

-29701-

125545

BY THE U.S. GENERAL ACCOUNTING OFFICE

Report To The Secretary Of The Navy

Allegations Of Contract Buy-in And Substantial Cost Increases In The Navy's Standard Automated Financial System

Senator William Proxmire asked GAO to review the validity of allegations made to him regarding the Navy's Standard Automated Financial System, currently under development. GAO did not find sufficient evidence to support the first allegation--that the contractor had purposely made a low offer with the intent of increasing its profits later. The second allegation was that the Navy has decided to proceed with the project despite substantial cost increases. GAO found that, while costs have increased, the Navy's decision to proceed was based on mission requirements and the contractor's commitment to improve. The third allegation--that project costs may increase to \$200 million--could not be substantiated.

GAO found that while some project management weaknesses have been addressed, additional improvements are needed if future costs are to be contained. GAO is making recommendations to assist the Navy in managing the project and in containing the total cost of this system.



~~030497~~

030497

GAO/IMTEC-85-2
OCTOBER 30, 1984

Request for copies of GAO reports should be sent to:

**U.S. General Accounting Office
Document Handling and Information
Services Facility
P.O. Box 6015
Gaithersburg, Md. 20760**

Telephone (202) 275-6241

The first five copies of individual reports are free of charge. Additional copies of bound audit reports are \$3.25 each. Additional copies of unbound report (i.e., letter reports) and most other publications are \$1.00 each. There will be a 25% discount on all orders for 100 or more copies mailed to a single address. Sales orders must be prepaid on a cash, check, or money order basis. Check should be made out to the "Superintendent of Documents".



UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

INFORMATION MANAGEMENT
& TECHNOLOGY DIVISION

B-214403

The Honorable John F. Lehman, Jr.
The Secretary of the Navy

Dear Mr. Secretary:

In response to a May 14, 1984, request from Senator William Proxmire, we have reviewed allegations made to him regarding the Navy's Standard Automated Financial System (STAFS). After analyzing the allegations and discussing them with the Senator's office, we performed a limited review, focusing on the principal concerns that (1) the contractor "bought in" on the contract, (2) the Navy has decided to proceed with the project even though costs have substantially increased, and (3) project costs may increase to \$200 million. Senator Proxmire has asked that we report the results of our review directly to you. The Senator has also asked that we review the status of STAFS in about 6 months and report to him on the results.

We did not find sufficient evidence to conclude that the Computer Sciences Corporation (CSC) bought in on the contract; that is, purposely made a low offer, knowing future modifications would be required and could be used to make up the understated amount. However, we found that project and contract costs have increased substantially because the original design concept was expanded, certain costs were not included in the original estimates, and the system's complexity was initially underestimated by both CSC and the Navy. We also found that the decision of the Navy's Assistant Secretary for Financial Management to proceed with the project was based on mission needs, contractor commitments, and Navy project management improvements. He believes that these factors outweigh his concern over increased costs. Although we cannot substantiate the allegation that project costs may rise to \$200 million, we believe these costs are susceptible to future increases because the Navy does not have specific cost containment plans.

BACKGROUND

In 1978, the Navy determined that the research and development, test, and evaluation laboratories of the Navy Industrial Fund needed a standard financial system. Because each laboratory had developed its own accounting system, their accounting and financial reports were not uniform and did not meet management needs. In the interim between 1978 and 1981 the Navy expanded its original concept from an automated financial system to a financial management

information system. The Navy also hoped that once the system was successfully implemented at the laboratories, it could be adapted for use at other industrial fund installations.

In 1982, the Navy awarded a contract for \$58.2 million to CSC for STAFS. The contract provides for system design and development, purchase of hardware, and system implementation and maintenance. Three contract types are included: cost-plus-fixed-fee for design and development; time and materials for implementation; and firm fixed-price for the remaining elements. The contractor is currently working on system design and, in accordance with the cost-plus-fixed-fee arrangement, receives a set fee¹ and is reimbursed for all costs allowable under established cost principles. A more detailed discussion of STAFS is provided in appendix II.

A walk-through² of the system design was conducted with CSC in January 1984. Because of problems identified during the walk-through, CSC determined that additional time and effort would be needed to complete the design. In April 1984, CSC submitted a revised estimate of cost to complete the design and development that raised the amount from \$13.9 million to \$29 million. The following month, Navy officials revised their estimates of contract costs to include hardware upgrades and associated costs. In total, these revisions have increased the value of the contract from \$58.2 million to \$87 million. In addition, the Navy has revised its total estimated project costs to be \$129.3 million.

In June 1984, the Assistant Secretary for Financial Management decided to accept CSC's increased time and work schedules. As part of this decision, the Assistant Secretary placed a cap of \$129.3 million on the total project cost. Although the Assistant Secretary placed no cap on the contract, the Navy project officer said the Navy is committed to holding contract costs within CSC's recent estimate of \$87 million.

ALLEGATION THAT CSC BOUGHT IN ON THE CONTRACT

It was alleged that CSC bought in on the contract--that is, purposely made a low offer with the intent of increasing its profits in later, noncompetitive modifications. Although it is not illegal for contractors to offer below their anticipated costs, federal regulations now characterize a buy-in as an improper business practice when done with the expectation of recovering losses through excessively high-priced contract modifications or follow-on

¹The original set fee was \$1,078,949. An increased fee is being negotiated, based on additional work for the system design.

²A step in the design process where the project office personnel and users review and evaluate the contractor's product and reach agreement with the contractor on disposition of any deficiencies identified.

contracts.³ The Navy and CSC denied that a buy-in had occurred. The Navy offered as evidence the fact that CSC's design and development costs were reasonable and similar to those submitted by other qualified vendors. We found that although noncompetitive modifications to the contract are occurring, this is inconclusive evidence of a buy-in. To substantiate the allegation of a buy-in would require determination of CSC's subjective intent. We cannot establish this intent on the basis of the evidence we have examined.

Federal regulations define a contractor buy-in as the submission of an offer below anticipated costs, with the expectation of

- increasing the contract amount after award through unnecessary or excessively priced change orders/contract modifications, or
- receiving follow-on contracts at artificially high prices to recover losses incurred on the buy-in contract.

