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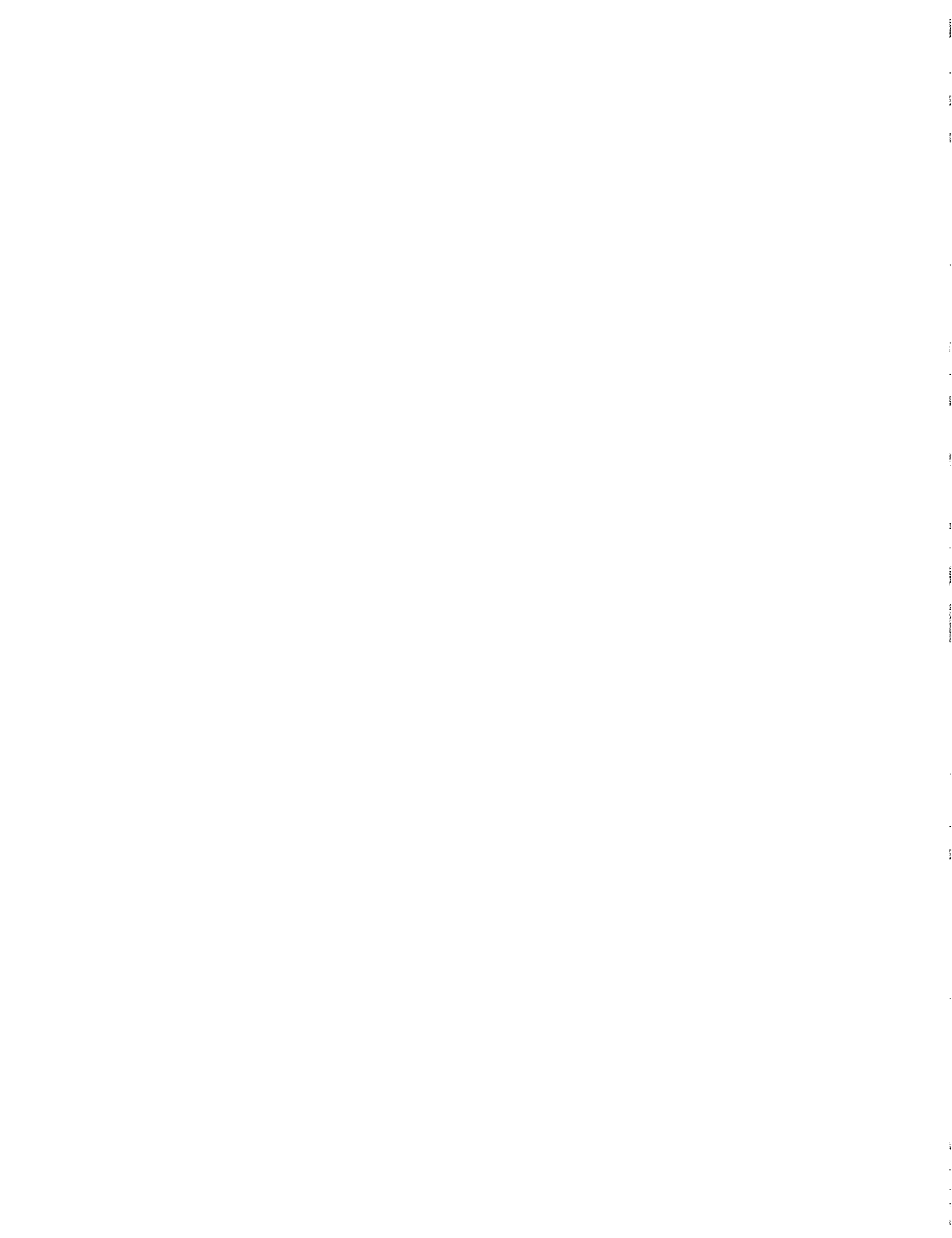
Report to the Chairman, Committee on
Appropriations, U.S. Senate

January 1986

**NAVY
MAINTENANCE**

**Costs to Overhaul
Navy Ships at Private
Shipyards**







United States
General Accounting Office
Washington, D.C. 20548

National Security and International
Affairs Division
B-133170

January 9, 1986

The Honorable Mark O. Hatfield
Chairman, Committee on Appropriations
United States Senate

Dear Mr. Chairman:

In response to your March 27, 1985, letter and subsequent discussions with your office, we reviewed the estimated and actual costs to overhaul Navy ships at private shipyards.

