# Audit Report

OFFICE OF THE INSPECTOR GENERAL

**DEFENSE BASE CLOSURE AND REALIGNMENT BUDGET DATA FOR THE NAVAL SURFACE WARFARE CENTER**

Report Number 93-052

February 10, 1993

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## Department of Defense

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**The following acronyms are used in this report.**

A-E.....Architect-Engineer
BRAC.....Base Realignment and Closure
CHESDIV.....Chesapeake Division, Naval Facilities Engineering Command
COBRA.....Cost of Base Realignment Actions
EPA.....Environmental Protection Agency
GAO.....General Accounting Office
MILCON.....Military Construction
NAVFACINST.....Naval Facilities Engineering Command Instruction
NAVSEA.....Naval Sea Systems Command
NSWC.....Naval Surface Warfare Center
RDT&E.....Research, Development, Test and Evaluation
SIOH.....Supervision, Inspection, and Overhead
STP.....Sewage Treatment Plant

INSPECTOR GENERAL
DEPARTMENT OF DEFENSE
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February 10, 1993

MEMORANDUM FOR ASSISTANT SECRETARY OF THE NAVY (FINANCIAL MANAGEMENT)

SUBJECT: Audit Report on Defense Base Closure and Realignment Budget Data for the Naval Surface Warfare Center (Report No. 93-052)

We are providing this final report for your information and use. The report addresses the requirements of Public Law 102-190, "National Defense Authorization Act for Fiscal Years 1992 and 1993," December 5, 1991. The Law prescribes that we evaluate significant increases in military construction project costs over the estimated costs provided to the Commission on Base Realignment and Closure. This report is one in a series of reports relating to FY 1993 military construction costs for closing and realigning bases. The report also addresses the realignment of the Naval Surface Warfare Centers in White Oak, Maryland, and Panama City, Florida, to Dahlgren, Virginia, and the realignment of the Naval Surface Warfare Center in Annapolis, Maryland, to Carderock, Maryland. Comments on a draft of this report were considered in preparing the final report.

Comments received on a draft of this report conform to the requirements of DoD Directive 7650.3 and there are no unresolved issues. Therefore, no additional comments are required.

The courtesies extended to the audit staff are appreciated. If you have any questions concerning this audit, please contact Mr. Wayne Million at (703) 692-2991 (DSN 222-2991) or Mr. John Delaware at (703) 692-2992 (DSN 222-2992). Appendix D lists the distribution of this report.

Robert J. Lieberman
Assistant Inspector General
for Auditing

cc:
Secretary of the Navy
Assistant Secretary of Defense (Production and Logistics)
Comptroller of the Department of Defense

Office of the Inspector General, DoD

AUDIT REPORT NO. 93-052 February 10, 1993
(Project No. 2CG-5022.05)

# AUDIT REPORT ON DEFENSE BASE CLOSURE AND REALIGNMENT BUDGET DATA FOR THE NAVAL SURFACE WARFARE CENTER

## EXECUTIVE SUMMARY

**Introduction.** This audit was directed by Public Law 102-190, "National Defense Authorization Act for FY 1992 and 1993," December 5, 1991. The Law states that the Secretary of Defense shall ensure that the amount of the authorization requested by DoD for each military construction project associated with base realignment and closure actions does not exceed the original estimated cost provided to the 1991 Defense Base Closure and Realignment Commission. The Secretary of Defense is required to submit to Congress an explanation of the reasons for the differences between a project's requested amount and the initial estimated cost. The Inspector General, DoD, is required to review each military construction project for which there is a significant difference and provide the results of the review to the Secretary of Defense for forwarding to Congress. This report is one in a series of reports relating to FY 1993 military construction cost increases for closing and realigning bases.

**Objective.** The overall objective of the audit was to evaluate significant cost increases over the estimated costs provided to the 1991 Defense Base Closure and Realignment Commission for base closure and realignment military construction projects. This report provides the results of the audit related to the realignment of Naval Surface Warfare Centers elements in White Oak, Maryland, and Panama City, Florida, to Dahlgren, Virginia; and the realignment of the Naval Surface Warfare Center element in Annapolis, Maryland, to Carderock, Maryland. Three projects were in the FY 1993 military construction package for the Naval Surface Warfare Center; one at Dahlgren and two at Carderock.

**Audit Results.** We found that the Navy overstated the cost of the Dahlgren project by approximately $18.4 million. The Navy also understated the costs of two Carderock projects by $7.5 million.

**Internal Controls.** We did not include a review of internal controls as related to the objective because of the time sensitivity of the data reviewed.

**Potential Benefits of Audit.** We determined that the monetary benefits at the Naval Service Warfare Center could range from

$13.0 million to $18.4 million if our recommendations are implemented (see Appendix B). Further, by increasing the scope of the laboratory the Navy will have a building that will meet research requirements.

**Summary of Recommendations.** We recommended that the Naval Surface Warfare Center prepare a new DD Form 1391, "Military Construction Project Data," for Project P-267S in accordance with the documentation and cost factors in Naval Facilities Engineering Command Instruction 11010.44E, Military Handbook 1010, and related architect-engineer studies, and revise and resubmit DD Form 1391 for the Ship Materials Technology Facility (Project P-179S) to include the total project scope for the Ships Materials Engineering Department. We also recommended that the Comptroller of the Navy reduce the total cost estimate for military construction for the sewage treatment plant by $13.0 million to $18.4 million to take into account overstated costs and duplicate requirements.

