

GAO

Report to the Chairman, Subcommittee on
Legislation and National Security,
Committee on Government Operations,
House of Representatives

September 1988

COMPUTER PROCUREMENT

Decision Needed on Navy's Standard Automated Financial System



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Information Management and
Technology Division

B-224248

September 13, 1988

The Honorable Jack Brooks
Chairman, Subcommittee on Legislation
and National Security
Committee on Government Operations
House of Representatives

Dear Mr. Chairman:

In your April 12, 1988, letter, you expressed concern about the cost and management of the Navy's Standard Automated Financial System (STAFS). STAFS was initiated in 1980 to help improve the accounting and financial management of 14 Naval engineering centers and research laboratories. Since that time the system's costs have soared and its implementation schedule has slipped. As agreed with your office, we have reviewed the cost and management of STAFS and are providing information and recommendations concerning the system's future. A detailed explanation of our objectives, scope, and methodology is contained in appendix I.

Our detailed findings are presented in appendixes II through IV. In brief, we found the following:

- Although initially intended strictly as a basic financial system, STAFS has since grown into a more comprehensive management information system containing capabilities that go well beyond those originally envisioned. According to Navy Accounting and Finance Center officials, many of the extra management information capabilities were added to accommodate user requests in the hope of gaining their acceptance of the system.
- STAFS' implementation schedule has slipped by more than 5 years from its original estimate of early 1986, and its project costs have grown from an estimated \$32.9 million to \$479.4 million, partly because of expansions in the system's scope. Moreover, one current Navy estimate of the system's life cycle costs totals \$843.1 million.
- The Navy has not fully disclosed either STAFS' estimated project costs or life cycle costs in its budget submissions to the Congress.
- The Navy has attempted to implement STAFS at four sites, but implementation at three has been unsuccessful because of data conversion and system performance problems. Although the fourth site is experiencing some success, it has not operated the system under work load and operating conditions that are representative of all the sites. As a result, this

experience does not currently provide a good indication of whether the system can be successfully implemented at all the centers and laboratories.

- STAFS is facing opposition from most of its users, who have cited problems such as (1) its history of performance deficiencies and unsuccessful implementation attempts and (2) its high cost.
- The testing STAFS underwent prior to its attempted implementation at the four sites did not fully provide assurance that the system can be successfully deployed to all centers and laboratories. Specifically, the testing did not satisfy Defense policies requiring testing at one or more representative sites using actual transaction data.
- Although faced with dramatic increases in STAFS costs, the Navy has not adequately explored alternatives for satisfying its accounting and financial management requirements.
- The Office of the Secretary of Defense's delegation of approval authority to the Navy for STAFS is based on incomplete Navy cost information.
- The Office of the Secretary of Defense has directed the Navy to convert the funding of the centers and laboratories from the industrial fund to an alternative funding method. However, this decision is not supported by evidence showing that such a change would be advantageous. Moreover, there are several reasons for continuing to operate the activities under the industrial fund: (1) the Office of the Secretary of Defense has not provided a persuasive argument for the change, (2) industrial funding offers better reporting of the centers' and laboratories' costs in performing their work, and (3) continuing with the industrial fund would avoid the need for a costly redesign of STAFS to accommodate a change to an alternative funding method.
- To accommodate a change from industrial funding, the Navy believes it would have to redesign STAFS. Whether this redesign could be accomplished within the terms of the existing contract cannot be determined until the scope of the redesign has been more clearly defined.

Conclusions

The Navy is facing a dilemma. An estimated \$230 million will have been spent on STAFS by the end of fiscal year 1988, with estimates for implementing STAFS ranging as high as \$479.4 million. The system has yet to be fully tested, has not become fully operational at any site, has grown well beyond its originally intended purpose, and is experiencing opposition from users. In addition, the decision by the Office of the Secretary of Defense to change the centers from industrial funding to an alternative funding method would necessitate costly changes in the system. Finally, the full costs of the program have not been provided to either the Office of the Secretary of Defense or the Congress.

Against this backdrop, the Navy must decide the best course of action: whether to continue with some version of the current system or pursue an alternative. This decision is complicated by the fact that the Navy has not fully analyzed alternatives to STAFS.

In light of the Navy's dilemma and the importance of good financial management, we believe that (1) further testing of STAFS, (2) evaluation of the need for its expanded capabilities, and (3) exploration of alternative approaches for achieving a viable accounting and financial management system would be a wise course. It would also be prudent to ensure that, in the interim, spending for STAFS be held to the minimum necessary to complete these efforts.

The Office of the Secretary of Defense's decision to change from industrial funding to an alternative funding method is not supported by evidence showing that such a change would be advantageous. We believe that the lack of persuasive arguments presented in favor of it, the advantages offered by industrial funding, and the potential for increased cost and delays associated with redesigning STAFS to accommodate the change argue for continuing with industrial funding.

Recommendations

We recommend that the Assistant Secretary of the Navy for Financial Management direct the Commander, Navy Accounting and Finance Center, to concurrently:

- Fully test STAFS as required by Defense policies to determine how effectively the system will operate under the work load and operational conditions found at the sites.
- Evaluate the need for STAFS' expanded capabilities in light of its intended mission.
- Fully explore alternatives to STAFS for satisfying the centers' and laboratories' accounting and financial management requirements.
- Ensure that, in the interim, spending for STAFS be held to the minimum necessary to complete these efforts.

