

093819

UNCLASSIFIED

U.S. GENERAL ACCOUNTING OFFICE

STAFF STUDY

[ DLG ANTI-AIR WARFARE MODERNIZATION PROGRAM

DEPARTMENT OF THE NAVY ]

ACC 00001

FEBRUARY 1973

UNCLASSIFIED

~~713063~~

093819

C O N T E N T S

	<u>Page</u>
PROGRAM DESCRIPTION AND STATUS	1
PROGRAM COST EXPERIENCE	2
CONTRACT DATA	4
PROGRAM PERFORMANCE EXPERIENCE	6
PROGRAM SCEHDULE EXPERIENCE	6
RELATIONSHIP TO OTHER SYSTEMS	7
SELECTED ACQUISITION REPORTING	8
AGENCY COMMENTS	8
APPENDIX I	9
APPENDIX II	10

THE GUIDED MISSILE FRIGATE (DLG)  
ANTI-AIR WARFARE MODERNIZATION PROGRAM

PROGRAM DESCRIPTION AND STATUS

The DLG Anti-Air Warfare Modernization Program is primarily intended to improve the anti-air warfare capabilities of the 10 ships of the DLG-6 class, the nine ships of the DLG-16 class, and the nuclear DLG(N)-25. Modernization will enable these ships to launch TERRIER and STANDARD missiles from the same launcher. Illustrations of the DLG-6 and DLG-16 class ships are attached as Appendixes I and II. The DLG(N)-25, will have about the same above deck profile as shown for the DLG-16 class.

All ships are being equipped with an improved three-dimensional air search radar, an improved guided missile fire control system, and the Naval Tactical Data System. Changes are also being made to improve the communications system, increase the anti-submarine detection capability, and to increase the electrical generating and air-conditioning capacities. In addition to modernizing the ships, needed repairs and rehabilitation are being made to ship structures and equipment.

As of June 30, 1972, four DLG-6 class ships and six DLG-16 class ships had completed the modernization program. Another two DLG-6 class ships and the remaining three DLG-16 class ships were in various phases of the program. These five ships are scheduled to complete modernization during the period of October 1972 to March 1974.

The first of the remaining four ships of the DLG-6 class started the program in October 1972 and modernization of all four ships is scheduled for completion by March 1976. The DLG(N)-25 is scheduled to start in June 1974, and be completed in October 1976.

PROGRAM COST EXPERIENCE

Our review of Navy records and discussions with Navy officials, showed an estimated program cost at June 30, 1972, of \$1,020.6 million, an increase of \$14.0 million over the \$1,006.6 million reported as of June 30, 1971.

The cost changes for this program are shown in the following table.

	<u>Amount</u> (In Millions)
June 30, 1971 Estimate	\$ 1,006.6
Changes during fiscal year 1972:	
Engineering Change (+) 7.7	
Support Change (+) 1.3	
Economic Change (+) 4.6	
Estimating Change (+) 1.8	
Other Changes (-) 1.4	<u>(+) 14.0</u>
Program Costs as of June 30, 1972	<u>\$ 1,020.6</u>

As indicated above, engineering changes resulted in a net increase of \$7.7 million. Of this amount \$7.5 million is attributable to planned equipment changes to the DLG(N)-25 as follows. (1) \$6.4 million for removing the 3-inch guns and installing the Close-In Weapon System and other equipment, and (2) \$1.1 million for computer software for the Naval Tactical Data System. The remaining \$ 2 million is the net increase resulting from other minor engineering changes.

The net increase of \$1.3 million in support costs represents a number of adjustments pertaining to outfitting requirements for various ships.

Of the \$4.6 million in increased economic costs, \$4 million represents

expected higher labor rates, material costs, and escalation for the DLG-10 and DLG(N)-25 ships. The remaining \$.6 million resulted from higher escalation costs and repair labor rates experienced on two of the completed ships.

Estimating changes resulted in a net increase of \$1.8 million. The increase is a combination of (1) a reinstatement of \$3.6 million in fiscal year 1972 post-delivery funds that had been deleted in a prior year, and (2) a net decrease of \$1.8 million, primarily in the cost estimates for the DLG-10 and DLG(N)-25 ships due to updated cost information.

A decrease of \$1.4 million in other changes is a combination of a \$4.1 million cost overrun and an increase of \$2.7 million, primarily for radar equipment for the DLG-11 which had not been charged to the program.

