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REPORT TO THE COMMITTEE ON APPROPRIATIONS HOUSE OF REPRESENTATIVES

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**Significant Audit Findings
In The Department Of Defense**

B-106190

**BY THE COMPTROLLER GENERAL
OF THE UNITED STATES**

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FEB. 21, 1974



COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

B-106190

The Honorable George H. Mahon
Chairman, Committee on Appropriations 113-0
House of Representatives

Dear Mr. Chairman:

This is our annual report of significant audit findings in the Department of Defense. A similar report on Federal civil departments and agencies was submitted separately.

We have included items which we believe should be of interest and use to the Committee during the appropriations hearings for fiscal year 1975. Audit reports have previously brought these findings and recommendations to the attention of departmental officials. Some matters commented on in this report are those on which the Department has indicated that corrective action either has been or will be taken. The items have been included, however, in view of their significance and of the fact that we have not had an opportunity to evaluate the adequacy of corrective actions taken.

We shall be pleased to furnish any additional information you may desire.

We are sending copies of this report to the Department of Defense and to the military departments so that they may be in a position to answer any inquiries that may be made during the appropriations hearings with respect to these findings and recommendations.

Sincerely yours,

A handwritten signature in cursive script that reads "James B. Stets".

Comptroller General
of the United States

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PROCUREMENT PRACTICES AND CONTRACT ADMINISTRATION

NEED TO KEEP THE CONGRESS INFORMED AND TO APPLY APPROPRIATE CRITERIA IN DECISIONS ON LONG-TERM LEASING

Department of the Navy

The Navy uses tankers to transport fuel for itself and for the other military services. Part of the tanker fleet consists of 14 Government-owned T-2 tankers built during the 1940s. Navy studies concluded that transportation costs would be reduced by replacing the 14 old tankers with 9 new ones. The Navy entered into a long-term (20-year) leasing arrangement on June 20, 1972, by having private interests obtain the funds to finance the construction of the tankers with Navy's guarantee that it would lease them.

GAO made a review to determine (1) whether the Navy's action was the more economical method to meet its needs, (2) whether or not the Congress had an opportunity to consider the wisdom of the transaction before the formal commitment to spend future funds, and (3) whether review and approval by the Congress should be required for future transactions of this type.

A March 23, 1972, decision of the Comptroller General on the legality of this leasing arrangement stated that GAO could not say the transaction resulted in purchase of an asset, for which funds are required to be authorized and appropriated by the Congress, because the Navy never obtains actual title to the tankers. GAO said it had no legal objection to the transaction but that, in view of the program's magnitude, it would seem appropriate to inform the House and Senate Committees on Armed Services and Appropriations of Navy plans before going forward. Navy officials advised GAO that they gave informal rather than formal notification to selected committee staff members.

If the tankers were purchased, total Government payments would be made during a 3-year construction period. By leasing, total payments are spread over a 20-year period with no payments due until the tankers are ready for use. Determining whether leasing is more economical than purchasing

depends on the discount rate used to convert future dollars into today's value.

The Navy's lease-versus-purchase analysis used the criteria established in Department of Defense (DOD) Instruction 7041.3. This instruction requires a 10-percent discount rate which represents an estimate of the average return on private investment before taxes and after inflation. The source cited in this instruction is the Office of Management and Budget (OMB) Circular A-94.

Circular A-94 prescribes the discount rate for evaluating Government decisions concerning the initiation, renewal, or expansion of programs or projects. However, A-94 states that its provisions do not apply to the evaluation of Government decisions concerning the acquisition of commercial-type services and that guidance for making such decisions is contained in Circular A-76. OMB Circular A-76 criteria for valuing money is the yield on long-term Department of the Treasury borrowing rate. This rate, at the time the transaction was entered into, was about 6 percent.

A comparison of the effects on Government costs if (1) no present-value discount is used, (2) a 10-percent discount is used (A-94 criteria), and (3) a 6-percent discount is used (A-76 criteria) shows the following:

\$178.1 million more to lease with no present value discount;

\$10.4 million less to lease at 10-percent discount;

\$29.6 million more to lease at 6-percent discount.