We obtained information on the 105 regular ship overhauls performed in private shipyards from fiscal year 1982 through May 1985. We (1) compared contract award amounts, government estimates, and final contract prices, (2) reviewed selected contract modifications and ascertained their effect on contract costs, and (3) contrasted the size of price increases in the fixed-price contracts with those in the cost type contracts. We also reviewed Navy policies for distributing overhaul work geographically.

We found that overhaul costs increased significantly between the time of contract award and the time of contract completion. Such increases occurred under each of the 105 contracts, which consisted of 75 fixed-price contracts and 30 cost type contracts. On the 75 fixed-price contracts, the prices increased from \$594 million to \$967 million, a difference of \$373 million, or 63 percent. On the 30 cost type contracts, the prices increased from \$539 million to \$728 million, a difference of \$189 million, or 35 percent.

We also found that 71 of the 75 fixed-price contracts and 24 of the 30 cost type contracts were awarded at prices below the government estimates. These differences averaged 31 percent and 21 percent, respectively.

The increases in contract costs between award and completion were the result of modifications for growth work and new work. The Navy categorizes growth work modifications as those relating to technical shortfalls in the original work package and new work modifications as those pertaining to requirements not included in the work package. According to the Navy, growth work accounted for 76 percent of the cost increases on fixed-price contracts and 66 percent of the increases on cost type contracts.

We analyzed selected modifications for 25 fixed-price contracts and found, in contrast to the experience on initial awards, that the Navy paid more than the government estimated that these modifications should cost. Navy officials stated that the higher prices were the result of (1) negotiating on a sole-source basis with the original contractor rather than negotiating competitively, (2) allowing premium pay for overtime and weekend work to meet scheduled completion dates, and (3) reimbursing the contractor for the costs of delays and disruptions caused by modifications.

The Navy has changed its policy governing the geographic distribution of overhaul work. Prior to May 1985, one-third of the regular overhauls were reserved for a ship's homeport area. In May 1985, the policy was changed to require that regular overhauls and other planned maintenance actions that would require more than 6 months to complete be competed coastwide. Maintenance actions of 6 months or less could continue to be reserved for the homeport area. This policy change may not have a significant impact because, over recent years, the Navy has been decreasing the number of regular overhauls and increasing the number of short, labor-intensive maintenance actions.

The results of our analysis are described in more detail in appendix I.

On December 5, 1985, the Department of Defense provided official oral comments on a draft of this report. The Department agreed with the report.

As arranged with your office, we are sending copies of this report to the Chairmen, House Committee on Government Operations, Senate Committee on Governmental Affairs, House Committee on Appropriations, and House and Senate Committees on Armed Services; the Director, Office of Management and Budget; and the Secretaries of Defense and the Navy. Copies will be made available to other interested parties upon request.

Sincerely yours,



Frank C. Conahan
Director

Costs to Overhaul Navy Ships at Private Shipyards

In August 1985, the Navy had an active fleet of 538 ships that required periodic maintenance. This maintenance is accomplished either in eight naval shipyards or in approximately 40 private shipyards.

Scheduled maintenance actions for carrying out general repair and alterations are called regular overhauls. Regular overhauls for the more complex Navy ships, such as submarines and carriers, are generally done in naval shipyards. Overhauls for less complex ships, such as auxiliary and amphibious ships, are routinely done in private shipyards. In the past, the Navy used both fixed-price contracts and cost type contracts to obtain ship maintenance from private shipyards. In May 1985, however, the Chief of Naval Operations directed that fixed-price contracting be the primary acquisition strategy for ship overhauls. Under a fixed-price contract, a contractor agrees to perform work for a specific amount. The price is not subject to adjustment on the basis of a contractor's cost experience in performing the contract. A cost type contract provides for payment of allowable incurred costs to the extent prescribed in the contract.