**Management Comments.** The Navy generally agreed to revise and resubmit a DD Form 1391 for the Sewage Treatment Upgrade and Project P-179S, "Ship Materials Technology Facility."

The Comptroller of the Navy concurred with the draft report's recommendation to reduce the total cost estimate but disagreed with the amount of monetary benefits. The Navy stated that a preliminary estimate for the sewage treatment plant was $20 million, which was a $13 million decrease. The Navy agreed that, upon conclusion of current studies, the projects' scopes and cost estimates would be revised.

**Audit Response.** We consider the Navy comments to be responsive to the draft report. Part I summarizes the management comments and the audit response to management comments, and Part III lists the complete text of management comments.

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This report was prepared by the Contract Management Directorate, Office of the Assistant Inspector General for Auditing, DoD. Copies of the report can be obtained from the Secondary Reports Distribution Unit, Audit Planning and Technical Support Directorate, (703) 614-6303 (DSN 224-6303).

## PART I - RESULTS OF AUDIT

### Introduction

On March 6, 1992, we announced our audit of Defense Base Closure and Realignment Budget Data. The audit was directed by Public Law 102-190, "National Defense Authorization Act for Fiscal Years 1992 and 1993," enacted December 5, 1991. The objective of the audit was to evaluate significant increases in military construction (MILCON) project costs over the estimated costs provided to the 1991 Commission on Base Realignment and Closure (BRAC). This report is one in a series of reports relating to FY 1993 MILCON costs for closing and realigning bases. This report addresses the realignment of two elements of the Naval Surface Warfare Centers (NSWC), one each in White Oak, Maryland, and Panama City, Florida, to Dahlgren, Virginia; and the realignment of the NSWC element in Annapolis, Maryland, to Carderock, Maryland.

The realignment includes three MILCON projects proposed for FY 1993 totaling $59.5 million. The first project involves the expansion of a sewage treatment plant (STP) for $33 million at NSWC Dahlgren. The STP is needed to accommodate the additional volume incurred with the realignment; however, proper documentation required by Naval Facilities Engineering Command Instruction (NAVFACINST) 11010.44E, "Shore Facilities Planning Manual," to support the project could not be found. The second and third projects are located at NSWC Carderock and are for the construction of facilities to support the realignment. One of these projects, valued at $23 million, is for a Ship Materials Technology Facility. This project was not adequately funded to provide a facility comparable to the facility's current capabilities. The other project, valued at $3.5 million, is for construction of a Composite Materials Laboratory as a separate wing on the Ship Materials Technology Facility.

### Background

Public Law 102-190 states that the Secretary of Defense shall ensure that the amount of the authorization requested by DoD for each MILCON project associated with BRAC actions does not exceed the original estimated cost provided to the 1991 Commission. The Secretary of Defense is required to submit to Congress an explanation of the reasons for the differences in a project's requested amount and the initial estimated cost. Also, the Inspector General, DoD, is required to review each MILCON project for which the Secretary of Defense submits an explanation to Congress.

Costs submitted to the 1991 Commission were developed from a computer model, "Cost of Base Realignment Actions" (COBRA), initially developed during the 1988 base closure process. The

model was used to estimate the potential costs and savings associated with realignment and closure recommendations. Specifically, the model estimated one-time realignment and closure costs, such as administrative planning and support, personnel actions, moving, construction, and procurement and construction cost avoidances.

The COBRA model also estimated recurring costs and savings. However, the costs were developed as a "closure and realignment package" for a particular closing or base realignment and not developed by specific MILCON projects for each installation affected by the recommendations.

**Scope**

Because we were unable to determine the amount of cost increases for each MILCON project related to a specific base closure, we compared the total COBRA construction cost for each base closure package to the Military Departments' MILCON budget submissions for FY 1993 and future fiscal years. Our comparison found 13 base closure packages with increases ranging from $1.1 million to $35.3 million. We elected to audit seven packages. Each had an increase in cost of 20 percent or greater. This report covers the realignment package for the NSWC.

The 1991 Commission concurred with the Navy recommendation to close and realign many of the Navy research, development, test, and evaluation (RDT&E), engineering, and fleet support activities. To accomplish these objectives, the Navy developed a consolidation plan for these activities that would create four centers: Naval Air Warfare Center; Naval Command, Control, and Ocean Surveillance Center; Naval Surface Warfare Center; and Naval Undersea Warfare Center. The realignments of the David Taylor Research Center, Annapolis; the Naval Coastal Systems Center, Panama City; and the Naval Surface Weapons Center Detachment, White Oak, were identified for restructuring under the NSWC. The original COBRA estimate for NSWC military construction was $61 million. The FYs 1993 through FY 1997 MILCON budget for base closure at NSWC totaled $95.6 million, an increase of $34.6 million or 56.7 percent. The Navy FY 1993 Budget submission explained that the increase was caused by additional projects resulting from the transfer of laboratory functions.

We reviewed justification for the three FY 1993 MILCON projects totaling $59.5 million located at two NSWC sites related to the RDT&E, engineering, and fleet support activities realignment. The remaining projects, currently estimated at $36.1 million, are scheduled for implementation during FY 1994.

This economy and efficiency audit was conducted at the activities listed in Appendix C during the period May through August 1992.

We did not rely on computerized data to conduct this audit. Additionally, we did not review internal controls related to our objective because of the time sensitivity of the data under review. Except as noted, the audit was made according to auditing standards issued by the Comptroller General of the United States, as implemented by the Inspector General, DoD.