One indication of a buy-in would be an unreasonably low offer by one or more vendors. The Navy contends that the identification of unreasonably low-priced quotations was addressed when it evaluated responses to the STAFS Request for Proposals. In fact, the Navy's own estimate of \$4.8 million for the software development phase was much lower than all qualified offers. In addition, the Navy points to similarities in the cost proposals of CSC and the other two qualified offerors as indicators that CSC did not buy in. We found that all qualified offerors proposed similar costs for design and development. However, we do not believe this shows conclusively that a buy-in did not occur. While the argument is reasonable, it is nonetheless possible that the other vendors also attempted to buy-in. In addition, we were concerned that the similar costs could have been the result of government-furnished staff hour estimates. Consequently, we examined the Request for Proposals documents. The documents contained no estimates of staff hours for design and development that could serve as the basis for an offer. The Navy officer who conducted the procurement also assured us that the Navy gave no verbal estimate of staff hours to prospective offerors. It appears, therefore, that the offerors made cost proposals based on their own estimates and not on government-furnished staff estimates.

Although we evaluated the low offer characteristics of a buy-in, we were unable to conclude that, in this instance, the contractor submitted a low offer with the expectation that losses would be recovered through change orders or follow-on contracts. We found that the contract modifications currently under negotiation will result in substantially higher costs. However, substantial cost increases are not in themselves conclusive evidence of a buy-in because they do not establish the contractor's intent at the time of proposal submission. The causes of contract cost increases are

³Federal Acquisition Regulation 3.501.

discussed in our review of the second allegation. As to whether the contractor obtained follow-on contracts at artificially high prices to recover losses incurred on the original contract, we found that, to date, the Navy has not awarded CSC a follow-on contract.

While substantial cost increases occurred subsequent to the original contract, we did not find sufficient evidence to support the allegation that CSC bought in on the contract. A more detailed discussion of this allegation is provided in appendix III.

ALLEGATION THAT THE NAVY IS PROCEEDING
WITH STAFS DESPITE COST INCREASES

It was also alleged that the Navy is proceeding with the STAFS project even though costs have increased substantially. We found that the Assistant Secretary for Financial Management has decided to accept cost increases and to proceed with work on the system. His decision to proceed was based on mission requirements and his personal involvement in securing a commitment from CSC's top management to correct past deficiencies.

Several important management considerations have influenced the Assistant Secretary's decision to proceed. First, the development of STAFS is integral to the Navy's commitment to install standard financial systems throughout the service. An additional consideration was that it could cost more to develop an independent system at each industrial fund laboratory than it would for CSC to complete STAFS. A third consideration was that the Navy hopes to spread out costs by adapting STAFS to additional industrial fund facilities. Still another factor that influenced the Assistant Secretary was a personal commitment made in May 1984 by the president of CSC's Systems Group to improve the company's performance. In discussing this point with senior CSC officials, we were told that CSC regards the STAFS project as one of their company's most important contracts and has given it commensurate management emphasis and technical controls.

In April 1984 CSC designated a senior vice president to be in charge of project oversight, an action that CSC describes as indicative of its commitment to the successful implementation of STAFS. In addition, we were told that CSC has implemented improved workflow procedures and productivity initiatives. CSC believes that these improvements, coupled with the current level of cooperation between the Navy and itself, will permit it to complete the project within the time and cost estimated in April 1984. The Navy has also acted to improve its project management. It is hiring more project specialists and, since June, has been obtaining reports from the contractor that keep Navy management better informed about the project's status. Despite the improvements in project and contract management, the Assistant Secretary has demonstrated his concern over potential cost increases by setting a cap of \$129.3 million for the project.

We found that both contract and overall project costs have increased substantially. Navy officials attribute the growth in contract costs from \$58.2 million to the currently estimated \$87 million to (1) a lack of understanding of the system's complexity by both the Navy and the contractor, (2) a lack of detail in the functional description, (3) the contractor initially not providing the necessary level of design expertise and project management, (4) the upgrade and augmentation of hardware, and (5) increase in size of project staff.

With respect to overall project cost increases, Navy officials attribute the rise to the growth in scope since the project's inception. Because the concept of the system changed from an automated general ledger in 1978 to a financial management information system by 1980, the Navy does not consider it valid to use the 1978 estimate as a baseline. The documents the Navy gave us showed a rise in project cost estimates from \$32.9 million in 1980 to \$129.3 million in 1984. Navy officials stated that comparison between these estimates is inappropriate because of items initially omitted such as software maintenance and terminals. When adjustments for the components they omitted from the original estimates were applied, the increase was from \$103.8 million in 1980 to the current estimate of \$134.8 million. Although the \$134.8 million included \$5.5 million in prior year development costs, Navy officials did not include this amount in the \$129.3 million project cap because they view this as a sunk⁴ cost. However, in our opinion, this criterion is not a sufficient justification since all costs that have been incurred are sunk costs. (See app. III, pp. 11, 12 and 13.)

We verified the allegation that the Navy is proceeding with STAFS and that costs have increased. Navy officials believe the decision has a reasonable basis and they plan to control costs. A more detailed discussion of this allegation is provided in appendix III.

ALLEGATION THAT PROJECT COSTS
MAY INCREASE TO \$200 MILLION

The third allegation is that project costs for STAFS may increase to \$200 million before the system is completed. We cannot substantiate that costs will increase by this amount. We are concerned, however, that project costs could rise in the future because (1) some problems identified by Navy reviews remain unresolved, (2) there is yet no concrete evidence of improved contractor performance, and (3) the Navy does not have a contingency plan that is sufficiently detailed to permit it to implement its system capability reduction strategy.

Navy management reviews of October 1983 and April 1984 determined that the STAFS project was basically sound, but identified some deficiencies. A Navy audit report of October 1983 also found

⁴A cost that has already been incurred and cannot be recouped.

some deficiencies and questioned whether the project was still cost-effective. The findings of the 3 reviews/audits were:

- Project costs escalated substantially since the economic analysis of 1980.
- The project cost estimate of 1982 was understated because it did not include costs related to systems development and operations in accordance with the Navy Office of the Comptroller manual, paragraph 074723-3d.
- The project was behind schedule and costs had increased because initially CSC did not understand the STAFS requirements. The April 1984 report stated that the functional description, which defines system requirements, was not substantially improved in terms of detail.
- Navy configuration control has not been efficient and timely.

We asked the Vice Commander, Navy Accounting and Finance Center, and project staff what measures were taken to respond to the reported deficiencies. Originally they stated that the Navy was planning to prepare an economic analysis in 1985. Subsequent to a discussion with us, the Vice Commander directed the project officer to complete the economic analysis by December 1984. Relative to not identifying all costs, they said that development and operating costs incurred by the laboratories could not be included because these costs could not be documented.