The Naval Sea Systems Command (NAVSEA) is responsible for the overhaul and repair of Navy ships. Its Industrial and Facility Management Directorate has management control of the eight naval shipyards and 16 Supervisors of Shipbuilding, Conversion and Repair (SUPSHIP) offices. The SUPSHIP offices plan and manage the overhaul of Navy ships in private shipyards located in their geographical areas.

Objective, Scope, and Methodology

As requested, we reviewed the estimated and actual costs to overhaul Navy ships at private shipyards. We (1) compared contract award amounts, government estimates, and final contract prices, (2) reviewed selected contract modifications and ascertained their effect on contract costs, and (3) contrasted the size of price increases in the fixed-price contracts with those in the cost type contracts. We also reviewed Navy policies for distributing overhaul work geographically.

We acquired data from NAVSEA on the 105 regular ship overhauls performed in private shipyards from fiscal year 1982 through May 1985. Information on labor hours planned and used under the contracts was not readily available and, as agreed, we concentrated on obtaining cost data. We also reviewed the contract files, including selected modifications, for 25 of these contracts. We judgmentally selected the contract modifications, with emphasis on high dollar modifications.

We visited 7 of the 12 SUPSHIP offices that managed the 105 contracts. These offices were located in Boston, Massachusetts; Charleston, South Carolina; Jacksonville, Florida; Portsmouth, Virginia; San Diego, California; San Francisco, California; and Seattle, Washington. We discussed our observations with various NAVSEA, SUPSHIP, and industry officials.

Our review was made in accordance with generally accepted government audit standards and was performed between April 1985 and October 1985.

Contract Cost Growth

Overhaul costs increased significantly between the time the contracts were awarded and the time the contracts were completed. In addition, the contract award amounts often were substantially less than the government estimates of the costs to do the work.

We compared the contract award amounts for the 105 contracts with the government estimates and the final contract completion prices. The following table shows the summary results of this comparison.

Table I.1: Summary Cost Comparison

| Dollars in millions | | | | |
|---------------------|---------------------|----------------|---------------------|----------------|
| Contract type | Number of contracts | Award amount | Government estimate | Final price |
| Fixed-price | 75 | \$ 594 | \$ 843 | \$ 967 |
| Cost type | 30 | 539 | 646 | 728 |
| Total | 105 | \$1,133 | \$1,489 | \$1,695 |

Comparison of Contract Award Amounts and Final Prices

The final contract price exceeded the contract award amount for each of the 105 contracts. The extent of the increases for each SUPSHIP office is shown in tables I.2 and I.3.

**Appendix I
Costs to Overhaul Navy Ships at
Private Shipyards**

Table I.2: Comparison of Fixed-Price Contract Awards and Final Prices

Dollars in millions

| SUPSHIP | Number of contracts | Total award amount | Total final price | Difference | |
|---------------|---------------------|--------------------|-------------------|----------------|-----------|
| | | | | Amount | Percent |
| Bath | 3 | \$ 36.1 | \$ 55.9 | \$ 19.8 | 55 |
| Boston | 9 | 57.6 | 78.8 | 21.2 | 37 |
| Brooklyn | 7 | 76.7 | 129.1 | 52.4 | 68 |
| Charleston | 6 | 17.4 | 27.5 | 10.1 | 58 |
| Jacksonville | 2 | 1.9 | 3.7 | 1.8 | 93 |
| Long Beach | 4 | 21.8 | 29.9 | 8.1 | 37 |
| Pearl Harbor | 2 | 12.6 | 17.1 | 4.5 | 36 |
| Portsmouth | 15 | 122.7 | 177.8 | 55.1 | 45 |
| San Diego | 12 | 109.8 | 229.2 | 119.4 | 109 |
| San Francisco | 8 | 110.6 | 182.3 | 71.7 | 65 |
| Seattle | 7 | 26.7 | 35.9 | 9.2 | 35 |
| Total | 75 | \$593.9 | \$967.2 | \$373.3 | 63 |