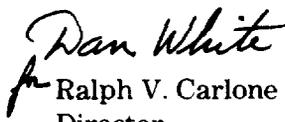
If, on the basis of these efforts, the Navy decides to continue with STAFS, we recommend that the Assistant Secretary of the Navy provide the Office of the Secretary of Defense the information needed to review this decision in accordance with its oversight responsibilities. In addition, we recommend that the Office of the Secretary of Defense provide the Congress a revised budget exhibit for STAFS based on a current estimate of project and life cycle costs.

Last, we recommend that the Secretary of Defense permit the Assistant Secretary of the Navy for Financial Management to continue industrially funding the centers and laboratories, unless the need for a change can be clearly demonstrated.

We discussed the contents of this report with the Assistant Secretary of the Navy for Financial Management and the Commander of the Navy Accounting and Finance Center and have incorporated their comments where appropriate. Our work was performed in accordance with generally accepted government auditing standards.

Unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of this letter. At that time, we will send copies to the Chairmen, Senate and House Committees on Appropriations, Secretaries of Defense and the Navy, and other interested parties. We will also make copies available to others upon request.

Sincerely,


for Ralph V. Carlone
Director

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Abbreviations

GAO	General Accounting Office
IMTEC	Information Management and Technology Division
NIF	Navy Industrial Fund
STAFS	Standard Automated Financial System

Objectives, Scope, and Methodology

Concerns about the costs and management of the Navy's Standard Automated Financial System (STAFS) prompted the Chairman, Subcommittee on Legislation and National Security, Committee on Government Operations to ask us to review STAFS and provide information and recommendations on the system's future.

In developing the information contained in this report, we interviewed Navy officials responsible for program management, contract management, and budget development. We also interviewed Navy and Office of the Secretary of Defense officials having system oversight and approval roles. Additionally, we interviewed Navy officials for the parent command responsible for 7 of the 14 Research, Development, Test and Evaluation centers as well as officials from both Navy and Defense audit organizations involved in STAFS.

Also as part of our work, we reviewed internal Navy reports on the project, system life cycle management documentation, contract documents, system testing documents, and relevant budget documents. We also reviewed applicable Defense and Navy directives and instructions governing information system acquisitions. However, our work did not include an independent assessment of the accuracy or completeness of Navy cost estimates for STAFS.

In responding to the Chairman's concerns, we also visited two centers where the Navy reported the system to be operational. At these two sites, we interviewed center and project office officials responsible for system implementation, as well as system users. We also observed the system's implementation status and operational performance at both centers.

We performed our work between May and July 1988 at Navy headquarters offices in Washington, D.C., and at the STAFS Project Office in San Diego, California. The principal headquarters offices include the Navy Accounting and Finance Center, the Commander's Office within the Space and Naval Warfare Systems Command, the Information Resources Management Branch within the Naval Data Automation Command, the Information Systems Division within the Chief of Naval Operations, the Navy Office of the Comptroller, and the Naval Audit Service. Office of the Secretary of Defense offices include the Information Resources Management System Directorate within the Office of the Assistant Secretary of Defense (Comptroller) and the Department of Defense Office of the Inspector General. The two centers that we visited are the Naval Air

Engineering Center in Lakehurst, New Jersey, and the Naval Ship
Weapon Systems Engineering Station, Port Hueneme, California.

We discussed the facts in this report with the Assistant Secretary of the Navy for Financial Management and the Commander of the Navy Accounting and Finance Center and have incorporated their comments where appropriate. However, we did not obtain official agency comments on a draft of the report. We performed our work in accordance with generally accepted government auditing standards.

Cost and Management of STAFS and a Framework for Deciding Its Future

In 1980, the Navy initiated STAFS to (1) standardize the Navy's accounting and financial management functions within Navy Industrial Fund (NIF) activities in accordance with government requirements and (2) satisfy the financial management needs of these activities. The Navy plans to initially implement STAFS at 14 NIF Research, Development, Test and Evaluation centers—11 research laboratories and 3 engineering centers—and then consider deploying it to other NIF activities such as shipyards, aviation depots, and ordnance stations (see appendix V for a listing of the 14 centers).¹

The Navy has reported that the centers' existing systems are unique, have led to non-standard reporting, and lack adequate internal controls. According to Navy Accounting and Finance Center officials, STAFS will address these problems and provide compliance with recent laws and regulations as well as General Accounting Office, Office of Management and Budget, and Treasury Department guidance concerning accounting and financial management control and discipline. Further, these officials stated that having a standardized system will respond to past General Accounting Office criticism that the Navy's existing management information systems are costly to maintain and largely duplicative.²

The centers and their parent commands fund STAFS' project office and certain contract costs with NIF funds on a pro rata basis. The centers also use NIF funds to directly fund their respective site-specific costs (e.g., data conversion planning, preparation, and execution; training; and some hardware purchases).

The Assistant Secretary of the Navy for Financial Management expects to make a decision on STAFS' future in the near term. In the interim, the Assistant Secretary has reduced project office and contractor efforts until he reaches a decision. Under this reduced effort, he has identified \$4 million, which the parent commands have agreed to provide, as the minimum additional funding required to sustain the project and avoid foreclosure of reasonable alternatives until he reaches a decision.

¹On February 29, 1988, the Navy accepted the Naval Civil Engineering Laboratory's request to withdraw from the STAFS program, thus reducing the number of sites to 13. As of July 1988, no replacement site had been identified.