**Other Audits**

In addition to this report, the following audits, which relate to the overall objective, have been issued or are being conducted on base closure and realignment.

o The base closure of Naval Station Philadelphia, Pennsylvania, and the realignment of Naval Aviation Engineering Service Unit to Naval Air Warfare Center, Lakehurst, New Jersey, IG, DoD, Report No. 92-085, May 7, 1992.

o The partial closing of MacDill Air Force Base (AFB), Florida, and the realignment of some of its functions to Luke AFB, Arizona, and Seymour Johnson AFB, North Carolina, IG, DoD, Report No. 92-086, May 7, 1992.

o The base closure of Fort Benjamin Harrison, Indiana, and the realignment of some of its functions to Fort Meade, Maryland, including the realignment of functions originally scheduled to move to Fort Benjamin Harrison from Fort Sheridan, Illinois, but now realigned to Fort Knox, Kentucky, IG, DoD, Report No. 92-087, May 7, 1992.

o The closure of Carswell AFB, Texas and the realignment of some of its functions to Minot AFB, North Dakota; Barksdale AFB, Louisiana; Dyess AFB, Texas; and Tinker AFB, Oklahoma, IG, DoD, Report No. 93-027, December 27, 1992.

The General Accounting Office (GAO) is conducting an audit (GAO Code 398100) of the closure of Rock Island Arsenal, Illinois, and various other minor activities with functions being realigned to Redstone Arsenal, Huntsville, Alabama.

The Army Audit Agency conducted an audit, Report SR 92-702, dated August 12, 1992, on Base Realignment and Closure Construction Requirements, which included coverage of our objectives at two activities. The audit covered, in part:

o the realignment of functions from Fort Benjamin Harrison to Fort Jackson, South Carolina; and

o The closure of Fort Ord, California, and the realignment of some of its functions to Fort Lewis, Washington.

We will submit a summary report to the Secretary of Defense upon completion of the audits of all seven base closure packages with significant FY 1993 cost increases over the costs submitted to the 1991 Commission.

**Discussion**

**MILCON project supporting documentation.** NSWC did not ensure that three MILCON projects related to the realignment of the command were adequately planned and documented to provide complete and usable facilities within a justified cost, as required by NAVFACINST 11010.44E. The cost of Project P-267S, "Sewage Treatment Plant Upgrade," is overstated by $18.4 million because NSWC did not have detailed justification to support all the project costs, used inflated factors to calculate costs, duplicated support facility requirements in other MILCON projects, and included requirements not directly associated to the base realignment. The cost of Project P-179S, "Ship Materials Technology Facility," and Project P-172S, "Composite Materials Laboratory," are understated by $7.5 million because NSWC personnel believed they were constrained to a pre-established funding limit from Naval Sea Systems Command (NAVSEA). As a result, NSWC will not obtain a complete and usable facility that would satisfy the deficiency generated by the realignment of functions directed by the 1991 Commission.

**Overstated project costs.** Project P-267S provides for the upgrade of the existing sewage treatment plant at NSWC Dahlgren. The upgrade will increase capacity from 400,000 to 600,000 gallons per day to partially accommodate the transfer of functions from NSWC White Oak. The project would also decontaminate the existing facility and associated waste material in compliance with an Environmental Protection Agency (EPA) and Virginia Department of Waste Management enforcement order. The project was estimated to cost $32.8 million and is composed of 12 line items as listed in Appendix A.

NAVFACINST 11010.44E provides guidance on the preparation of MILCON project documentation. The instruction includes a requirement for a detailed cost estimate that should be prepared on DD Form 1391, "Military Construction Project Data" (DD Form 1391), in sufficient detail to permit cost validation. Military Handbook 1010, "Cost Engineering: Policy and Procedures," contains unit cost data for facility projects.

Our audit disclosed that NSWC did not have adequate documentation as required by NAVFACINST 11010.44E to support the projected cost for the sewage treatment plant upgrade project. In many cases we found that the cost factors NSWC used to calculate the cost of the project were significantly greater than those in Military Handbook 1010 or in related architect-engineer (A-E) studies. The project documentation did not contain any justification for

the larger cost factors. Additionally, we found the project included requirements not directly attributable to the base closure. As a result, the cost of Project P-267S is overstated by approximately $18.4 million. Our review of each project line item is discussed as follows.

**Construction of STP.** NSWC overstated the construction cost of the STP by $1.5 million. NSWC derived a $7.5 million construction cost by multiplying the average gallons per day (600,000) by $12.50 per gallon. However, NSWC personnel did not have documentation to support the $12.50-per-gallon factor. An A-E study prepared in May 1991 for NSWC estimated the cost of a new state-of-the-art sewage treatment plant at $6 million. The state-of-the-art plant would have an average capacity of 700,000 gallons per day. The A-E cost estimate included a 25-percent contingency factor for unknowns and a 15-percent factor for cost escalations to the mid-point of construction.

**New mains to "C" gate.** NSWC overstated the cost of this project line item by $319,900. The construction of new facilities at the C gate area necessitated replacement of the 8-inch main sewer lines from the C gate area to the sewage treatment plant to accommodate expected increases in sewage production. NSWC estimated the cost at $500,000 but did not have documentation to support the cost estimate. Military Handbook 1010 provides a unit cost factor of $10.31 per linear foot for 8-inch sanitary sewer pipe including the cost of excavation backfill and compaction. NSWC prepared an evaluation of the sanitary sewers in January 1988 that resulted in a detailed map of the existing sewer lines. We used this study to estimate that the length of the 8-inch sewer pipe from the C gate area to the sewage treatment plant is approximately 17,465 linear feet. Applying the unit cost factor from Military Handbook 1010, we estimate that installing new main sewer lines from the C gate area would cost approximately $180,100, which is $319,900 less than the NSWC estimate.