Table I.3: Comparison of Cost Type Contract Awards and Final Prices

Dollars in millions

| SUPSHIP | Number of contracts | Total award amount | Total final price | Difference | |
|--------------|---------------------|--------------------|-------------------|----------------|-----------|
| | | | | Amount | Percent |
| Bath | 5 | \$ 99.6 | \$134.4 | \$ 34.8 | 35 |
| Boston | 1 | 12.5 | 21.7 | 9.2 | 73 |
| Brooklyn | 5 | 88.5 | 112.0 | 23.5 | 26 |
| Pascagoula | 7 | 117.1 | 158.3 | 41.2 | 35 |
| Portsmouth | 2 | 18.3 | 27.2 | 8.9 | 49 |
| San Diego | 5 | 75.6 | 95.8 | 20.2 | 27 |
| Seattle | 5 | 127.4 | 178.9 | 51.5 | 41 |
| Total | 30 | \$539.0 | \$728.3 | \$189.3 | 35 |

Comparison of Contract Award Amounts and Government Estimates

We found that 95 of the 105 contracts were awarded at prices below the government estimates. As tables I.4 and I.5 show, this condition was not limited to a particular SUPSHIP office or contract type.

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Table I.4: Fixed-Price Contract Awards Below Government Estimates

Dollars in millions

| SUPSHIP | Number of contracts | Total estimate | Total award | Difference | Range of awards below estimate (percent) | | |
|---------------|---------------------|----------------|----------------|----------------|--|-----------|-----------|
| | | | | | 0-10 | 11-40 | 41-62 |
| Bath | 3 | \$ 49.5 | \$ 36.1 | \$ 13.4 | 0 | 3 | 0 |
| Boston | 8 | 86.7 | 52.0 | 34.7 | 0 | 6 | 2 |
| Brooklyn | 7 | 102.1 | 76.7 | 25.4 | 1 | 5 | 1 |
| Charleston | 6 | 24.6 | 17.4 | 7.2 | 1 | 4 | 1 |
| Jacksonville | 2 | 3.0 | 1.9 | 1.1 | 0 | 2 | 0 |
| Long Beach | 4 | 24.9 | 21.8 | 3.1 | 1 | 3 | 0 |
| Pearl Harbor | 2 | 15.4 | 12.6 | 2.8 | 0 | 2 | 0 |
| Portsmouth | 13 | 158.5 | 119.5 | 39.0 | 3 | 7 | 3 |
| San Diego | 12 | 196.8 | 109.8 | 87.0 | 0 | 3 | 9 |
| San Francisco | 7 | 115.0 | 85.3 | 29.7 | 2 | 4 | 1 |
| Seattle | 7 | 32.6 | 26.7 | 5.9 | 1 | 6 | 0 |
| Total | 71 | \$809.1 | \$559.8 | \$249.3 | 9 | 45 | 17 |

Table I.5: Cost Type Contract Awards Below Government Estimates

Dollars in millions

| SUPSHIP | Number of contracts | Total estimate | Total award | Difference | Range of awards below estimates (percent) | | |
|--------------|---------------------|----------------|----------------|----------------|---|-----------|----------|
| | | | | | 0-10 | 11-40 | 41-53 |
| Bath | 5 | \$124.1 | \$ 99.6 | \$ 24.5 | 2 | 3 | 0 |
| Boston | 1 | 16.5 | 12.5 | 4.0 | 0 | 1 | 0 |
| Brooklyn | 3 | 60.6 | 54.1 | 6.5 | 1 | 2 | 0 |
| Pascagoula | 7 | 180.6 | 117.1 | 63.5 | 0 | 4 | 3 |
| Portsmouth | 2 | 22.2 | 18.3 | 3.9 | 0 | 2 | 0 |
| San Diego | 3 | 48.3 | 45.8 | 2.5 | 3 | 0 | 0 |
| Seattle | 3 | 78.2 | 69.9 | 8.3 | 2 | 1 | 0 |
| Total | 24 | \$530.5 | \$417.3 | \$113.2 | 8 | 13 | 3 |

The difference between the government estimates and the contract award amounts averaged 31 percent for the fixed-price contracts and 21 percent for the cost type contracts.