Information provided by Office of the Secretary of Defense from the Congressional Data Sheets shows the current estimate through completion of this system as of December 31, 1972, to be \$1,010.4 million. The \$10.2 million decrease from the June 30, 1972, amount can be attributed to a reevaluation of Post Delivery equipment

#### Economic Escalation

The current price escalation for the modernization program is \$26.3 million or approximately 3 percent of the program cost. This amount is comprised of \$15.1 million of actual costs and \$11.2 million of projected costs. The projected costs are computed based upon approved DOD guidance.

#### Logistics Support/Additional Procurement Costs

Logistic support/additional procurement costs are limited under the program to providing only initial and replenishment spares and/or supplies needed by the ship to complete its modernization work and return to the fleet. The current estimate for these costs is \$32 million exclusive of the costs applicable to the DLG-16 and DLG(N)-25 ships. Cost data for these ships was not available because Navy records precluded segregating them from other ship costs.

Program funding

CWO 00001

As of June 30, 1972, the Congress had appropriated \$618.4 million for the modernization program. Reprogramming actions of \$95 million increased this amount to \$713.4 million, of which \$608.6 million had been obligated. Of the amount obligated, \$515.3 million had been expended.

Funds programmed as of June 30, 1972 are as follows:

	<u>Fiscal Year 1972 and Prior Years</u>	<u>Fiscal Year 1973</u>
Development	\$ -	\$ -
Procurement	713.4	148.4
Construction	-	-
Total	<u>\$ 713.4</u>	<u>\$ 148.4a</u>

<sup>a</sup>Amount actually appropriated by the Congress for this program was \$101.4 million. The change occurred because funding for the DLG-11 was postponed until fiscal year 1974.

CONTRACT DATA

The modernization and repair of eight DLG-16 class ships is being accomplished by the Bath Iron Works Corporation, Bath, Maine. The 10 ships of the DLG-16 class and the remaining ship in the DLG-16 class were assigned to the Philadelphia Naval Shipyard, Philadelphia, Pennsylvania for modernization. The modernization and repair of the DLG(N)-25 is scheduled to begin in the Puget Sound Naval Shipyard, Bremerton, Washington, in June 1974.

The contract with Bath provides for modernizing eight ships at a fixed price of \$54.4 million (plus escalation) and repairing them at prices to be negotiated on a repair order basis. As of June 30, 1972, there were 150 changes to the scope of the modernization work at an

estimated cost of \$8.3 million. With respect to repairs, there have been 3,980 repair orders issued at an estimated cost of \$49.9 million.

The modernization and repair work at the Philadelphia Naval Shipyard is done on a cost-reimbursable basis. Currently, seven of the ten DLG-6 class ships and the one DLG-16 ship had completed or were undergoing work. The following schedule summarizes costs for modernization and repairing them as of June 30, 1972:

Initial Cost estimates	\$ 166.2 million
Change order issued (155)	3.7 million
Other Costs (includes escalation, overtime, and increased repairs)	<u>25.6 million</u>
Total	<u>\$ 195.5 million</u>

The Navy purchases equipment and services from a number of contractors for the modernization program. However, a Navy official informed us that updating the contract data previously reported in the SAR would entail extensive research.

The progress reporting plan for the Bath Iron Works Corporation and the Philadelphia Naval Shipyard consists of the submission of the following types of reports (1) status of significant industrial milestones, (2) labor progress curves, (3) test memorandum status, (4) erection schedules, and (5) material status reports. The shipyards also participate in Quarterly Production Progress Conferences. We were informed that these reports combined with bi-monthly inspections by project office personnel permit close control of the shipyards' operation.

#### PROGRAM PERFORMANCE EXPERIENCE

The modernization program is intended to provide the ships with updated weapon systems which would increase target acquisition range, reduce reaction time, and provide a greater kill probability. In last year's study, we stated that available data on missile firings from ships that had been modernized disclosed a high percentage of failure. Many of the failures were attributed, however, to the missile itself. This condition still exists. The Navy stated that the increased missile failures were attributed to making the environmental conditions under which the system was tested more severe, or closer to actual operational conditions. Notwithstanding, the recorded reliability percentages indicate a very slight increase in the surface-to-air mode and a 50 percent drop in the surface-to-surface mode since June 30, 1971. Both of these amounts are still far below the reliability requirement for the Standard Missile. (See study on Standard Missile)

The operational and technical characteristics of the DLG(N)-25 were approved during fiscal year 1972. As compared to the tentative characteristics reported in the June 30, 1971, SAR the more significant changes are the replacement of the ship's 3-inch guns with the Close-In Weapons System and an increase in the ship's cruising range. It will also be equipped with antisubmarine capabilities above those of the other ships in the program.