**Site clearance and demolition of storage buildings.** NSWC overstated the cost to demolish three public works storage facilities by $96,874. NSWC submitted a cost of $100,000 but did not have documentation to support the cost estimate. According to NSWC property records, the combined space of the three structures is 12,502 square feet. Military Handbook 1010 provides a unit cost factor of $.25 per square foot for the demolition and disposal of wood frame buildings. Using Military Handbook guidelines, the estimated cost of the demolition of the three structures should be only $3,126.

**Replacement of demolished buildings.** The replacement cost for the demolished buildings was overstated by $387,370. NSWC calculated a cost of $1.2 million to replace the storage buildings discussed above. The cost estimate was prepared using

$100 per square foot for a 12,000-square-foot-building. NSWC did not have documentation to support the $100-per-square-foot factor. Military Handbook 1010 provides a cost factor of $65 per square foot for public works storage facilities. Using the actual square footage of the three buildings (12,502 square feet) and the Military Handbook cost factor, the estimated cost should be $812,630, which is $387,370 less than NSWC estimate.

**"C" Gate pumping station and holding tank.** The proposed cost of $3.5 million for the C Gate pumping station and holding tanks was not a valid requirement associated with the realignment of NSWC and should not be charged to the base closure account. The project documentation stated that the additional storage and pumping capacity and waste lines were needed to transport effluent to the sewage treatment plant from the C gate where new research facilities will be located. NSWC did not have documentation to support the costs for the pumping station and holding tank as part of Project P-267S. However, MILCON Project P-262, "Fleet Requirements Support Building," includes a requirement for a sewage disposal system with holding ponds as support facilities for the building. Project P-262 estimated costs for the sewage disposal system at approximately $815,000. Congress approved the project in the FY 1992 National Defense Authorization Act. Consequently, the requirement for the new sewage pump station in Project P-267S is a duplication of the requirement in Project P-262. The project line item costing $3.5 million should be deleted from Project P-267S.

**Demolition of existing plant.** In June 1989, the EPA and the Virginia Department of Waste Management determined that the sewage treatment plant at NSWC was contaminated with chemical waste. The contamination resulted from an electroplating operation that was discontinued in February 1990. An EPA enforcement order required NSWC to decontaminate the sewage treatment plant in compliance with EPA standards. One option was to demolish the existing facility and decontaminate the surrounding environs according to clean closure guidelines. NSWC estimated $1.5 million to demolish the existing STP. During 1991, further NSWC tests showed that the contamination of the sewage treatment plant had been neutralized. In April 1992, the Virginia Department of Waste Management notified NSWC that the decontamination of the sewage treatment plant and collection system was satisfactory. Consequently, demolishing the existing plant is no longer required, and the $1.5 million funding requirement should be eliminated from the MILCON project.

**Clean closure of plant environs and packaging and removal of hazardous waste.** In addition to decontaminating the sewage treatment plant, the EPA enforcement order also required clean closure of the sewage treatment plant environs, which includes two wastewater treatment ponds and sludge drying beds. The contaminated materials were to be transported to a hazardous

waste disposal facility. NSWC estimated costs of $10.5 million for the clean closure of the plant and $2.5 million for packaging and removing the hazardous waste. The estimate included $6.8 million to clean up the sewage treatment plant and $1.4 million to package and remove the related hazardous waste. Since the sewage treatment plant has been decontaminated and will not require clean up, both the $6.8 million cost and the $1.4 million cost can be eliminated from the project cost.

**Wetlands mitigation.** NSWC submitted proposed costs of $1.2 million for wetlands mitigation based on a preliminary A-E study. At the time of our audit, this was the best estimate that NSWC had to replace wetlands lost due to the upgrade of the sewage treatment facility.

The term "wetlands" refers to those areas inundated by surface or ground water with a frequency sufficient to support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Executive Order 11990, "Protection of Wetlands," states that each agency shall take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. The Navy position is to maintain no overall loss of wetlands and to avoid impacting wetlands wherever possible. In addition, any action significantly affecting wetlands requires an environmental review to determine if wetland impacts are unavoidable; only then may wetlands be reduced. At the time of our audit, NSWC had contracted for a study on constructed wetlands resulting from the sewage treatment project. The final report had not been received. Accordingly, these costs were not questioned.

**Miscellaneous.** NSWC estimate of $1 million for miscellaneous items in Project 267S was an attempt to fund unforeseen problems encountered during construction. However, this estimate duplicates the amount calculated under the contingency line item. NSWC did not have documentation to support the estimate. NAVFACINST 11010.14Q establishes a reserve for contingencies of 5 percent of the total estimated project cost as part of a project cost estimate in the DD Form 1391. The contingency line item for Project P-267S was $1.475 million, thus the miscellaneous line item should be eliminated.

**Contingency and supervision, inspection, and overhead (SIOH).** Overstated project costs result in an overstatement of contingency costs and SIOH costs. According to DoD Instruction 7040.4, "Military Construction Authorization and Appropriation," a standard rate factor of 5 percent is permitted for contingency costs. The SIOH costs are derived by applying 6 percent to the sum of the total of the project costs and contingency cost. As a result of the reduced costs estimates for the project, the

contingency costs and SIOH costs could be reduced by $0.83 million and $1.04 million, respectively.