At a discount rate of about 8-3/4 percent, there is little difference between leasing and purchasing.

By leasing instead of purchasing, the Navy was not required to obtain specific congressional authorization and approval. The Navy told GAO that it preferred to purchase new tankers but that it had been unsuccessful in obtaining procurement funds in prior years and, therefore, considered leasing as its only viable alternative. However, future

Government payments under this lease transaction will more than double the amount that would have been paid if direct congressional approval had been received and the tankers had been purchased.

Although leasing is recognized as a proper means of acquiring assets, the magnitude of the funds involved in this transaction clearly warranted congressional input to the decisionmaking process.

GAO recommended that the Secretary of Defense revise DOD instructions to provide for application of the guidelines set forth in Circular A-76 in evaluating long-term leasing of assets, such as ships. GAO also recommended that, to improve congressional awareness of future build and charter programs, the Secretary of Defense should assist the Congress by

- providing it with information on the proposed method of acquisition (long-term leasing or purchasing);
- providing, to appropriate congressional committees, a detailed cost analysis showing full impact on future budgets when long-term leasing is proposed; and
- requiring analyses of long-term leasing arrangements to be made on a total-cost-to-the-Government basis, including direct effects of delayed payments of income taxes.

DOD and the Navy generally accepted GAO's recommendations for improving congressional review of future build-and-character programs. DOD assured GAO that formal presentations would be given to key congressional oversight committees.

The Navy did not concur, however, in GAO's treatment of deferred taxes because it believes that the value of deferred payment of income taxes should not be recognized as a cost. DOD did not concur with GAO's recommendation that DOD instructions be revised to provide for application of

the guidelines set forth in OMB Circular A-76 in evaluating long-term leasing of assets such as ships.

Since the Navy's program is similar to Government programs for leasing buildings, the Congress should evaluate the need for legislation similar to Public Law 92-313 of June 16, 1972. That law amended the Public Buildings Act of 1959 to require congressional approval of all leases greater than \$500,000 a year. It also requires that a prospectus containing details of the transaction be provided to the Congress. Similar legislation may be appropriate for long-term leasing of such assets as ships. Because the Navy's program can be considered as setting a precedent (the Navy is considering acquiring other types of vessels, such as dry-cargo ships, in this manner), legislation could be an effective tool to insure congressional oversight of future long-term-leasing programs. (B-174839, Aug. 15, 1973.)

IMPROVEMENT NEEDED IN USE OF FORMAL
ADVERTISING PROCEDURES FOR PROCUREMENT

Department of Defense and civil agencies

GAO reviewed procedures and practices of DOD, the General Services Administration (GSA), and the Tennessee Valley Authority (TVA) in using formal advertising for bids in order to (1) identify problems that limit competition and increase costs to the Government and (2) offer suggestions to the agencies for more effective and less costly use of this method of procurement.

GAO examined 138 contracts, awarded under formal advertising procedures by 8 procurement offices of these agencies, and found that 8,956 suppliers had been solicited but that only 8 percent of them had submitted bids. Fifty-three contracts were awarded on the basis of three or fewer bids. Causes of the low response follow.

- Bidders lists were based on broad categories of items and did not reveal the relatively few sources capable of bidding for a specific item.
- Previous bidders were not regularly solicited.
- Advertising in the Commerce Business Daily was not timely, and the published description of supplies or services required was insufficient to elicit bids.
- The causes for the low number of bids were not evaluated to increase competition for future procurements.
- Restrictive specifications or purchase descriptions were used repeatedly.
- The complexity of invitations discouraged suppliers from bidding.
- Bidders were given insufficient time to bid.
- Bids were rejected because of minor discrepancies.

Administrative costs of formal advertising include costs of maintaining lists of bidders; preparing and mailing invitations; and receiving, recording, and analyzing bids.

Opportunities for reducing these costs were evident because:

- 41 percent more invitations for bid (IFBs) were prepared for distribution than were used.
- About 50 percent of the pages in the IFBs were standard contract provisions which were repeated from one solicitation to another.
- Furnishing more than two copies of the IFB to the firms solicited was unnecessary.
- 92 percent of the solicitations mailed to firms did not result in bids.