These Navy officials agreed that initially CSC did not understand the level of effort required to complete the system design and that this resulted in schedule slippage and cost increases. They believe that CSC now understands how to develop STAFS and can deliver a successful system. At the close of our review, they indicated that the functional description had not been firmly set.

The project staff and the Vice Commander also believe that the Navy now has configuration management under control. CSC has developed a computer program that records the design deficiencies identified by Navy project staff and the corrective action taken by CSC. They believe this will provide the tool that is necessary for the project officer to control design changes.

In April 1984, the contractor gave the Navy a new schedule of cost and work to complete the contract. In May 1984, the contractor made a top management commitment to Navy to improve. However, we did not find concrete evidence that this has yet resulted in improved contractor performance. We found that in the 4 months subsequent to this commitment to improve, work breakdown reports showed CSC was falling progressively behind the revised schedule. The May design work was 16.2 percent behind the revised schedule; by August, work was 22.6 percent behind schedule. The new schedule and cost to complete may require another revision if improvement by the contractor does not materialize as expected.

Because STAFS system design and development work is reimbursed under a cost-plus-fixed-fee arrangement, schedule slippages can result in increased costs. The project officer is confident that he can manage the contract within the Navy's June estimate of \$87 million. When we discussed the Navy's plans for cost containment with the Vice Commander, he said the only thing the Navy has considered is reducing system capabilities by eliminating subsystems or tasks it considers nonessential. However, it has not yet developed a contingency plan to identify what could be pared from the system or how other actions and alternatives could be exercised.

At the onset of our work, Navy officials said they had not yet responded to their auditors' recommendations to prepare an updated economic analysis of the STAFS project. As discussed earlier, the Navy has since decided to complete this analysis by December 1984. However, the officials do not plan to include industrial fund activity costs for participation in system design, nor do they intend to include costs for space preparation and occupancy. They said that these costs are not identified separately in the activities' budgets and cannot be accurately derived from auditable budget documents or accounting reports. We believe that an economic analysis should include all costs and benefits and that best estimates should be used when firm figures are not available. Navy guidelines require that these costs be included. The accuracy of the economic analysis has, or should have, a heavy impact on the Navy's ability to make management decisions on the cost-effectiveness of the system. A more detailed discussion of this allegation is provided in appendix III.

CONCLUSIONS AND RECOMMENDATIONS

We did not find sufficient evidence to substantiate the allegation made to Senator Proxmire that CSC, the contractor, bought in on the contract. However, we did find that the Navy was proceeding with the STAFS project and contract even though costs have increased. While we cannot substantiate the third allegation--that project costs may increase to \$200 million--we have identified some project management weaknesses that could lead to future cost increases.

The Navy has encountered significant cost growth in the STAFS project. Navy officials state that the increase occurred because neither the Navy nor CSC understood the complexity of the system, hardware was upgraded, and additional project staff was hired. However, the Navy believes that recent changes in project management, including improved controls over the contractor's performance and a commitment by the contractor's top management to correct that firm's deficiencies in performance, will enable STAFS to be developed within time and cost limitations. CSC agrees with this assessment and believes that there is a renewed commitment on both sides to achieve this goal.

We believe the Navy's recent actions to improve project management are a step in the right direction. However, in our opinion

the Navy should be ready to pursue alternative courses of action should it encounter future cost increases. The Navy has experienced substantial cost growth in its contract estimate for design and development because of its difficulties in establishing proper contractor understanding of its system requirements. Ensuring the availability of firm, documented system requirements and design specifications should demonstrate that CSC fully understands how to meet the Navy's needs. In addition, these system requirements and design specifications should permit the Navy to recompute the development phase of the contract if necessary. The Navy should develop a current cost/benefit analysis that will enable it, at the next management decision point, to properly decide whether the benefits of the system--as it is proposed or in a pared down form--justify its continued development. Finally, although the Navy has placed a cap on project cost, it has not prepared for the possibility of further problems with this project and contract. We believe project management should prepare a contingency plan addressing project, contract, and system alternatives, including how such alternatives would be exercised.

We believe that the Assistant Secretary for Financial Management should have relevant cost, schedule, and performance data available by the end of the design phase so that he can properly review and assess progress before making a decision to proceed with the development phase or to pursue alternative courses of action. To accomplish this, we recommend that you direct the Assistant Secretary for Financial Management to:

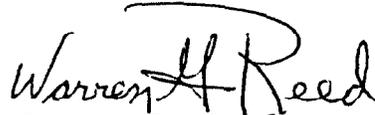
- Firmly set the Navy's system requirements and ensure that CSC provides fully documented design specifications at the end of the design phase as required by the contract.
- Prepare an updated economic analysis to compare current benefits, or those of a reduced system, with current project cost estimates (including all costs in accordance with NAVCOMPT manual, paragraph 074723-3d) and an updated cost-to-complete estimate from the contractor.
- Develop a contingency plan to identify alternative courses of action for management to (1) contain costs and (2) ensure cost-effective results.

- - - - -

As you know, 31 U.S.C. 720 requires the head of a federal agency to submit a written statement on actions taken on our recommendations to the Senate Committee on Governmental Affairs and the House Committee on Government Operations not later than 60 days after the date of the report, and to the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

We are sending a copy of this report to Senator William Proxmire.

Sincerely yours,


Warren G. Reed
Director

APPENDIXES

<u>APPENDIX</u>		<u>Page</u>
I	OBJECTIVE, SCOPE, AND METHODOLOGY	1
II	THE STANDARD AUTOMATED FINANCIAL SYSTEM	2
	STAFS background	2
	STAFS chronology as of July 1984	4
	Laboratories scheduled to use STAFS	5
III	RESULTS OF OUR REVIEW	7
	Allegation that Computer Sciences Corporation bought in on the contract	7
	Allegation that the Navy is proceeding with STAFS despite increased costs	9
	Management decides to proceed with the contract	9
	Project history shows growth in scope	10
	Growth in project cost accompanies growth in scope	10
	Navy gives its perspective on cost increases	13
	Allegation that project costs may increase to \$200 million	13
	Project deficiencies identified by Navy reviews	14
	No concrete evidence yet of improved contractor performance	15
	Navy has no specific plans for cost containment	16
	Navy lacks a current economic analysis of STAFS	17
	<u>ILLUSTRATIONS</u>	
	Figure 1: Three project cost estimates	11
	Figure 2: Increases in project and contract costs by component	12

ABBREVIATIONS

ADS	Automated Data System
CDA	Central Design Agent
CSC	Computer Sciences Corporation
GAO	U.S. General Accounting Office
NAVCOMPT	Office of the Comptroller
RDT&E	Research, Development, Test, and Evaluation
RFP	Request for Proposals
STAFS	Standard Automated Financial System
IV&V	Independent Verification and Validation

OBJECTIVE, SCOPE, AND METHODOLOGY

Our objective was to determine whether the allegations contained in an unsigned letter to Senator Proxmire were true. In response to reporting time requirements and with the agreement of the Senator's staff, we performed a limited review, focusing our report on three primary issues. These issues are (1) the contractor "bought in" on the contract, (2) the Navy has decided to proceed with the project even though costs have substantially increased, and (3) project costs might increase to \$200 million. We conducted our review in accordance with generally accepted government auditing standards.