**Understated project costs.** Project P-179S was developed in May 1991 to provide a building to accommodate the realignment and transfer of 185 personnel of the Ship Materials Engineering Department from NSWC Annapolis to NSWC Carderock. The realignment will consolidate and integrate work now being performed in office and laboratory space totaling 124,400 square feet but dispersed over 24 different buildings at NSWC Annapolis. Project P-172S was originally slated for construction at NSWC Annapolis as a Productivity Investment Funds project. However, the realignment of the Ship Materials Engineering Department required the project to be relocated to NSWC Carderock and funded as a BRAC MILCON project. NSWC decided to combine projects P-179S and P-172S into one facility by adding the Composite Materials Laboratory as a wing to the Ship Materials Technology Facility.

NAVFACINST 11010.44E, Chapter 11.6, states that a MILCON project should include all elements necessary to produce a complete and usable facility that satisfies an existing deficiency. The instruction also requires the sponsoring command to ensure the cost estimate represents the entire scope of the project. DoD guidance requires that all one-time implementation costs of base closures and realignments be budgeted and funded from the BRAC MILCON account.

NSWC understated the total cost of the Ship Materials Technology Facility by $7.5 million. NAVSEA established a funding limit of $23 million for Project P-179S before the project scope was defined or estimated costs were calculated. After the preliminary scope for the project was developed, a unit cost was derived to keep the total project cost within the NAVSEA funding limit even though the scope and potential cost had increased significantly. As a result, NSWC Carderock will not receive a complete and usable facility that will accommodate all functions to be realigned from NSWC Annapolis.

**Initial project scope and cost.** The original DD Form 1391 for Project P-179S, dated May 1, 1991, estimated the primary facility cost for the Ship Materials Technology Facility at $16.5 million. The project scope estimated a requirement for 110,000 square feet of space at a unit cost of $150 per square foot. In February 1992, the Chesapeake Division (CHESDIV), Naval Facilities Engineering Command, prepared a cost certification for the project at a total cost of $17.4 million. The project scope increased to 135,000 square feet; however, the unit cost was adjusted downward to $129 per square foot. Our discussions with NSWC personnel disclosed that these estimates were based on a total funding limit of $23 million imposed by NAVSEA. The certification stated that Naval Facilities Engineering Command

guidance did not contain unit cost factors for research facilities. Furthermore, the certification did not provide any support for the $129 unit cost. We found that Military Handbook 1010 contains an FY 1993 primary facility guidance unit cost factor for ship and marine labs. The unit cost factors for these types of facilities range from $97 to $153 per square foot. We believe the $129 factor was derived to keep the total project cost under the NAVSEA total funding ceiling.

The DD Form 1391 for Project P-172S estimated the primary facility cost for the Composite Materials Laboratory at $2.9 million. The project scope estimated a requirement for a 15,458 square foot laboratory facility at a unit cost of $185 per square foot.

**A-E design scope.** CHESDIV awarded an A-E design contract in May 1992, "to provide an accurate scope and cost estimate for the budget submission" of the Ship Materials Technology Facility including a wing for the Composite Material Laboratory. After meetings with NSWC personnel, the A-E calculated the gross square feet required to satisfy the facility requirements for the Ship Materials Engineering Department. The A-E estimated 173,650 square feet as the gross space requirement. This estimate consisted of:

- 71,065 square feet of laboratory,
- 1,600 square feet of lab storage,
- 24,050 square feet of General Services Administration standard office space,
- 4,000 square feet of conference rooms, and
- 72,935 square feet for stairwells, hallways, and common areas.

**A-E estimate of construction cost.** The A-E estimated that the average construction cost to build a research facility in the Washington Metropolitan Area was $160 to $170 per square foot. At a cost of $160 per square foot and 173,650 gross square feet, the primary facility cost for the Ship Materials Technology facility would be $27.8 million. This amount is $7.5 million greater than the total primary facility cost on the DD Form 1391 for both projects.

**Facility requirements.** The A-E calculated that at the funding limit of $23 million and the potential construction cost of $160 per square foot, the Ships Material Engineering Department could only afford a 130,000-gross-square-foot facility. The A-E estimates would result in laboratory space of only 53,400 square feet. Currently, the Ship Materials

Engineering Department occupies 87,500 square feet of laboratory space in Annapolis. The A-E estimates the department needs 71,065 square feet of laboratory space based on workload changes and efficiencies from consolidation of facilities. NSWC personnel stated that if only 53,400 square feet of lab space were available, certain functions of the Ship Materials Engineering Department would not be transferred to Carderock until new facilities could be programmed in future MILCON budgets or other facilities could be renovated using base operating funds.

**Conclusion**

Because of the funding limitation imposed by NAVSEA, NSWC will be unable to realign and transfer all functions of the Ship Materials Engineering Department from NSWC Annapolis to NSWC Carderock as required by the 1991 Commission. The project scope will not provide a complete and usable facility as described in the DD Form 1391. NSWC should revise the cost estimate and funding request for Project P-179S to include the total cost to provide a complete and usable facility.