²Duplication in the Navy's Management Information Systems Is Costly (GAO/LCD-79-113; Oct. 15, 1979).

STAFS Is a Management Information System

STAFS is more than strictly an accounting and financial management system. It is a highly integrated, on-line management information system that includes accounting and financial management functions. Simply stated, an accounting and financial management system provides for (1) recording and classifying, during an accounting period, transactions that have a financial impact; (2) summarizing transactions at the period's end; and (3) reporting and interpreting the summarized information to support policy and management decisions. Examples of transactions include receipt and disbursement of cash, acquisition of assets, award of grants and contracts, hiring of employees, establishment of receivables and payables, generation of revenues, and incurrence of expenses.

STAFS offers functional capabilities beyond strictly accounting and financial management. It also offers logistics functions and functions to enhance the centers' operational productivity. According to senior officials with the prime contractor, STAFS is a "Cadillac" system offering management information reporting above the baseline requirements. Examples of logistics functions include electronic requisitioning of materials and services, automated generation of procurement documents, and electronic preparation of travel orders. Examples of functions to improve work force productivity include automated generation of "to do" lists, automated scheduling and controlling of scientific equipment calibration, and electronic mailing and approval of documents. These and other functions were requested by the centers and approved by the STAFS Executive Review Board³ for incorporation into the system.

Navy Accounting and Finance Center officials agreed with our observation that the system provides more than accounting and financial management functions. They also stated that STAFS' additional functionality was built into the system during its development to accommodate unconstrained center requests and thereby encourage centers' acceptance of the system. They described the approach used to accommodate user requests as "a little out of control." Similarly, the Assistant Secretary of the Navy for Financial Management stated that they "bent over backwards" to accommodate centers' requests for additional functionality.

³The STAFS Executive Review Board is a senior-level, oversight body responsible for monitoring, reviewing, and providing advice and recommendations on system development and implementation. It is chaired by the Deputy Comptroller of the Navy and includes representatives from the centers' parent commands.

STAFS' Cost Growth, Schedule Slippages, and Budgetary Disclosure

Although estimates of STAFS' current costs vary within the Navy, the system's costs and its scope have clearly grown since its inception, and the time frames for deploying the system have repeatedly slipped. Further, the Navy's budget submissions to the Congress do not fully disclose either STAFS' project costs or its life cycle costs.⁴

Cost Growth and Schedule Delays

STAFS was initiated in 1980 as a basic financial system performing functions such as labor processing, material processing, funding, and billing in addition to general ledger accounting. At this time, its estimated project costs were \$32.9 million. However, between 1980 and 1982, STAFS evolved into a management information system with 16 integrated subsystems (e.g., supply, labor, travel, and capital investment).

In 1982, the Navy awarded a \$58.2 million contract for hardware procurement and system design, development, implementation, and maintenance. At that time, estimated project costs, which include contract costs, had grown to \$66.8 million, and system deployment to the 14 centers was to be accomplished by early 1986.

During 1984, we reviewed STAFS and reported⁵ that the Assistant Secretary of the Navy for Financial Management had capped rising project costs at \$129.3 million and that estimated contract costs had grown to \$87 million. We reported that the cost increases were due to (1) expansions in the system's scope, (2) omissions and understatements of costs in early estimates (e.g., modem, terminal, and operational costs were omitted, and software development and maintenance costs were understated), and (3) underestimates of system complexity. We also reported that the program was susceptible to future cost increases and that the Navy needed an updated economic analysis that compared STAFS current costs and benefits, including site-specific costs, with other feasible alternatives. At that time, the system was to be deployed to all 14 centers by late 1986.

In mid-1987, project and contract cost estimates had grown to \$281.6 million and \$216.8 million, respectively, and system deployment had

⁴Navy Instruction 5231.1B, "Life Cycle Management Policy and Approval Requirements for Information System Projects," defines project costs as all costs from mission analysis/project initiation through system deployment at all operating sites. Life cycle costs include, in addition to project costs, the costs of maintaining the system over its expected useful life.

⁵Allegations of Contract Buy-in and Substantial Cost Increases in the Navy's Standard Automated Financial System (GAO/IMTEC-85-2; Oct. 30, 1984).

slipped to mid-1989. In late 1987, the Assistant Secretary of the Navy for Financial Management approved a partial deployment of the system. Specifically, he capped project costs at \$183 million and restricted deployment to three centers.

Since then, the centers' parent commands and the STAFS Executive Review Board have separately reported project cost estimates of almost \$500 million, and project officials told us that system deployment to all centers would not occur until 1991 at the earliest, over 5 years later than originally scheduled. This increase to almost \$500 million (actually \$479.4 million, according to Navy Accounting and Finance Center officials) is attributable to the inclusion of (1) costs that were previously omitted from any estimates (i.e., site-specific implementation costs unique to each of the 14 centers, although some of these costs relating to correction of existing data base errors, according to program officials, would have to be incurred even if STAFS was not implemented) and (2) costs associated with a STAFS redesign from an industrial fund system to an appropriation fund system. We did not attempt to assess the accuracy of this estimate as part of our review.