Working at the Navy project management office in San Diego, California, and at Navy offices in Arlington, Virginia, we obtained copies of Navy audit reports, management reports and analyses, prior economic analyses, and pertinent correspondence. We reviewed these as well as the Request for Proposals, bid summaries, the original and revised functional descriptions, the Computer Sciences Corporation's estimate to complete the contract, and current contractor bills. We did not attempt to study the system design, nor did we review either the contracting officer's files or CSC's files. We interviewed officials in the Naval Supply Systems Command, the Office of the Comptroller, the Navy Regional Contract Center, Philadelphia, and the project management office, as well as CSC officials. We completed our review in August 1984.

To enable us to meet his deadline on this report, the Senator asked that we not obtain agency comments. We did, however, discuss the facts on which we based our conclusions with the Assistant Secretary of the Navy for Financial Management and with the Vice Commander, Navy Accounting and Finance Center, and his staff. Additional information was provided by the Navy and has been incorporated in the report. We also discussed the Navy's assessment of CSC's performance with CSC officials to obtain their perspective. Their comments have been incorporated.

THE STANDARD AUTOMATED FINANCIAL SYSTEMSTAFS BACKGROUND

The Navy Industrial Fund finances 52 U.S. Navy activities such as shipyards, public works centers, and research laboratories. There are 14 research and development, test and evaluation (RDT&E) laboratories within the industrial fund community. Each laboratory has its own separate accounting system. When Navy customers place orders with industrial fund activities for services to be performed, the activities make the necessary outlays and replenish their funds by billing customers for completed services. Accurate cost accounting systems are important to ensure (1) proper matching of costs, (2) better estimations of costs, and (3) adequate planning for future requirements.

Recently the Navy has been developing standard financial management systems at several naval activities. The Standard Automated Financial System is one of these. Once STAFS has been successfully implemented for the research laboratories, the Navy plans to adapt it for other industrial fund activities.

Industrial fund laboratories currently use financial reporting systems that are neither standard nor economical, and do not meet Federal accounting standards. Our 1979 report also criticized the Navy's management information systems, saying the systems were too costly to maintain and were largely duplicative.¹ In response to these issues, the Navy directed that the feasibility of establishing a new system be studied. The study group, completing its work in 1978, concluded that a new system was feasible and recommended formation of a central design agent for STAFS. The scope of the system was to be limited strictly to the Navy Industrial Fund accounting. Fully committed to creating a new system, the Navy issued a moratorium on additional development of existing systems and assigned Naval Supply Systems Command as the central design agent for the new plan.

The Automated Data System (ADS) Development Plan, approved in 1980, outlined a broader concept for STAFS and provided the only cost/benefit study performed to date. With its expanded scope, the system would provide financial information for laboratory managers in addition to meeting all the fiduciary accounting and budgeting requirements identified in the feasibility study. The ADS plan advocated the purchase of dedicated financial computers at each laboratory over the alternatives of time-sharing or retaining the existing systems. The Navy subsequently approved a system development plan and drew up a Request for Proposals (RFP). The RFP was released in December 1981.

During the period between the feasibility study and the development of the functional description in 1981, the concept was

¹"Duplication in the Navy's Management Information Systems is Costly" (GAO/LCD-79-113, Oct. 15, 1979).

expanded from an automated financial system to a management information system. It grew from four subsystems to 16. Although user requirements have been clarified, these 16 subsystems have remained essentially the same since the RFP was issued. They are as follows:

Subsystems identified in the feasibility study -

General ledger
Cost posting
Billings
Funding

Subsystems added later -

Unit identification code
Activity
Travel
Employee labor accounting
Financial inventory
Supply
Planning
Audit trail
Controlled assets
Budget
Cash management
Aircraft accounting

The Navy awarded a contract in December 1982 to Computer Sciences Corporation to provide a comprehensive system to meet Navy research laboratory processing needs. The contract comprised six major elements with three cost types:

<u>Element</u>	<u>Cost type</u>
System design and development	Cost-plus-fixed-fee
Hardware	Firm fixed-price
Commercial software	Firm fixed-price
Terminals and modems (option)	Firm fixed-price
Implementation	Time and materials
Maintenance hardware and software	Firm fixed-price

Currently 6 to 9 months behind the original schedule, the design phase is expected to be completed by December 1984.

Since contract award, several events have taken place that affected the management of STAFS. Project management was transferred from the Naval Supply Systems Command to the Navy Comptroller in October 1983. The central design agent is now the Navy Accounting and Finance Center. The project officer, who was transferred with the project, reports directly to the Vice Commander of the Center.

In March 1984, CSC submitted a revised milestone schedule for completion of work on the contract. Then in April 1984, CSC

submitted its cost proposal for work to be completed under the design and development phase. The negotiations were scheduled to start in August 1984. Navy management reviews attribute contract delays and increased costs to (1) the Navy's and CSC's underestimation of system complexity, and (2) CSC initially not providing the necessary level of expertise in design and development. A more detailed discussion of the causes of these cost increases is provided in appendix III.

STAFS CHRONOLOGY AS OF JULY 1984

A brief recap of the development of the STAFS system, in chronological order, is as follows:

- 10/07/77 Under Secretary of the Navy directed a study to develop a new financial system for industrial fund RDT&E activities.
- 07/24/78 Feasibility study completed recommending implementation of a new system.
- 09/08/78 Central design agent (CDA) assigned to Naval Supply Systems Command.
- 01/05/79 Moratorium placed on further development of existing systems for industrial fund RDT&E activities.
- 01/09/79 CDA team began systems design.
- 05/20/80 ADS development plan completed (cost/benefit comparison).
- 06/15/81 System Decision Paper II approved; procurement authorized.
- 12/15/81 Request for Proposals released to vendor community.
- 12/02/82 Resources Annex completed to document STAFS costs and obtain additional procurement authority.
- 12/16/82 Contract awarded to CSC.
- 05/83 CSC delivered revised functional description.
- 09/07/83 Audit report by Naval Audit Service for Research, Engineering, and Systems.
- 10/14/83 Audit report by Naval Audit Service Western Region.
- 10/83 Project transferred from Naval Supply Systems Command to Navy Comptroller (NAVCOMPT).
- 10/26/83 Management review of STAFS by Naval Supply Systems Command.