The only characteristic change made in fiscal year 1972, will provide increased air search capability to the last four DLG-6 ships to be modernized. This capability will also be given to the DLG(N)-25.

#### PROGRAM SCHEDULE EXPERIENCE

As of June 30, 1972, the six DLG-6 and three DLG-16 class ships that had not yet completed the program were expected to do so on or before



their scheduled milestone dates. According to a project official, one of the DLG-6 ships may experience a starting delay because its funding was postponed 1 year to fiscal year 1974. Should this occur, there would be a delay in the completion of the ship's modernization.

We reported in our March 1972 study that the DLG(N)-25 had experienced a 12-month delay in the start of its modernization work. During this review, we noted that the ship start date has been delayed an additional three months. This is due to the ship's nuclear engine's ability to operate longer than anticipated before replacement.

The two DLG-6 ships completing the program in fiscal year 1972, completed the program 3 to 4 months later than expected. The delays were primarily caused by engine auxiliary exhaust problems and high fire room temperatures encountered during final contract trials. These problems were subsequently corrected.

#### RELATIONSHIP TO OTHER SYSTEMS

The Navy has a total of 35 guided missile frigates in the fleet, under construction, or to be constructed. These include 28 non-nuclear frigates commissioned between 1960 and 1967, two nuclear frigates commissioned in 1962 and 1967, two nuclear frigates under construction, and 3 DLG(N)-13 class nuclear frigates for which funds have been approved. In addition, funding for long lead time nuclear components for two more DLG(N)-38 class nuclear frigates have been approved. Nineteen of the 28 non-nuclear frigates and the first nuclear-powered frigate are being modernized under the current program,