Reasons for Contract Cost Increases

The increases in contract costs were the result of modifications for growth work and new work. The Navy categorizes growth work as that related to the specifications in the original work package. Changes are made to correct technical shortfalls, such as errors in the specifications

and drawings or the lack of sufficient detail in the specifications. The Navy categorizes new work as that pertaining to requirements not included in the original work package. Changes are made to correct deficiencies not detected during preoverhaul inspections or to add alterations that should not wait until the next overhaul.

Navy data indicates that growth work accounted for 76 percent and new work accounted for 24 percent of the cost increases on fixed-price contracts. On cost type contracts, growth work amounted to 66 percent and new work 34 percent.

We analyzed selected modifications for 25 fixed-price contracts and found that the Navy paid more than the government estimated that these modifications should cost. Our analysis showed that the final negotiated prices averaged 27 percent more than the government estimates. A primary cause of the higher prices, according to SUPSHIP officials, was that the modifications were negotiated on a sole-source basis with the original contractors and were not negotiated competitively.

Work done pursuant to contract modifications also can cost more than it would under the original contract because premium pay for overtime and weekend work may be required to meet scheduled completion dates. In addition, contractors often ask reimbursement for the costs of delays and disruptions caused by the modifications. For example, on one overhaul modification for the U.S.S. Adroit, the contractor's proposal of \$428,424 included \$72,268 for premium time and \$30,858 for disruption elements. In another instance, on a modification for the U.S.S. Sustain, the contractor's proposal of \$345,944 included \$73,715 for premium time and \$44,569 for disruption elements.

Cost Increases Occur Under Both Types of Contracts

Our analysis showed that, although cost increases were larger under fixed-price contracts, cost type contracts also had substantial increases. The comparisons of contract award amounts and final contract prices shown in tables I.2 and I.3 indicated that the increases averaged 63 percent under fixed-price contracts and 35 percent under cost type contracts.

Navy Policy Change for Assigning Overhauls to Private Shipyards

The Chief of Naval Operations recently changed the policy on assigning ships to overhaul activities. Prior to May 1985, OPNAV Notice 4700 provided that at least one-third of the regular overhauls be reserved for a ship's homeport area. This policy benefited private shipyards in areas where large numbers of ships were homeported, such as San Diego, Norfolk, and Charleston. However, in making appropriations for fiscal year 1985, the House and Senate conference committee directed that the reservation of an arbitrary percentage of overhauls be terminated.