01/84 STAFS system design walk-through.

02/84 Preliminary design frozen.

04/02/84 Management review of STAFS by NAVCOMPT's Standard Systems Activity.

04/12/84 CSC proposal submitted on an estimated cost to complete work, with causative factors for increases in costs.

04/84 CSC's work breakdown reporting system implemented.

05/08/84 CDA analysis of causes of CSC's causative factors.

06/01/84 CDA completed technical evaluation of CSC's cost proposal including increased time and work schedules.

06/84 Project manager briefing to NAVCOMPT regarding CSC proposal.

06/84 Assistant Secretary for Financial Management decided to accept CSC proposal and continue contract work.

06/84 Configuration management support by CSC formalized.

08/13/84 Scheduled date for negotiations of costs to complete contract.

LABORATORIES SCHEDULED TO USE STAFS

The following Navy Industrial Fund RDT&E laboratories are scheduled to use STAFS:

Naval Air Development Center, Warminster, Pennsylvania

Naval Coastal Systems Laboratory, Panama City, Florida

Naval Surface Weapons Center, Dahlgren, Virginia

David W. Taylor Naval Research and Development Center,
Bethesda, Maryland

Naval Ocean Systems Center, San Diego, California

Naval Underwater Systems Center, Newport, Rhode Island

Naval Weapons Center, China Lake, California

Naval Air Engineering Center, Lakehurst, New Jersey

Naval Air Propulsion Test Center, Trenton, New Jersey

Naval Air Test Center, Patuxent River, Maryland

Pacific Missile Test Center, Point Mugu, California

Civil Engineering Laboratory, Point Hueneme, California

Naval Research Laboratory, Washington, D.C.

Naval Ocean Research and Development Activity,
Bay St. Louis, Missouri

RESULTS OF OUR REVIEW

On May 14, 1984, Senator Proxmire forwarded an unsigned letter and other documents to us that contained allegations regarding (1) a "buy-in" on the contract for the Navy's Standard Automated Financial System, (2) the Navy's decision to proceed with STAFS even though costs have increased, and (3) the potential increase of project costs to \$200 million. We have reviewed the allegations. We did not find sufficient evidence to conclude that CSC bought in on the contract. We have verified that the Navy has decided to proceed with the system and that cost increases have occurred. Although we cannot verify that project costs will increase to \$200 million, we believe that total project costs are susceptible to future increases because the Navy does not have specific cost containment plans.

ALLEGATION THAT COMPUTER SCIENCES CORPORATION BOUGHT IN ON THE CONTRACT

It was alleged that Computer Sciences Corporation "bought in" on the contract--that is, purposely made a low offer with the intent of increasing its profits in later, noncompetitive modifications. The Navy and CSC have denied that this occurred. The Navy offered as evidence the fact that CSC's design and development costs were reasonable and similar to those submitted by other qualified vendors. We found that although noncompetitive modifications to the contract are occurring, modifications in and of themselves are inconclusive evidence of a buy-in. To substantiate the allegation, we would have to find an intent on the part of CSC to profit from future unnecessary modifications.

Federal regulations define a contractor buy-in as the submission of an offer below anticipated costs, expecting

- to increase the contract amount after award through unnecessary or excessively priced change orders/contract modifications, or
- to receive follow-on contracts at artificially high prices to recover losses incurred on the buy-in contract.

Federal regulations also state that a buy-in may decrease competition or result in poor contract performance. Although it is not illegal for contractors to offer below their anticipated costs, the regulations now characterize buying in as an improper business practice when done with the expectation of recovering losses through excessively high priced contract modifications or follow-on contracts. The regulations place responsibility on the contractual officer for ensuring that buy-in losses are not recovered by the contractor.

Another factor to be considered in determining whether a buy-in occurred is the type of contract in question. Three contract types are included: cost-plus-fixed-fee for design and develop-

ment, time and materials for implementation, and firm fixed-price for the remaining elements. The design and development phase of the contract is the most susceptible to a buy-in. This is because a cost-plus-fixed-fee type of contract provides for reimbursement to the contractor of allowable costs incurred in the performance of the contract, to the extent prescribed in the contract. It establishes an estimate of total cost for the purpose of obligation of funds, and a ceiling which the contractor may not exceed without prior approval of the contracting officer. Federal regulations state that the cost-reimbursement type contract is suitable for use only when the uncertainties involved in contract performance are of such magnitude that cost of performance cannot be estimated with sufficient reasonableness to permit the use of any type of fixed-price contract. Fixed-price contracts are used when reasonably definite design or performance specifications are available.

An unreasonably low offer by one or more vendors might be an indicator of a buy-in. The Navy contends that this point was addressed when it evaluated responses to the STAFS Request for Proposals. In fact, the Navy's own estimate of \$4.8 million for the software development phase was much lower than all qualified offers. Our examination of the offers for design and development made by the four competing vendors showed their costs to be very close:

Vendor 1 ²	\$10.4M
Vendor 2	13.9M
Vendor 3	13.6M
Vendor 4	13.9M

In addition, the Navy contends that similarities in the cost proposals of CSC and other offerors indicate that CSC did not buy in. We do not believe this shows conclusively that a buy-in did not occur. While the argument is reasonable, the possibility that other vendors also attempted to buy in is not addressed. In addition, we were concerned that the similar costs could have been the result of government-furnished staff hour estimates. Accordingly, we examined the Request for Proposals documents. The documents contained no estimates of staff hours for design and development that could serve as the basis for an offer. The Navy officer who conducted the procurement also assured us that the Navy gave no verbal estimate of staff hours to prospective contractors. It appears, therefore, that the offerors made cost proposals based on their own estimates and not on government-furnished staff estimates.

We were unable to conclude that, in this instance, the contractor made a low offer with the expectation that losses would be recovered through change orders or follow-on contracts. We found that the contract modifications currently under negotiation will result in higher costs. However, substantial cost increases are not in themselves conclusive evidence of a buy-in because they do

²Evaluated as not technically qualified.

not establish the contractor's intent at the time of proposal submission. Another aspect of a buy-in is obtaining a follow-on contract at artificially high prices to recover losses incurred on the original contract. We found that, to date, the Navy has not awarded CSC a follow-on contract. Therefore, in our analysis of these facts, we did not find sufficient evidence to support the allegation that CSC bought in on the contract.