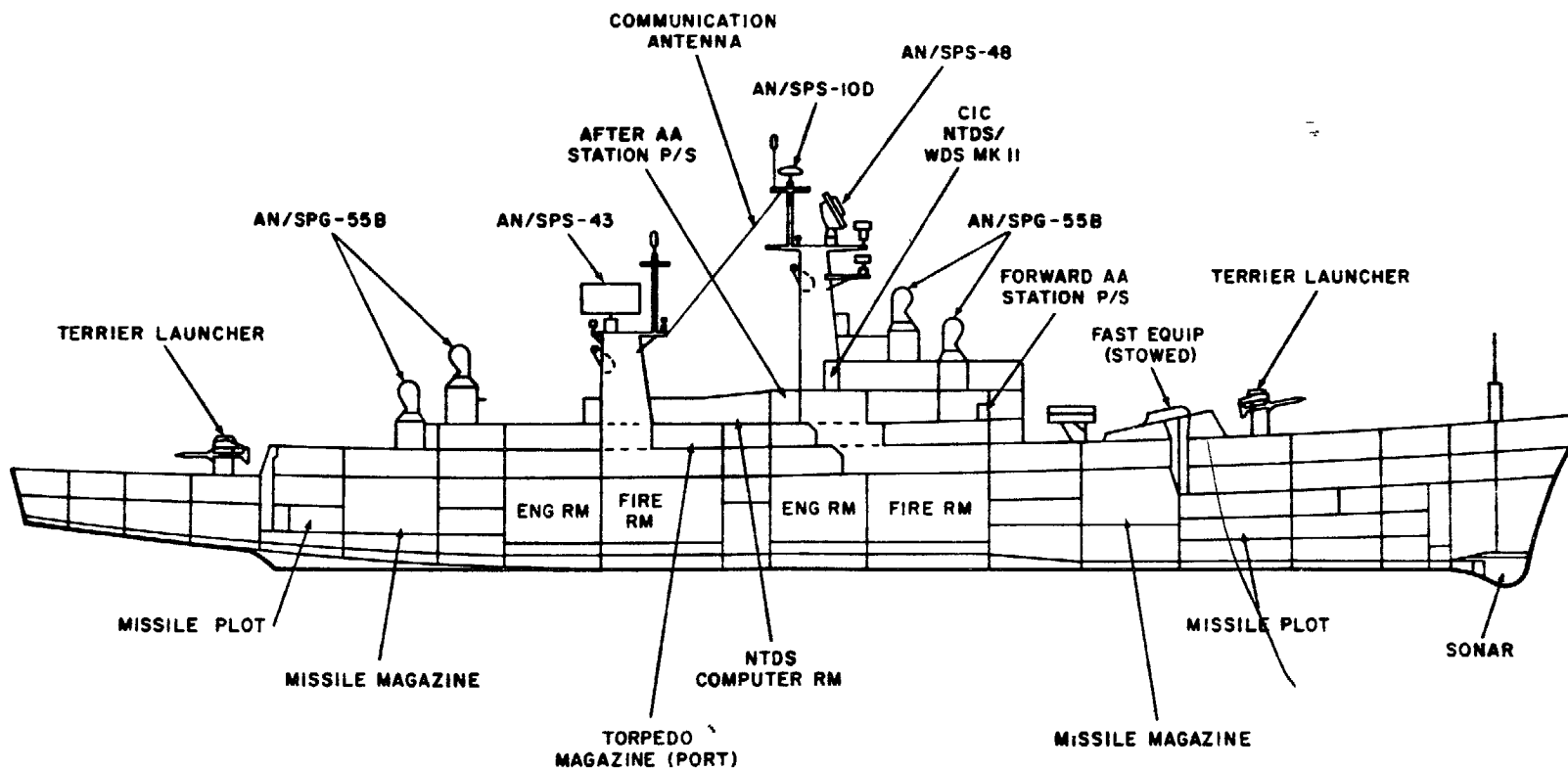
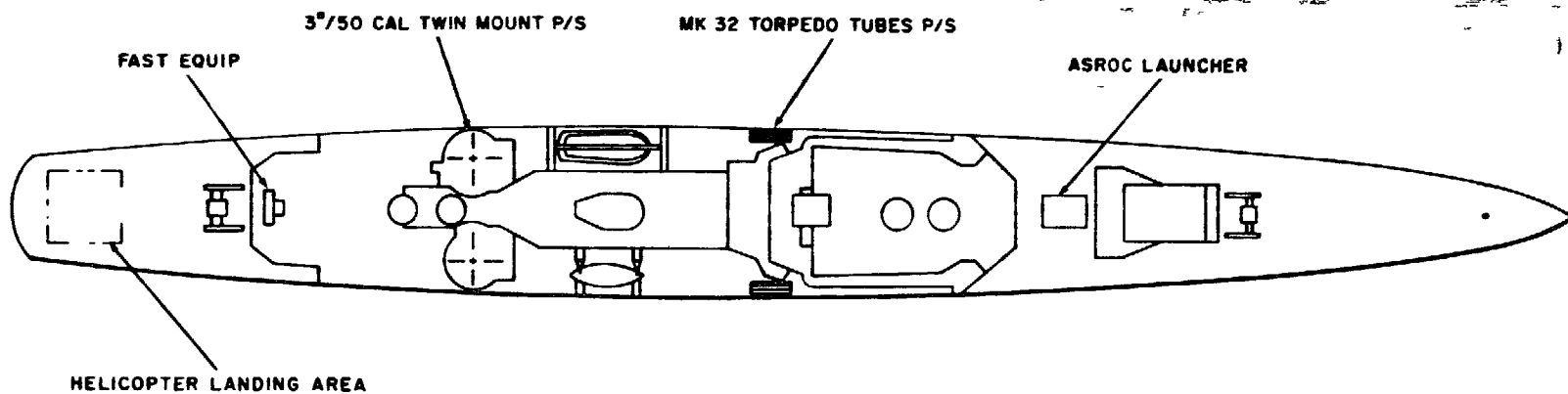
The 10 DLG-6 class ships have one Terrier launcher as do the DLG-26 through 34 and DLG(N)-35 ships. The DLG-16 class ships and the DLG(N)-25 have two Terrier launchers. The Standard Missile is currently being deployed on the modernized DLG's. The Tartar weapon system will be deployed on the five nuclear frigates expected to be delivered to the Navy by 1978.

#### SELECTED ACQUISITION REPORTING

This program was deleted from the SAR system on June 30, 1971. In last year's study, we questioned the Office of the Secretary of Defense's decision to delete this program from the SAR system. Because this program is to continue until late in calendar year 1976 and approximately half of the program funds of \$1,020.6 million have yet to be expended, we believe that the visibility and control brought about the SAR system is justified and should be reinstated.