RECOMMENDATIONS, MANAGEMENT COMMENTS AND AUDIT RESPONSE

**1. We recommend that the Naval Surface Warfare Center revise and resubmit a DD Form 1391, "Military Construction Project Data" for:**

**a. Project P-267S, Sewage Treatment Plant Upgrade, based on the documentation and cost factors in Naval Facilities Engineering Command Instruction 11010.44E, Military Handbook 1010 and related architect-engineer studies.**

**b. Project P-179S, Ship Materials Technology Facility, to include the total project scope for the Ship Materials Engineering Department requirements at Carderock.**

**Management Comments.** The Navy concurred, with qualifications, to Recommendation 1. The Navy initiated a concept study for the Sewage Treatment Plant in June 1992. Preliminary estimates indicate the project's cost to be around $20 million. The 20-percent design milestone for the Ships Materials Technology Facility indicates an increased efficiency from the new design for the facility that will not require additional square footage to support the functions to be housed at Carderock. However, adjustments in design will increase the project cost by $3.8 million.

**Audit response.** The Navy actions meet the intent of our recommendation. However, we believe the cost of the Ship Materials Technology Facility may be more than the Navy estimate because the Navy did not revise the unit cost

factor of $127 per square foot used on the original DD Form 1391. As we stated in the finding, the A-E estimated that the average construction cost to build a research facility in the Washington Metropolitan Area is $160 to $170 per square foot.

**2. We recommend that the Comptroller of the Navy reduce the total cost estimate for military construction project P-267S by $13.0 million to $18.4 million, to take into account the overstated costs and duplicated requirements.**

**Management response**. The Navy did not concur with the estimated savings stating that the recently completed detailed concept study identifies a preliminary total cost of $20 million.

**Audit response**. The Navy actions meet the intent of our recommendation. The preliminary total cost of $20 million is a decrease of $13 million from the $33 million cost shown on the original DD Form 1391 and should be supported by the detailed cost analysis. We revised our recommendations to accommodate the latest Navy estimate for the cost of the project. The complete text of the Navy comments to the draft report is in Part III of this report.

**Deleted Recommendations**. The Navy comments stated that environmental cleanup of the sewage treatment plant is required to provide a complete and usable facility. Consequently, the cost of the environmental cleanup should be included in the MILCON project rather than charged to environmental funds. Accordingly, we have deleted the draft report Recommendations 2. and 3.b. that required transferring cleanup costs of $5.3 million from construction to environmental funds. We have renumbered Recommendation 3.a. of the draft report as Recommendation 2. in this final report.

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## PART II - ADDITIONAL INFORMATION

APPENDIX A - Sewage Treatment Plant Costs

APPENDIX B - Summary of Potential Benefits Resulting from Audit

APPENDIX C - Activities Visited or Contacted

APPENDIX D - Report Distribution

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## APPENDIX A - SEWAGE TREATMENT PLANT COSTS

| Project Line-Item Description | Cost Estimate | Amount Overstated |
|---|---|---|
| Construct Storage Treatment Plant | $ 7,500,000 | $ 1,500,000 |
| New Mains to "C" Gate | 500,000 | 319,900 |
| Site Clearance & Demolition | 100,000 | 96,874 |
| Replace Demolished Buildings | 1,200,000 | 387,370 |
| "C" Gate Pumping Station & Holding Tank | 3,500,000 | 3,500,000 |
| Demolition of Existing Plant | 1,500,000 | 1,500,000 |
| "Clean Closure of Plant Environs | 10,500,000 | 6,800,000 |
| Packaging & Removal of Hazardous Waste | 2,500,000 | 1,430,000 |
| Wetlands Mitigation | 1,200,000 | |
| Miscellaneous | 1,000,000 | 1,000,000 |
| Subtotals | $29,500,000 | $16,534,144 |
| Contingency (5 percent) | 1,475,000 | 826,707 |
| Subtotals | $30,975,000 | $17,360,851 |
| SIOH (6 percent) | 1,859,000 | 1,041,651 |
| Totals | $32,834,000 | $18,402,502 |

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## APPENDIX B - SUMMARY OF POTENTIAL BENEFITS RESULTING FROM AUDIT

| Recommendation Reference | Description of Benefit | Type of Benefit |
|---|---|---|
| 1.a. and 1.b. | Compliance. DD Forms 1391 did not have adequate supporting documentation for the requirements and estimated MILCON costs as required by NAVFACINST 11010.44E. Compliance with this regulation will result in more accurate estimates of the requirements and cost of the projects and also enable their valuation. | Nonmonetary |
| 2. | Economy and Efficiency. Reduce total cost of MILCON Project P-267S. | Funds put to better use of $13.0 million to $18.4 million to the Military Construction Appropriation* |

* Navy's recent concept study identified potential monetary benefits of $13 million. However, the exact amount will not be known until completion of the final design in July 1993.

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## APPENDIX C - ACTIVITIES VISITED OR CONTACTED

Office of the Secretary of Defense

Comptroller of the Department of Defense, Washington, DC

Navy

Comptroller of the Navy, Washington, DC
Naval Sea Systems Command, Washington, DC
Chesapeake Division, Naval Facilities Engineering Command, Washington, DC
Naval Surface Warfare Center, Headquarters, Arlington, VA
Dahlgren Division, Naval Surface Warfare Center, Dahlgren, VA
Carderock Division, Naval Surface Warfare Center, Carderock, MD
Annapolis Division, Naval Surface Warfare Center, Annapolis, MD

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## APPENDIX D - REPORT DISTRIBUTION

Office of the Secretary of Defense

Assistant Secretary of Defense (Production and Logistics)
Deputy Assistant Secretary of Defense (Installations)
Comptroller of the Department of Defense