ALLEGATION THAT THE NAVY IS PROCEEDING WITH STAFS DESPITE INCREASED COSTS

It was also alleged that the Navy is proceeding with STAFS even though project costs have increased. We found that the Assistant Secretary for Financial Management has decided to proceed with work on the system and that costs have increased substantially. His decision to proceed was based on mission requirements and his personal involvement in securing a commitment from CSC's top management to correct past deficiencies. He has, however, placed a cap of \$129.3 million on total project costs.

Project costs have increased markedly since 1978. In fact, 18 months after the award, contract costs for design and development alone had increased from \$13.9 million to \$29 million. The Navy attributes the cost increases to changes in scope and other factors.

Management decides to proceed with the contract

Following talks with CSC's top management and briefings by Navy staff, the Assistant Secretary for Financial Management decided in June 1984 to accept CSC's increased time and work schedule for STAFS.

Several important management considerations have influenced the Assistant Secretary's decision to proceed. First, the development of STAFS is integral to Navy's commitment to install standard financial systems throughout the service. An additional consideration was that it could cost more to develop independent systems at the industrial fund laboratories than it would for CSC to complete STAFS. A third consideration was that the Navy hopes to spread out costs by adapting STAFS to additional industrial fund facilities.

Renewed confidence in CSC's performance also influenced the Assistant Secretary's decision. In May 1984 the president of CSC's Systems Group made a personal commitment to improve CSC performance. As evidence of this, he placed project oversight under a senior vice president. Other steps CSC has taken are

- planned increases in the size of its project staff,
- a recently installed configuration management system, and
- an improved work breakdown reporting system.

CSC officials told us they regard the STAFS project as one of their company's most important contracts and are giving it commensurate management emphasis and technical controls.

The Navy acknowledges that CSC's actions do not directly relate to controlling future costs. If future costs do increase, the Navy believes cost containment may require reduction of work in other areas yet to be determined. Despite the improvements in project and contract management, the Assistant Secretary has demonstrated his concern over potential cost increases by setting a cap of \$129.3 million for the project.

Project history
shows growth in scope

The Navy's original concept, as presented in the feasibility study of 1978, was to automate a financial system for its Navy Industrial Fund laboratories. The Navy found, however, that the concept would not meet federal accounting principles and standards. In 1980 the Navy considered several new alternatives and, on the basis of a cost/benefit analysis, decided to develop a more sophisticated financial system. The Navy further refined its plans and in 1981 developed the functional description for a state-of-the-art system that could provide financial information to management.

Growth in project cost
accompanies growth in scope

According to documents the Navy has furnished us, the 1978 feasibility study for an automated financial system estimated a project cost of \$2.4 million for software design and development and hardware. The study estimated an annual expenditure of \$784,000 to operate the system. Navy officials also provided us with three additional project cost estimates made in subsequent years. When we attempted to compare the rise in project costs from the 1978 feasibility study to the most current estimate, Navy officials voiced concern that such a comparison could not be made because of changes in scope. They contend that the original concept of STAFS envisioned in 1978 was that of an automated general ledger and that this concept evolved in 1980 to an expanded financial management information system. In addition, they believe that the 1980 and 1982 estimates are inaccurate because some project costs were not included. For example, in 1982 the Navy did not include \$19.8 million for terminals and modems, even though this was a line item in the contract. At our request, the Navy provided adjustments to the 1980, 1982, and 1984 project cost estimates. Figure 1 allows comparison of the three cost estimates. The figure also identifies components that were omitted at the time of the estimate and the adjustments made by the Navy for those cost components.

Figure 1

THREE PROJECT COST ESTIMATES

<u>ORIGINAL COMPONENTS</u>	Cost of components (in millions)		
	<u>1980 ADS plan</u>	<u>1982 Resource annex</u>	<u>1984 June estimate</u>
Hardware	\$ 6.8	\$ 8.4	\$ 11.2
Hardware maintenance	3.7	4.9	5.0
Software development	4.8	13.9	29.0
Software maintenance	-	7.0	8.8
Implementation	-	4.2	13.2
Independent verification and validation	-	-	10.4
Terminals and modems	-	-	19.8
Future work	-	-	6.5
Prior year development costs	3.8	5.5	-
Project management-CDA	10.4	14.5	14.9
Project management-operational costs	<u>3.4</u>	<u>8.4</u>	<u>10.5</u>
Subtotal	<u>32.9</u>	<u>66.8</u>	<u>129.3</u>
<u>ADJUSTMENTS AS OF AUGUST 1984 1/</u>			
Software maintenance	7.0	-	-
Implementation	13.2	9.0	-
Independent verification and validation	10.4	10.4	-
Terminals and modems	19.8	19.8	-
Future work	6.5	6.5	-
Operational costs, FY 88-91	14.0	-	-
Operational personnel	-	1.2	-
Prior year development costs	-	-	5.5
Subtotal	<u>70.9</u>	<u>46.9</u>	<u>5.5</u>
Total	<u>\$103.8</u>	<u>\$113.7</u>	<u>\$134.8</u>

Note 1. Adjustments were provided by the Navy at our request so that comparisons could be made.