#### AGENCY COMMENTS

A draft of this staff study was reviewed by Navy officials associated with the management of this program and comments were coordinated at the Headquarters level. The Navy's comments are incorporated as appropriate. As far as we know there are no residual differences in fact.

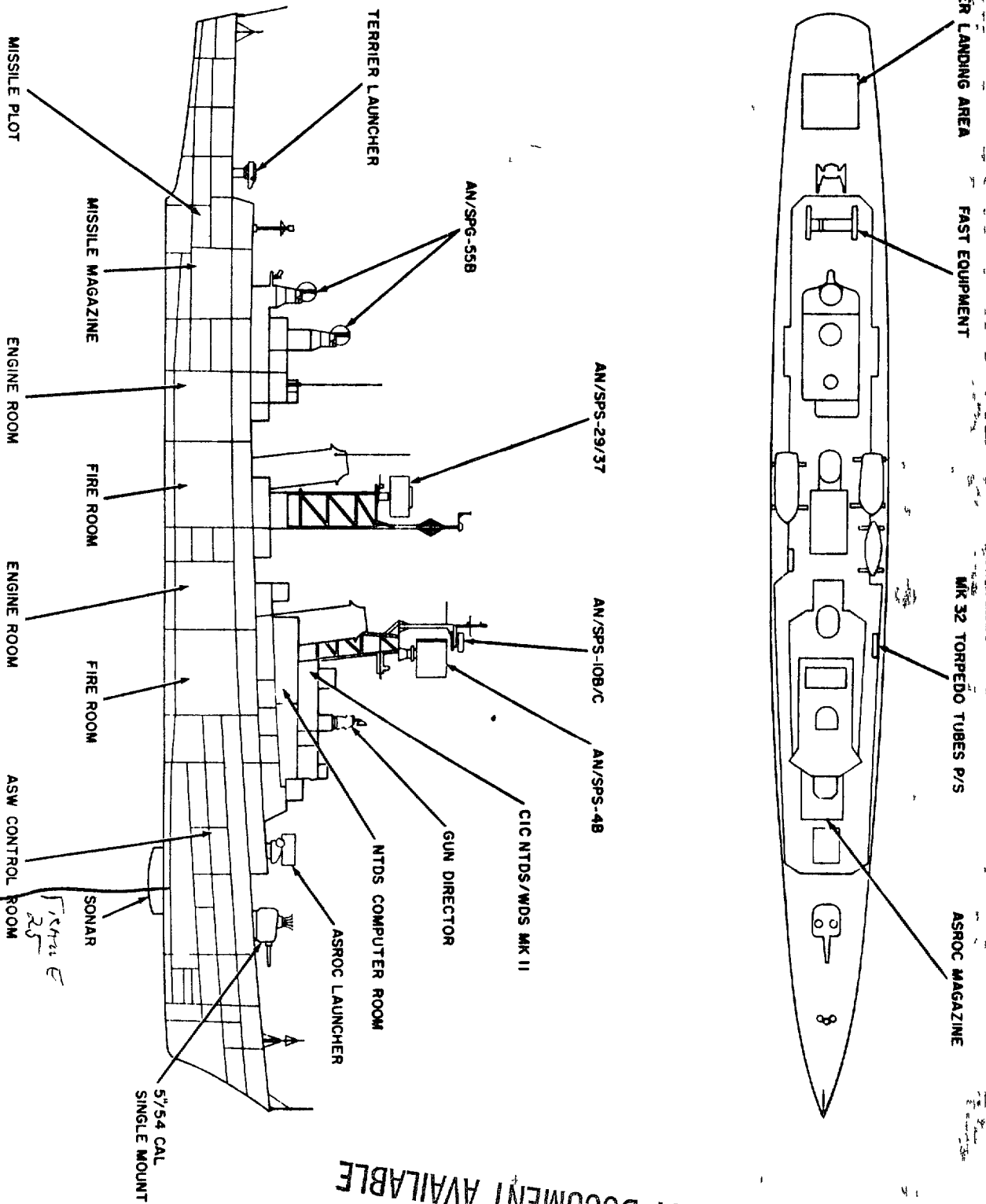


BEST DOCUMENT AVAILABLE

APPENDIX I

DLG 16 Profile and Plan View After Modernization.

DLG 6 Profile and Plan View After Modernization.



BEST DOCUMENT AVAILABLE