistant Secretary of the Navy (Research, Development and Acquisition)
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Senate Committee on Armed Services
Senate Committee on Governmental Affairs
Senate Ranking Minority Member, Committee on Armed Services
House Committee on Appropriations
House Subcommittee on Defense, Committee on Appropriations
House Ranking Minority Member, Committee on Appropriations
House Committee on Armed Services
House Committee on Government Operations
House Subcommittee on Legislation and National Security, Committee on Government Operations