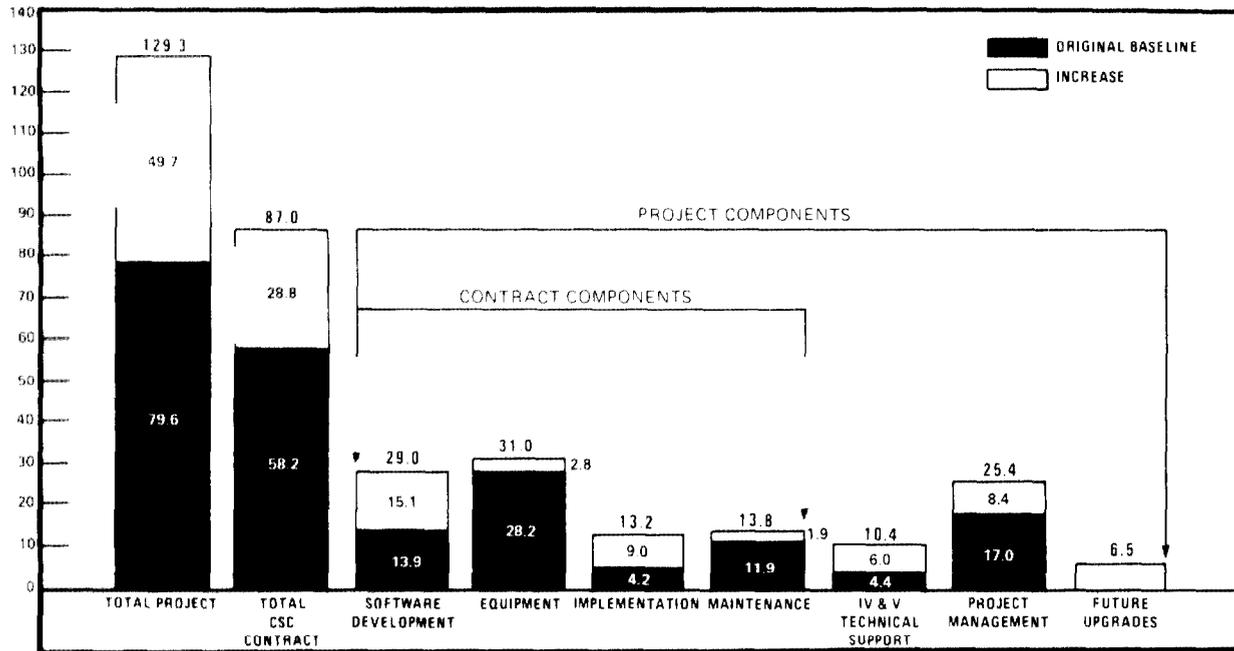
With the adjustments provided by the Navy, estimated total project costs are shown to rise from \$103.8 million to \$134.8 million. Without adjustments, the increase is more dramatic, from \$32.9 million to \$129.3 million. In addition, the software development phase, which is included in the CSC contract, has risen from \$4.8 million to \$29.0 million.

Another depiction of project and contract cost increases is provided in figure 2. This figure compares baseline cost (cost

originally estimated for that cost component) with the latest June 1984 estimate. Baseline costs for contract components were derived from the contract awarded in 1982; those for technical support, from the contract awarded in 1983. The June 1984 estimate was presented to the Assistant Secretary prior to his decision to proceed with the CSC contract. (Total project and contract increases are also depicted in fig. 2.)

Figure 2

INCREASES IN PROJECT AND CONTRACT COSTS BY COMPONENT
(DOLLARS IN MILLIONS)



Of the \$49.7 million total project increase, the Navy attributes \$23.8 million to growth based on poor requirements definition, and \$19.4 million to requirements not budgeted in the baseline. The remaining \$6.5 million is budgeted for future upgrades/reserves.

None of the estimates described in figures 1 and 2 include past or future costs of the industrial fund facilities, such as staff participation in development and training, data base administration, space occupancy, etc. The Navy said these costs are not identified separately in the industrial fund activities' budgets and cannot be accurately derived from auditable budget documents. Also, the estimate in figure 2 does not include the adjustment for \$5.5 million in prior year costs shown in figure 1. Because Navy officials view this as a sunk cost, they do not consider it as part of the current project budget.

Navy gives its perspective on cost increases

The Vice Commander and project staff gave us a number of reasons why CSC's contract has increased from \$58.2 million to \$87.0 million. Their stated reasons are:

- The Navy and CSC did not fully understand the complexity of the system.
- The Navy's initial functional description lacked detail and necessitated the addition of new procedures, and their original milestones were unrealistic.
- CSC's did not initially provide the necessary level of expertise in design and project management.
- Hardware was upgraded and augmented.
- Increases are planned in the size of project staff.

In retrospect, Navy officials believe CSC did not fully understand the complexity of the system. They also believe that because the original specifications were written at a high level, the Navy itself did not understand the effort that would be required to translate them into detailed design. This problem was not evident until Navy officials conducted a system walk-through with CSC in January 1984. At that time the Navy determined that many procedures had to be clarified, some procedures had to be added, and new milestones had to be developed. These factors added to the time and cost needed to complete the design.

Another factor affecting cost was the contract provision for state-of-the-art hardware. Although the bid was based on Digital Equipment Corporation's VAX-11/750 computer configuration, the more powerful and higher priced VAX-11/780 will be purchased for the system. This change in equipment will also increase the cost of maintenance.

The Navy found that some of the industrial fund facilities, originally believed to need one computer, would require two computers to run the system. This factor has increased the cost estimates for hardware, implementation, and maintenance.

The estimated project cost allows for the addition of 16 specialists to the project management staff. The Navy believes this staff increase should provide it with the expertise to improve management of the contract.

ALLEGATION THAT PROJECT COSTS
MAY INCREASE TO \$200 MILLION

The third allegation is that project costs for STAFS may increase to \$200 million before the system is completed. We cannot verify that costs will increase by this amount. We are concerned, however, that project costs could rise in the future because

- some deficiencies identified by Navy reviews remain unresolved,
- concrete evidence of an improvement in CSC's performance is yet to be demonstrated,
- Navy has no specific plans to contain costs other than to pare features from the system.

We are also concerned that the Navy does not have a current cost/benefit analysis that will enable it to properly decide at the next management review point whether the benefits of the system, as proposed or in a pared-down form, justify its continued development.

Project deficiencies
identified by Navy reviews

The Naval Audit Service Western Region report of October 1983 noted that (1) the 1982 project cost estimate understated system development and operational costs, (2) the STAFS project was far behind schedule and substantially more costly than originally estimated, and (3) it was questionable whether the project was still cost-effective. The report recommended that project management prepare an updated economic analysis for STAFS and include all project costs in accordance with the NAVCOMPT manual, paragraph 074723-3d. The auditors estimated that project costs omitted from the previous analysis would total several million dollars.

Another report critical of the project was issued in April 1984 by staff of the Navy Comptroller Standard Systems Activity. The report concluded that the major cause of the problems experienced was an apparent lack of understanding of the system by CSC. The findings included:

- The functional description, which the Navy expected the contractor to refine, was not substantially improved in terms of detail.
- Coordination was lacking between CSC and government subject matter experts.
- CSC argued for 6 months over design changes that could have been accepted as logical extensions of an adequate requirements analysis.

The reviewers decided CSC had found ways to resolve some of these problems. The reviewers also concluded that CSC now understands the full requirement and is working well with Navy project staff. Navy reviewers disagreed with CSC's assertion that changes warranted the increased costs. They believed CSC should have accepted all of the changes as valid system requirements and not have regarded them as new items.