Department of the Army

Secretary of the Army
Assistant Secretary of the Army (Installations and Logistics)
Chief of Engineers, U.S. Army Corps of Engineers
Inspector General, Department of the Army
Auditor General, U.S. Army Audit Agency

Department of the Navy

Secretary of the Navy
Assistant Secretary of the Navy (Financial Management)
Assistant Secretary of the Navy (Installations and Environment)
Comptroller of the Navy
Naval Facilities Engineering Command
Auditor General, Naval Audit Service

Department of the Air Force

Secretary of the Air Force
Assistant Secretary of the Air Force (Financial Management and Comptroller)
Assistant Secretary of the Air Force (Manpower, Reserve Affairs, Installations and Environment)
Air Force Audit Agency

Non-DoD Federal Organizations

Office of Management and Budget
General Accounting Office, National Security and International Affairs Division, Technical Information Center

**APPENDIX D - REPORT DISTRIBUTION (cont'd)**

Chairman and Ranking Minority Member of the Following Congressional Committees:

Senate Committee on Appropriations
Senate Subcommittee on Defense, Committee on Appropriations
Senate Committee on Armed Services
Senate Committee on Governmental Affairs
House Subcommittee on Defense, Committee on Appropriations
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

Senator Barbara A. Mikulski, U.S. Senate
Senator Charles S. Robb, U.S. Senate
Senator Paul S. Sarbanes, U.S. Senate
Senator John W. Warner, U.S. Senate
Congressman Herbert H. Bateman, U.S. House of Representatives
Congressman Wayne Gilchrest, U.S. House of Representatives
Congresswoman Constance A. Morella, U.S. House of Representatives

## PART III - MANAGEMENT COMMENTS

Department of the Navy

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DEPARTMENT OF THE NAVY
OFFICE OF THE ASSISTANT SECRETARY
(FINANCIAL MANAGEMENT)
WASHINGTON, DC 20350-1100

21 JAN 1993

MEMORANDUM FOR THE DEPARTMENT OF DEFENSE ASSISTANT INSPECTOR GENERAL FOR AUDITING

Subj: DODIG DRAFT QUICK-REACTION REPORT ON THE REVIEW OF DEFENSE BASE REALIGNMENT AND CLOSURE BUDGET DATA FOR THE NAVAL SURFACE WARFARE CENTER (PROJECT NO. 2CG-5022.05)

Ref: (a) DODIG Memo of 6 Nov 92

Encl: (1) DON Response to Draft Audit Report

I am responding to the draft audit report forwarded by reference (a), concerning increases in Naval Surface Warfare Center military construction project costs over the estimated costs provided to the 1991 Defense Base Closure and Realignment Commission.

Department of the Navy comments are provided in enclosure (1). We generally concur with the recommendations of the report, but disagree with the actual dollar values of the revisions, and that environmental funds vice construction funds should be charged for clean up costs of the existing plant. The complex and confusing technical issues connected with the projects reviewed, combined with the tight schedules dictated by the base closure process made initial scoping and associated cost estimating extremely difficult. The purpose of the NSWC/NAVFAC initiated concept studies, referenced in the audit report, is to clarify scope and cost, and to facilitate project design.

The Military Construction process is such that at certain design milestones, scope and cost estimates are revised and the program cost adjusted accordingly. We agree with the DODIG that upon conclusion of our immediate studies, the projects' scopes and cost estimates should be revised. We disagree with the actual dollar values of the revisions. Details of this disagreement can be found in enclosure (1).

Al Conte
ALBERT V. CONTE
Acting

Copy to:
NAVCOMPT (NCB-53)
NAVINSGEN (04)

DEPARTMENT OF THE NAVY RESPONSE
TO
DODIG DRAFT QUICK-REACTION REPORT ON THE REVIEW OF DEFENSE BASE REALIGNMENT AND CLOSURE BUDGET DATA FOR THE NAVAL SURFACE WARFARE CENTER
(PROJECT NO. 2CG-5022.05)

DODIG Audit Recommendation:

1. We recommend that the Naval Surface Warfare Center revise and resubmit a DD Form 1391, "Military Construction Project Data" for:

a. Project P-267-S, Sewage Treatment Plant Upgrade, based on the documentation and cost factors in Naval Facility Instruction 11010.44E, Military Handbook 1010, and related architect-engineer studies.

DON Response: Concur with qualifications. Implementation of the Base Realignment and Closure Act decisions and response to the State of Virginia Notice of Non-compliance necessitated expediting the submittal of programming documents for this project. The complex and confusing technical issues, both environmental and design-related, made the initial scoping and cost estimating difficult. To ensure adequate funding for the project, a conservative approach to the unknowns associated with the project was used to develop the initial cost estimate.

To adequately address project scope and cost, a concept study was initiated in June 1992. A revised DD Form 1391 will be prepared when design has progressed far enough to provide adequate basis for a valid cost estimate. Based on recent, yet preliminary cost estimates, the project's cost is expected to be around $20 million. Target completion date for a valid cost estimate/revised DD Form 1391: 31 July 1993.

DODIG Audit Recommendation:

1. We recommend that the Naval Surface Warfare Center revise and resubmit a DD Form 1391, "Military Construction Project Data" for:

b. Project P-179S, Ship Materials Technology Facility, to include the total project scope for the Ship Materials Engineering Department requirements at Carderock.