Recently, the centers' parent commands also estimated STAFS' operations and maintenance costs through fiscal year 2000 to be \$411.8 million. Coupled with the \$479.4 million project cost estimate and allowing for about \$48.1 million in maintenance costs already included in this figure, the system's life cycle cost estimate now totals approximately \$843.1 million. The Commander, Navy Accounting and Finance Center, and STAFS program officials told us that they believe this estimate of operations and maintenance is high because it is based on three centers' implementation experiences with STAFS during a time when a significant number of software changes were made. According to the officials, such a large number of changes are not expected to be needed in the future. We did not attempt to assess the accuracy of the parent commands' estimate during our review, and the program officials could not provide their own estimate.

The project office's estimate of sunk costs through the end of fiscal year 1988 are \$230 million (\$134 million in contract costs, \$21 million in project office costs, and \$75 million in site-specific costs).

Budgetary Disclosure

Both the Office of Management and Budget and the Department of Defense require agencies to supplement their budget submissions to Congress with a series of special budget exhibits designed to, among other

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things, separately highlight funding requests for major information systems. STAFS is one of the major systems separately highlighted in the Navy's budget exhibits. However, the Navy's most recent submissions do not fully disclose STAFS' costs.

The Navy's amended fiscal year 1988/1989 budget exhibit for STAFS shows life cycle costs of \$183.8 million. However, its internal estimate of only project costs at the time of this budget submission were \$281.6 million, almost \$100 million more than it disclosed in the exhibit. Similarly, the budget exhibit indicates that STAFS' fiscal year 1989 funding requirement is \$3.4 million, while the Navy's internal estimate for this year was almost 10 times the amount disclosed. Moreover, the internal Navy estimate of \$281.6 million omits certain site-specific implementation costs (estimated to be \$134.5 million), costs to convert STAFS from NIF accounting to some other accounting method (all but \$5.1 million of an estimated \$68.4 million),⁶ and system operations and maintenance costs (estimated to be \$380 million).

The \$183.8 million project cost figure disclosed in the STAFS budget exhibit represents the cap that the Assistant Secretary of the Navy for Financial Management placed on project costs under limited system deployment approval (i.e., approval to implement certain software at 3 of the 14 centers). The reason this estimate was disclosed rather than the internal Navy estimate of \$281.6 million, according to officials in the Naval Data Automation Command and the Information Systems Division within the Office of the Chief of Naval Operations, is because the \$281.6 million estimate was not approved and funded within the Navy and thus disclosing it would have been improper and premature. These officials also stated that to communicate this fact in the budget exhibit, the Navy was to have a footnote that read "Costs are increasing in scope; new costs are being developed." However, they said that the footnote was inadvertently omitted.

⁶According to program officials, this is a "worst case" estimate. It assumes that two appropriation-fund-based STAFS systems would be required—one for the Operation and Maintenance and one for the Research, Development, Test and Evaluation. If only one system would be necessary, the estimate would be \$34.4 million.

Navy Has Experienced Great Difficulty in Its Attempts to Implement STAFS

The Navy has attempted to implement STAFS at four of the centers—Naval Weapons Center, Naval Civil Engineering Laboratory, Naval Air Engineering Center, and Naval Ship Weapons System Engineering Station. However, the attempts at the first three centers have been unsuccessful because of data conversion and system performance problems. Although the fourth site is experiencing some success, it has not operated the system under work load and operating conditions that are representative of all the sites. As a result, this experience does not currently provide a good indication of whether the system can be successfully deployed to the other centers.

STAFS is also facing opposition from most of its users, who have cited problems such as (1) its past history of performance deficiencies and unsuccessful implementation attempts and (2) its high cost.

System Implementation

The Naval Weapons Center was the initial system implementation site. In 1986, the Navy began converting from the center's existing system to STAFS, but later postponed the conversion until 1988 because the Navy found the center to be too large and complex a facility to attempt initial implementation. According to STAFS management officials, this implementation effort experienced data conversion problems, and it revealed system deficiencies. Consequently, the system lacked credibility with the center.

The Navy subsequently attempted to implement STAFS at the Naval Civil Engineering Laboratory, a much smaller center than the Naval Weapons Center. However, the laboratory stopped system implementation after about 4 months of effort. As stated in the message from the commander of the laboratory's parent command to the Navy Comptroller, STAFS has absorbed and will continue to absorb significant financial, technical, and management resources disproportionate to the value of the information it currently provides. The message further notes that the system does not have a favorable cost/benefit ratio and is not affordable.

The Navy also attempted system implementation at two other centers, the Naval Air Engineering Center and the Naval Ship Weapons Systems Engineering Station. In fact, the Navy twice attempted to implement the system at the Naval Air Engineering Center and was unsuccessful both times. As part of our review, we visited both centers to observe the system's status and operational performance. During our visit to the Naval Air Engineering Center in May 1988, we observed that although STAFS was reported to be fully operational at the time, it was not. We found

that the data conversion process from the center's existing systems to STAFS was still underway, STAFS was being run in parallel with the center's existing systems, user documentation had not been completed, and center and project office officials estimated system acceptance testing to be 6 to 9 months away. Additionally, we found that because of system data base errors, users did not rely on the system. We also found from observing several ad hoc system queries and updates that system edit checks were not functioning properly and response times for the supply subsystem were extremely slow (i.e., minutes per transaction instead of seconds per transaction).

About 3 weeks after our visit to the Naval Air Engineering Center, the commander of the center and its parent command notified the Navy Comptroller that STAFS' implementation at the center was being terminated because of system design deficiencies, conversion problems, costs, and the system's uncertain future. The notification concluded that STAFS was not an economical solution to its needs. The Assistant Secretary of the Navy for Financial Management told us that the Naval Air Engineering Center's primary reason for termination was that STAFS' uncertain future required the center to continue operating its existing systems in parallel, which was too expensive a requirement.