We asked the Vice Commander and project staff what measures had been taken to respond to the reported deficiencies. Originally

project staff stated that the Navy was planning to prepare an economic analysis in 1985. Subsequent to a discussion with us, the Vice Commander directed the project officer to complete an updated economic analysis by December 1984. Relative to not identifying all costs, Navy officials said they could not include development and operating costs incurred by the laboratories because these costs could not be documented.

The project officer said that the functional description has not been finalized. While CSC provided a draft of the revised functional description in May 1983, a finalized version will not be completed until physical configuration audit. Until then, the draft will be updated throughout system design and development phases.

The Vice Commander agreed with the finding in the April 1984 management review that initially CSC did not understand the level of effort required to complete the system design and that this resulted in schedule slippage and cost increases. He believes however that CSC now understands how to develop STAFS and can deliver a successful system.

The Vice Commander also believes that configuration management is now under control. CSC has developed a computer program that records the design deficiencies identified by Navy project staff and the corrective action taken by CSC. The Vice Commander believes this provides the tool that is necessary if the project officer is to control design changes.

Relative to the disagreement over design changes, the Vice Commander told us that the reviewers misunderstood the situation. He believes that CSC's lengthy argument over design changes was due to their not wanting to appear solely responsible for the increased cost of the project. This disagreement has been resolved and the Navy has accepted CSC's estimate to complete as achievable.

No concrete evidence yet of improved contractor performance

The project officer told us that the level of detail in CSC's May 1983 revised functional description was not what the Navy had expected and that changes from Navy's original document were mostly editorial. The Navy developed the original description as an "informational" appendix to the RFP, with the intention that the contractor would develop it into detailed performance requirements. Our comparison of the original work with CSC's product showed that CSC changed very little of the description; the changes it did make were principally editorial. It is logical to assume that if CSC had refined the functional description as the Navy had expected, it could have avoided many of the revisions in system design that have caused subsequent cost increases to the original contract.

The second scheduled contract deliverable, an integrated system design, has not yet been completed. The work on designs for the 16 subsystems is underway. Designs for the subsystems have to

pass through seven levels of review and approval before the final integrated system design can be approved. As of July 25, 1984, all subsystems had been approved at the first three levels. The approval status was as follows:

<u>Design level</u>	<u>No. of subsystems</u>
Three	5-2/3
Four	6-1/3
Five	1
Six	3
Seven	0

As shown above, no final subsystem design has yet been delivered. Although system design at this time is 6 to 9 months behind the original schedule, the Navy is satisfied with the quality of the interim designs it has reviewed following level three.

Because CSC has had problems delivering satisfactory subsystem designs, contract work is behind schedule. CSC has postponed design completion from December 1983 to December 1984. This delay has caused postponement of the first system implementation to October 1985. CSC has also asked for the option of extending the contract for 3 months; thus implementation could be further delayed until January 1986.

As a result of the Navy's concern about the progress of the work, in May 1984 the president of CSC's Systems Group made a personal commitment to improve the company's performance. Because we concluded work on our review in August, it was still too early to determine the effectiveness of CSC's commitment. CSC first began providing the Navy with work breakdown reports in June 1984. These reports for the first four months showed CSC was falling progressively behind the revised schedule. The May design work was 16.2 percent behind schedule and by August, work was 22.6 percent behind schedule. The new schedule and cost to complete may require another revision if improvement by the contractor does not materialize as expected.

Navy has no specific plans for cost containment

The Vice Commander stated that the Navy is committed to holding project costs for STAFS to a ceiling of \$129.3 million and to holding contract costs to \$87 million. However, as previously discussed, we found that design and development work is already behind the revised schedule. This could result in increased costs.

The project officer is confident that he can manage the contract within CSC's recent estimate of \$87 million. He believes that, even though design and development may run over the estimated \$29 million, there is enough leeway elsewhere in the contract to compensate. For example, he thinks the implementation will cost less than planned and the terminals will cost about \$10 million less than the \$19.8 million budgeted in the contract.

The Vice Commander discussed with us the contract alternatives they have considered. These include:

- Conversion of the design and development contract from cost-plus-fixed-fee to firm fixed-price.
- Termination for convenience of the government.
- Termination for default.
- Subcontracting the remaining work.

Although none of these alternatives has been ruled out, he believes that CSC's recent commitment to improve performance precludes implementation of these alternatives. If contract costs appear to be running over estimates, the Vice Commander says the Navy will probably reduce the STAFS capabilities by eliminating subsystems or tasks it considers nonessential. Thus, the Navy has not yet developed a contingency plan that identifies these nonessential tasks or other actions and alternatives that could be exercised at various points during the project. Further, project managers have not designated key management review points at which contract, management, and system development alternatives could be reviewed and decided upon. They believe the decisions about what can be eliminated can wait until the end of 1984, when the design phase is scheduled for completion.

Navy lacks a current economic analysis of STAFS

At the onset of our work, Navy project officials said they had not yet responded to auditors' recommendations that the economic analysis of STAFS be updated. However, as discussed earlier, the Vice Commander stated that the Navy has begun to prepare this update and now plans to have it completed by December 1984.

We noted that no past or future costs of industrial fund user facilities were included in the current project budget. The Navy audit report recommended that industrial fund costs be included in an updated economic analysis. The Vice Commander said, however, that industrial fund costs for development and operation could not be included. He said these costs are not identified separately in the activities' budgets and cannot be accurately derived from auditable budget documentation or accounting reports. The industrial fund costs include travel and salary costs for personnel on temporary duty over a 2-year period during the development stage, and for experts who attend monthly meetings, milestone reviews, etc. Another personnel cost is salary for industrial fund staff who now perform STAFS functions at the laboratories and who will provide technical and operational support once the system is installed. We believe that additional costs that should be considered in the Navy's cost/benefit analysis are space preparation and occupancy. Such costs are standard components of budgets and economic analysis. Navy guidelines (NAVCOMPT manual, paragraph 074723-3d) requires all costs to be included.

We believe it is good business practice to have a cost/benefit comparison on which to base management decisions. The Navy should use best estimates for these costs if firm figures are not available. The accuracy of the economic analysis has, or should have, a heavy impact on the Navy's ability to make management decisions on the cost effectiveness of STAFS.

(510064)

AN EQUAL OPPORTUNITY EMPLOYER

UNITED STATES
GENERAL ACCOUNTING OFFICE
WASHINGTON, D. C. 20548

OFFICIAL BUSINESS
PENALTY FOR PRIVATE USE \$300

POSTAGE AND FEES PAID
U. S. GENERAL ACCOUNTING OFFICE

THIRD CLASS



29-101

GE