DON Response: Concur with qualifications. The DD Form 1391 will be revised to reflect increased funding requirements. Target completion date is 31 January 1993. An increase to the project cost of $3.8 million is required to provide adequate funding for the primary facility, built-in equipment, mechanical utilities and site preparation (demolition).

Enclosure (1)

The proposed facility, consisting of two projects (P-179S, Ship Materials Technology Facility, budgeted at $23 million, and P-172S, Composite Materials Laboratory, budgeted at $3.5 million), will provide 150,000 square feet of engineering laboratory space. This combined scope is adequate to provide a complete and usable facility for the realignment of the Ship Materials Engineering Department (Code 28) from Annapolis to Carderock.

The architectural engineering firm (A&E) space requirement computation of 173,650 gross square feet was an initial estimate based on preliminary data. This estimate reflects current operations as they exist in twenty-four separate facilities at the Annapolis Detachment. Extensive review and evaluation of this requirement by both the user and the A&E has resulted in efficiencies both of required space and proposed operations of the department.

The 20 percent design milestone of September 1992 indicates an increased net to gross ratio (efficiency) for the facility. Additional square footage is not required to support the functions to be housed. However, the following adjustments to the budget cost are required:

(1) The covered storage and open storage identified on the DD Form 1391 will be deleted. The total primary facility will remain at 150,000 square feet. Utilizing the DD Form 1391 unit cost of $127 per square foot, this will increase the primary facility cost by $1.4 million.

(2) Some of the "built-in" equipment was considered to be technical collateral equipment funded with OPN appropriations. However, the refining of requirements indicates that this equipment (fume hoods and overhead cranes) meets the definition of OPNAVINST 11010.20E (Facilities Projects Manual) for installed equipment for which MILCON funding is appropriate. This will increase the primary facility cost by $1.3 million.

(3) Mechanical utilities in the original DD Form 1391 did not include requirements for sensitive environmental controls for the metrology laboratory. The additional funding required is $0.6 million.

(4) Demolition of building 102 at approximately $100,000 needs to be added to the project cost. Due to time constraints, the original DD Form 1391 assumed a vacant site for the facility. During the preparation of the Environmental Assessment for Base Realignment of the Carderock Division (September 1992), various environmental considerations indicated that the preferred siting of the facility would require demolition of building 102. This demolition cost was not included in the original Form 1391.

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The total required increase is $3.4 million plus five percent contingency and six percent supervision, inspection and overhead for a total project increase of $3.8 million.

DODIG Audit Recommendation:

Deleted

2. We recommend that the Naval Surface Warfare Center charge the costs for cleanup of the sewage treatment plant environs and removal of related hazardous waste to the Base Realignment and Closure II environmental account.

DON Response: Do not concur. The Sewage Treatment Plant project as developed provides a complete and usable facility. For the new plant to be complete and usable, the State of Virginia must issue a permit to operate the plant. Issuance of this permit requires that the old plant and the environs be "clean". Therefore, the environmental clean-up costs are included in the project to provide a complete and usable facility as required by Congressional guidance.

In addition to the legislative requirement that the facility be complete and usable, the retention of the clean-up funds in the project sends a clear message to the State of Virginia that Navy is serious about cleaning up the plant. By contrast, the removal of this funding from the project would leave Navy's intent in question.

It should be further noted that the use of the term 'account' in the cited section of Public Law 102-190, and the exclusive source of funds requirement it relates to, applies to the Base Closure account as a whole, and not to subsidiary cost categories established for budgeting purposes. The audit implies that differing categorizations of these Base Closure efforts equates to a potentially improper charging of an account. The project in question is exclusively funded in complete accordance with the provisions of law regarding Base Realignment and Closure environmental efforts.

DODIG Audit Recommendation:

Renumbered 2.

3. We recommend that the Comptroller of the Navy reduce the total cost estimate for military construction project P-267S by:

a. $18.4 million, to take into account the overstated costs and duplicated requirements.

b. $5.3 million for the clean closure of sewage treatment plant environs and removal of the related hazardous waste.

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DON Response: Do not concur with the estimated savings. The detailed concept study discussed in response 1.a. above identifies a preliminary total cost for the new sewage treatment

plant and environmental clean up of approximately $20 million. A revised DD Form 1391 with revised budget data will be submitted after 20% design completion. Target completion date is 31 July 1993.

The audit report references Military Handbook 1010 (MH 1010), "Cost Engineering; Policy and Procedures", and states that the DD Form 1391 cost estimate was inadequate for validation. MH 1010 is intended for new construction at a virgin site which is not the case at Dahlgren. Local construction knowledge and accepted estimating techniques were used along with standard estimating guides such as Means Cost Estimating Guide to determine a reasonable project cost based on available information.

The concept study, which is nearing completion, has evaluated all project requirements in greater depth than was possible during the initial DD Form 1391 preparation. The preliminary costs from the concept study reflect the latest information available and, after validation by the Navy, will be used to revise the budget for the Dahlgren Sewage Treatment Plant.

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# INTERNET DOCUMENT INFORMATION FORM

**A . Report Title: Defense Base Closure and Realignment Budget Data for the Naval Surface Warfare Center**

**B. DATE Report Downloaded From the Internet: 05/15/99**

**C. Report's Point of Contact: (Name, Organization, Address, Office Symbol, & Ph #):** **OAIG-AUD (ATTN: AFTS Audit Suggestions)**
**Inspector General, Department of Defense**
**400 Army Navy Drive (Room 801)**
**Arlington, VA 22202-2884**

**D. Currently Applicable Classification Level**: Unclassified

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