Although the Naval Ship Weapons Systems Engineering Station experienced early problems in implementing STAFS, the center has since consistently reported improvements in system performance. Our work at the station indicates that, while management and users believe certain system improvements are needed, they are generally satisfied with the system and believe that it is an improvement over their old system. However, satisfaction was not always present. According to minutes of a November 1987 STAFS review meeting, the center decided to begin system implementation under the impression that "full-scale, real world" testing had already taken place. However, it had not, and as a result, the center reported the following month that the system was not working as intended, was useless as an instrument of financial management, and must either be fixed or abandoned.

As a result, the project office and the contractor have dedicated resources to assist the center in implementing the system, and the center has made a commitment to STAFS implementation because (1) reversion to its previous system would be costly and disruptive, (2) STAFS would allow for optimal use of hardware already purchased, and (3) Navy-wide benefits would result from demonstrating that the system can be

satisfactorily implemented. Since then, the center has reported continued improvements in the system's capabilities and performance, and it is currently processing and reporting actual data and transactions.

However, according to the Commander, Navy Accounting and Finance Center, and STAFS program officials, the Naval Ship Weapons Systems Engineering Station is not representative of the other planned STAFS sites. Additionally, we found that the system is not fully operational at this site as the Navy has reported to congressional committees because (1) site acceptance testing, a prerequisite to reaching a fully operational status, has not occurred, and (2) the system is not currently running all the center's active transactions (i.e., transactions prior to fiscal year 1988 are being processed on the center's old system). STAFS project officials estimate that the old system will continue to run transactions through the middle of fiscal year 1989.

Additionally, the Navy recently evaluated STAFS' compliance with applicable accounting and financial management requirements at the Naval Ship Weapon Systems Engineering Station, and it identified 1 material weakness and 12 nonmaterial weaknesses. The material weakness concerns the system's inaccurate accumulation of cost data used for charging foreign military sales customers. STAFS project officials stated that this deficiency will be corrected shortly.

User Reaction to STAFS

The parent commands for all but 1 of the 14 centers do not support STAFS. In April 1988, the commanders for 13 of the centers' parent organizations signed a joint report recommending that the project be canceled. According to the report, the system suffers from functional design deficiencies such as the inability to support a multi-line procurement request, interface with Defense Contract Administration Service contract payment actions, and cost-effectively manage inventories. The report states that cancelling the system in favor of improving the centers' existing systems would produce potential cost avoidances of \$487.2 million. The Navy Accounting and Finance Center prepared a rebuttal to this report that agreed with some but disagreed with most of the findings. In particular, the rebuttal noted that the \$487.2 million cost avoidance does not consider the costs to maintain the centers' existing systems and thus is overstated by an unspecified amount. We did not attempt to substantiate either the report's findings and conclusions or the Navy Accounting and Finance Center's rebuttal as part of our review.

In June 1988, the commanders for the 13 centers issued a joint letter providing cost estimates to operate and maintain STAFS through fiscal year 2000. This letter also confirmed their conclusion in the April 1988 report that implementing and maintaining STAFS is far more costly than enhancing and maintaining the centers' existing systems. According to the letter, STAFS will not replace all current financial systems at the centers and will thus require the development and maintenance of interfaces between STAFS and local systems. Additionally, STAFS will require work force increases. For example, the commanders estimate from 5 to 23 additional people will be needed in the procurement and inventory areas, depending on the center's size. The letter states that the estimated cost differential between implementing, operating, and maintaining STAFS through fiscal year 2000, and enhancing, operating, and maintaining the centers' current systems is \$510.8 million. STAFS program officials told us that this estimate of operation and maintenance is too high. However, they could not specify by how much. Again, we did not attempt to validate the letter's findings and conclusions as part of our work.

According to Navy Accounting and Finance Center and STAFS project office officials, the individual centers also do not support the system. These officials stated that the reasons centers cite for opposing the system include (1) they are satisfied with their existing systems, (2) STAFS is too expensive, and (3) STAFS is operationally and functionally deficient.

A Navy Accounting and Finance Center internal briefing document also recognizes user resistance to STAFS for similar reasons. Specifically, the document describes user concerns as (1) the system is too costly, (2) the system does not meet management needs, (3) the file conversion from existing systems to STAFS is too difficult, (4) the system is "unforgiving" and difficult to use, (5) the system is not compliant with key accounting requirements, and (6) the system forces the centers to functionally reorganize (i.e., change their way of doing business).

The Assistant Secretary of the Navy for Financial Management acknowledges the users' resistance to STAFS. He told us that for the system to succeed this resistance must be overcome and that he is working with representatives from the centers' parent commands to offset the opposition.

STAFS Acceptance Testing Is Limited and Has Contributed to Deployment Problems

The testing that STAFS underwent before being deployed did not provide assurances that the system can be successfully deployed to all of the centers and has contributed to the deployment problems the Navy has experienced. Defense Directive 7920.1, "Life Cycle Management of Automated Information Systems," provides a structured process for controlling, managing, and evaluating information system projects to minimize cost and performance risks. This directive requires that, prior to deployment, all information systems, including those that will operate at multiple sites, be (1) field tested at one or more representative sites, using actual transaction data, and (2) certified for adequacy by the appropriate authority covering functional and technical interests prior to operation.