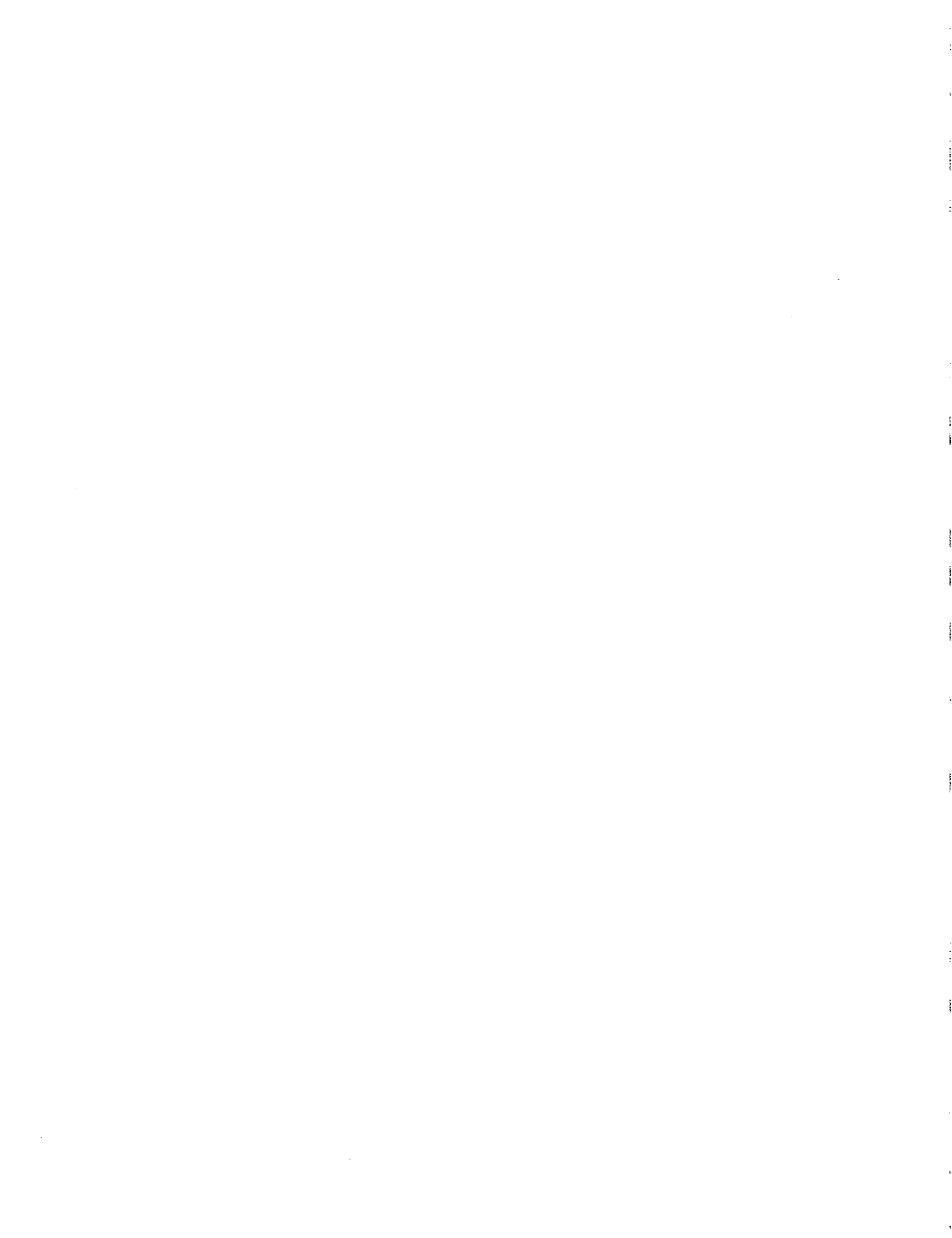
In May 1985, the policy in OPNAV Notice 4700 was changed to require that planned maintenance actions of more than 6 months be competed coastwide. Planned maintenance actions of 6 months or less continue to be reserved for a ship's homeport area, provided adequate capability, capacity, and competition exist. Maintenance actions include both overhauls and selected restricted availabilities. Selected restricted availabilities are short, labor-intensive maintenance actions that are required to sustain the condition of ships between overhauls.

This policy change may not significantly affect the distribution of maintenance actions because the Navy has been increasing the number of selected restricted availabilities and decreasing the number of overhauls. The following data provided by NAVSEA illustrates this trend.

**Table I.6: Private Shipyard Maintenance
 Actions
 Fiscal Years 1980 to 1986**

| Fiscal year | Regular overhauls | Selected restricted availabilities | Total |
|------------------|-------------------|------------------------------------|-------|
| 1980 | 43 | 11 | 54 |
| 1981 | 43 | 20 | 63 |
| 1982 | 48 | 22 | 70 |
| 1983 | 39 | 36 | 75 |
| 1984 | 25 | 48 | 73 |
| 1985 (projected) | 31 | 68 | 99 |
| 1986 (projected) | 13 | 71 | 84 |

Since selected restricted availabilities normally are planned to take less than 6 months, private shipyards in the homeport areas will continue to receive most of the work.



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