We found that the Navy did not fully test STAFS prior to its deployment in accordance with Defense policies. For example, the Navy's generic functional acceptance test was based on "dummy data" rather than actual transaction data that would correctly reflect the mix of work the centers perform. Additionally, according to STAFS program officials, the generic performance acceptance test did not use different transaction types but rather ran a single transaction 10,000 times. These officials added that the system barely met the specification using this performance testing approach, and if a representative mix of different transactions had been used, this mix would have "brought the system down."

STAFS project officials stated that they have improved testing since the generic acceptance test. Specifically, they stated that they have copied actual data from the Naval Ship Weapons Systems Engineering Station to use in testing, and they have tested STAFS' capacity for operation at larger sites by simulating these data at about nine times the rate that occurred at the Naval Ship Weapons Systems Engineering Station. They told us that the simulation results indicate that STAFS response times will be satisfactory at the larger centers.

Additionally, the Commander, Navy Accounting and Finance Center, while stating that the Navy failed to conduct field acceptance testing prior to system deployment, told us that testing is currently occurring on a continuous basis at the Naval Ship Weapons Systems Engineering Station. Specifically, he stated that the system has been processing actual transactions for 7 months, and the site is relying on the system for its end-of-year reporting. Thus, he stated that it is difficult to justify the need for field acceptance testing.

Navy Has Not Adequately Explored Alternatives or Gained Requisite Approvals for Deployment

Although faced with dramatic increases in STAFS costs, the Navy has not adequately explored alternatives for satisfying its accounting and financial management requirements. Further, it has obtained the Office of the Secretary of Defense's delegation of milestone approval authority on the basis of incomplete cost information.

The Navy's approach to acquiring major information systems, like STAFS, is governed by Navy Instruction 5231.1B, "Life Cycle Management Policy and Approval Requirements for Information System Projects." This instruction provides a structured process for planning, developing, reviewing, and approving information system projects. It is designed to control, manage, and evaluate an information system project to minimize the cost and performance risks associated with acquiring an effective system.

The instruction structures the acquisition process into five phases, each culminating in a milestone decision point. Each milestone decision is required to be supported by certain prerequisite documentation and analysis. This instruction also defines the milestone decision approval authorities according to certain dollar thresholds. The instruction states that information system acquisitions like STAFS, with estimated project costs over \$100 million or costs in any one year exceeding \$25 million, must be approved by the Office of the Secretary of Defense. The instruction further requires that the project cost estimate be updated prior to each milestone decision, and if the updated estimate elevates the system to a new dollar threshold, then the approval authority will change accordingly.

Navy Does Not Have Current Information on STAFS' Costs and Benefits

One of the key documents and analyses specified under Navy Instruction 5231.1B is an economic analysis. The economic analysis (i.e., analysis of alternatives) is required whenever milestone decisions involve a choice or trade-off among competing ways of satisfying a mission deficiency or need. The analysis is designed to evaluate and compare the costs and benefits of each option before a milestone decision is made. Each time a milestone decision point is reached, the economic analysis and the associated estimate of total project costs are to be updated. In short, the economic analysis provides a systematic approach for solving problems of choice.

With STAFS, the Navy is confronted with a choice among competing options. However, it currently lacks the necessary information upon which to make an informed decision. Specifically, the Navy does not

have a current economic analysis that compares system costs and benefits against alternatives. The latest economic analysis was developed in April 1985, and it compared STAFS to one alternative—upgrading the centers' existing systems to provide capabilities comparable to STAFS. At that time, project costs were estimated to be \$134.8 million. However, they have since risen to an estimated \$479.4 million and life cycle costs have been estimated to be \$843.1 million, according to the centers' parent commands.

Navy officials acknowledge the need for a current and comprehensive project cost estimate and an updated economic analysis to support a decision on the project's future, and in July 1988, the Navy tasked the Department of Energy, Oak Ridge Operations Office to update the economic analysis. However, this task directs that only one alternative to STAFS be considered—continuing to operate the centers' existing systems. However, other alternatives may exist, such as (1) acquiring strictly an accounting and financial management system or (2) improving the best one of the centers' existing systems and exporting it to all the centers. We believe that a thorough economic analysis should address all feasible alternatives. In contrast, the Commander, Navy Accounting and Finance Center, while acknowledging that other alternatives to STAFS exist besides continuing with the centers' existing systems, stated that time does not permit consideration of all alternatives, because the Navy is incurring about \$1 million a month in costs while it is waiting to decide STAFS' future. Further, the Assistant Secretary of the Navy for Financial Management told us that comparisons among alternatives cannot be made because STAFS offers improved financial management control and reporting that cannot be quantified against other alternatives.

Delegation of Approval Authority for STAFS Based on Incomplete Information

The Office of the Secretary of Defense exercises its approval authority over information system acquisitions through its Major Automated Information System Review Council.⁷ This council relies on the services' budget submissions to identify systems that exceed the dollar thresholds requiring its approval.

Although STAFS estimated project costs exceeded the \$100 million threshold, the Major Automated Information System Review Council has

⁷The Major Automated Information System Review Council is the Department of Defense's senior management oversight and decision-making body for general-purpose, major information system projects.

yet to review and approve the system. Instead, the Assistant Secretary of Defense (Comptroller) delegated approval authority to the Navy in 1987 based on a \$134.5 million estimate of STAFS' project costs in the Navy's budget exhibit. According to the STAFS action officer within the Assistant Secretary of Defense (Comptroller), Information Resources Management System Directorate, approval authority was delegated even though the \$134.5 million exceeded the \$100 million threshold because the estimated costs from mission analysis/project initiation to deployment (i.e., investment costs) were only around \$90 million. The official also stated that even though the 1987 internal Navy estimate of STAFS' costs was \$281.6 million, the Office of the Secretary of Defense does not receive this documentation and bases its delegation decisions solely on Navy budget submissions. The action officer added that the Navy's \$183.8 million estimate in its fiscal year 1988/1989 updated budget exhibit was the first indication of increased project costs.

The Assistant Secretary of the Navy for Financial Management stated that he notified the Office of the Secretary of Defense to arrange for a Major Automated Information System Review Council review as soon as he learned that STAFS' estimated project costs had exceeded the \$100 million threshold.

Conclusions

The Navy is facing a dilemma. An estimated \$230 million will have been spent on STAFS by the end of fiscal year 1988, with estimates for completing STAFS ranging as high as \$479.4 million. The system has yet to be fully tested, has not become fully operational at any site, has grown well beyond its originally intended purpose, and is experiencing opposition from users. In addition, the decision by the Office of the Secretary of Defense to change the centers from industrial funding to an alternative funding method would necessitate costly changes in the system. Finally, the full costs of the program have not been provided to either the Office of the Secretary of Defense or the Congress.

Against this backdrop, the Navy must decide the best course of action: whether to continue with some version of the current system or pursue an alternative. This decision is complicated by the fact that the Navy has not fully analyzed alternatives to STAFS.

In light of the Navy's dilemma and the importance of good financial management, we believe that (1) further testing of STAFS, (2) evaluation

of the need for its expanded capabilities, and (3) exploration of alternative approaches for achieving a viable accounting and financial management system would be a wise course. It would also be prudent to ensure that, in the interim, spending for STAFS be held to the minimum necessary to complete these efforts.

The Office of the Secretary of Defense's decision to change from industrial funding to an alternative funding method is not supported by evidence showing that such a change would be advantageous. We believe that the lack of persuasive arguments presented in favor of it, the advantages offered by industrial funding, and the potential for increased cost and delays associated with redesigning STAFS to accommodate the change argue for continuing with industrial funding.

Recommendations

We recommend that the Assistant Secretary of the Navy for Financial Management direct the Commander, Navy Accounting and Finance Center, to concurrently:

- Fully test STAFS as required by Defense policies to determine how effectively the system will operate under the work load and operational conditions found at the sites.
- Evaluate the need for STAFS' expanded capabilities in light of its intended mission.
- Fully explore alternatives to STAFS for satisfying the centers' and laboratories' accounting and financial management requirements.
- Ensure that, in the interim, spending for STAFS be held to the minimum necessary to complete these efforts.

If, on the basis of these efforts, the Navy decides to continue with STAFS, we recommend that the Assistant Secretary of the Navy provide the Office of the Secretary of Defense the information needed for its Major Automated Information System Review Council to review this decision in accordance with its oversight responsibilities. In addition, we recommend that the Office of the Secretary of Defense provide the Congress a revised budget exhibit for STAFS based on a current estimate of project and life cycle costs.

Centers Should Remain Industrially Funded

The Office of the Secretary of Defense has directed the Navy to convert the funding of the centers from industrial fund to an alternative funding method. Such a change could affect the centers' operations and would require a significant redesign of STAFS. The Navy strongly opposes the decision, and it has indefinitely deferred implementation of the change.

On the basis of our work, we do not support the decision to no longer industrially fund the centers. We believe that the Office of the Secretary of Defense's documentation supporting its decision does not clearly show that such a change would be advantageous. Further, we believe that there are clear advantages to retaining industrial funding and that the costs associated with the change could be sizable. Last, we believe that the change would complicate an already difficult situation the Navy faces with STAFS.

What Is Industrial Funding?

Industrial funding is a business-like method for operating the centers. Under this method, the centers provide goods and services to customers who reimburse the centers with funds from various sources, including direct appropriations. The centers maintain a level of working capital to finance their operations, and they use the customers' reimbursements to replenish the working capital.

Industrial funding allows the centers to expand or reduce their operations, depending on their customers' needs. It also provides more detailed cost reporting and a clearer picture of the costs of operating the centers. Specifically, under industrial funding, costs for labor, material, and contracting are accumulated for each project that the centers conduct. Additionally, applicable overhead costs are distributed to each project. Such detailed cost data provides the necessary information to manage individual projects.

Defense Decision and Navy Reaction

In late 1986, the Deputy Secretary of Defense directed the Navy to discontinue using industrial fund accounting for the 14 centers. Reasons for the decision include (1) the centers did not realize appreciable benefits from being NIF funded, (2) the Office of the Secretary of Defense and the Congress needed greater oversight of the centers, and (3) a possible one-time budgetary savings of \$1.2 billion would be realized from the reduction of the funded carryover.¹

¹The funded carryover is the amount of appropriated funds obligated by customers for work not to be accomplished by NIF activities until a subsequent fiscal year.

In a November 3, 1987, response to this direction, the Navy Comptroller expressed concern about converting the centers to another accounting method but agreed to redesign STAFS as the only practical way of implementing the required conversion. Further, in an April 14, 1988, letter, the Navy Comptroller stated that the Navy (1) believes that the most desirable, cost-effective approach for funding the centers is to retain industrial funding and (2) finds it difficult to identify a viable justification for converting from industrial funding to an alternate system because of the conversion's high cost and total lack of benefits. However, the Navy Comptroller added that since the conversion must be done, one was being planned.

The Navy proposed operating the centers on a reimbursable basis to implement the Defense's decision to convert. On August 24, 1988, the Office of the Secretary of Defense approved the Navy's proposal and provided the Navy a schedule for converting the centers between fiscal year 1990 and 1992. However, the Navy continues to disagree with the decision to convert, and Navy Accounting and Finance Center officials told us that the Navy has indefinitely deferred the implementation of the change. Further, the Navy's fiscal year 1990 and 1991 budgets are being prepared assuming that the change will not be implemented.

Defense Decision Not
Supported

As noted above, three of the primary reasons for the decision to no longer NIF fund the centers are that (1) the additional costs of operating under the NIF concept offset any benefits, (2) the Congress and the Office of the Secretary of Defense lose desired oversight and visibility over the centers' operations, and (3) a possible onetime budgetary reduction associated with eliminating the funded carryover could be realized. However, we do not believe that these reasons adequately support the decision to change.

With respect to the first reason, we found that the Office of the Secretary of Defense does not have any documentation or analysis supporting its position that the costs associated with NIF funding offset the benefits. Moreover, implementing the change would require that the Navy incur additional costs, including an estimated \$68.4 million to redesign the system.

Concerning the second reason, we earlier reported² that industrial fund reporting that includes the results of individual activity operations should facilitate congressional oversight. We also reported that the information currently disclosed to the Congress enhances visibility and monitoring of industrial fund performance at the activity group level, and that through this increased visibility, the Congress will be able to strengthen its oversight of how appropriated funds are ultimately used by industrial funds.

Regarding the last reason, the funded carryover is to some degree beneficial for smooth and continuous transition from one fiscal year to the next. Further, the Navy has already taken action to reduce the carryover. For example, the carryover for the 14 centers has dropped from \$3.1 billion in fiscal year 1985 to \$993 million in fiscal year 1987, according to data from the Navy Comptroller. Thus, converting from industrial funding is not necessary to address the funded carryover.

Conclusions

The Office of the Secretary of Defense decision to change the centers from industrial funding to an alternative funding method is not supported by evidence showing that such a change would be advantageous. We believe that the lack of persuasive arguments presented in favor of it, the advantages offered by industrial funding, and the potential for increased cost and delays associated with redesigning STAFS to accommodate the change argue for continuing with industrial funding.

Recommendation

We recommend that the Secretary of Defense permit the Assistant Secretary of the Navy for Financial Management to continue industrially funding the centers, unless the need for such a change can be clearly demonstrated.

²Recent DOD Reporting Changes Should Facilitate Congressional Oversight (GAO/NSIAD-86-58; Apr. 11, 1986).

Currently Unclear Whether Planned STAFS Redesign Is Within Scope of Existing Contract

To accommodate the Office of the Secretary of Defense's direction to no longer industrially fund the 14 centers, the Navy believes it would have to redesign STAFS. Whether this redesign could be accomplished within the terms of the existing STAFS contract or whether the redesign should be treated as a new procurement cannot be determined until the scope of the redesign has been more clearly defined.

The STAFS contract contains language that allows considerable flexibility on behalf of the contractor and government. Specifically, the contract requires the design and development of a defined system, and it provides for (1) hardware acquisition, (2) system implementation, and (3) system maintenance. The contract defines permissible system maintenance as those corrections, changes, or enhancements that affect 20 percent or fewer lines of the defined system's code on an annual basis. Requirements in excess of this amount are defined as changes outside the scope of the contract. Terms such as changes and enhancements could conceivably include software conversion, reprogramming, or software redesign. The contract thus allows for up to 520,000 additional lines of code annually.

Whether the STAFS redesign from a NIF system to a system using some other type of accounting method is within the existing contract's scope depends on the number of lines of code that will be affected. The contractor has not submitted a detailed proposal for the redesign. However, the contractor's current estimates show that approximately 18 percent of the system (i.e., 468,000 lines of code) will be affected by the redesign. On the basis of the contractor's estimate, it thus appears that the redesign can be considered a change or enhancement under the terms of the contract. In contrast, the STAFS project office has estimated that the redesign will affect 30 percent of the system (i.e., 780,000 lines of code). Using the project office's estimate, the redesign appears to be outside the contract's scope.

Fourteen Navy Sites Scheduled for STAFS Implementation

Naval Air Systems Command

Naval Air Engineering Center Lakehurst, New Jersey

Naval Air Test Center Patuxent River, Maryland

Naval Avionics Center Indianapolis, Indiana

Pacific Missile Test Center Port Mugo, California

Naval Facilities Engineering Command

Naval Civil Engineering Laboratory Port Hueneme, California

Naval Sea Systems Command

Naval Ship Weapons Systems Engineering Station Port Hueneme, California

Office of the Chief of Naval Research

Naval Research Laboratory Washington, D.C.

Space and Naval Warfare Systems Command

David Taylor Research Center Bethesda, Maryland

Naval Air Development Center Warminster, Pennsylvania

Naval Coastal Systems Center Panama City, Florida

Naval Ocean Systems Center San Diego, California

Naval Surface Warfare Center Dahlgren, Virginia

Naval Underwater Systems Center Newport, Rhode Island

Naval Weapons Center China Lake, California

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