GAO believes that, if its suggestions for correcting these conditions are adopted, DOD and the civil agencies could save several million dollars annually.

GAO recommended that DOD and GSA, the major agencies responsible for procurement policy, instruct procurement offices and agencies to:

- Establish a program in each procurement office to selectively review the extent of competition achieved under formal advertising and take aggressive action to stimulate competition where it appears to be restricted.
- Establish a work simplification program in each procurement agency to (1) solicit only previous bidders or suppliers and firms that request IFBs, (2) simplify and shorten IFBs, and (3) reevaluate the requirements for distributing IFBs.

After the report was issued to the Congress, the Office of Management and Budget asked GSA to immediately undertake a review of the unresolved issues and determine how best to proceed with appropriate implementation of the suggestions and recommendations.

GSA advised GAO that it was initiating action in cooperation with DOD to insure that formal advertising policy of executive agencies provides for maximum effective use of the technique. (B-176418, Aug. 14, 1973.)

POTENTIAL COST REDUCTIONS THROUGH IMPROVEMENT
IN CONTRACTORS' INDUSTRIAL OPERATIONS

Department of Defense

GAO reviewed industrial operations at the plants of three aircraft engine manufacturers performing a substantial amount of work for DOD. Industrial engineering and financial management principles were applied in these reviews to identify conditions which were increasing the cost of contract performance, and to bring those conditions to the attention of the contractor or Government officials for appropriate action.

There were areas at plants of each of the contractors where the contractors' operations could be improved and costs could be reduced through such things as (1) more effective programs for establishing, maintaining, and using labor standards for measuring labor efficiency, (2) strengthened production control systems for scheduling, coordinating, and controlling manufacturing operations, (3) elimination of excessive inspection and testing of material, parts, and assembled products, (4) greater efficiency in plant layout and plant use, (5) improved programs for maintenance, modernization, and replacement of equipment, and (6) relaxation of the military services' stringent packaging requirements for spare parts and assembled products destined for domestic rather than overseas delivery and use.

Suggestions for improving these conditions were brought to the attention of the contractors and of the cognizant procurement and contract administration organizations of DOD. The results of GAO's efforts will be especially useful to the Government's procurement and contract administration personnel who will be dealing with these contractors in the future.

Some of the suggested improvements will require time to implement and some will require further study by the contractors to determine the most feasible approach. Consequently, GAO was unable to quantify the savings which could result from the suggestions. GAO believes, however, that the savings would significantly exceed the cost to implement the improvements. (B-159896, June 26, 1973.)

POTENTIAL SAVINGS THROUGH PROCUREMENT
BASED ON LIFE CYCLE COSTING

Department of Defense

Life cycle costing is a procurement technique which takes into account not only the price of an item but also its useful life and the cost of maintaining it during the useful life. When competitive prices are being evaluated, this technique often reveals that a lower price is not necessarily more advantageous in terms of overall cost. In 1965 DOD began a program to test this concept and in 1970 issued implementing guidelines. Although the concept has been widely accepted by DOD's engineering and procurement managers, it has been successful at only five or six procurement activities which have used it aggressively. GAO evaluated the life cycle costing technique to determine its potential in DOD for broader application in awarding procurement contracts for subsystems and components.

From inception of the test program in 1965 to the time of GAO's review, contracts had been awarded on the basis of life cycle costing for only 64 procurements--43 of which had been awarded by the Air Force. The Air Force reported that the 43 procurements at a cost of about \$20 million resulted in overall savings of about \$25 million.

The limited application of the concept was attributable to insufficient emphasis by DOD. Neither the Armed Services Procurement Regulation nor the Defense Procurement Circulars--the primary means of disseminating policy and direction to procurement personnel and to contractors--had provided guidance on the life cycle costing technique. It is unlikely that the benefits and lessons learned from the test program can be widely used in DOD unless high-level interest is expressed and coordination, communication, and training are improved.

GAO recommended that the Secretary of Defense:

- Emphasize more vigorously the importance of an effective test program for the life cycle costing technique and provide coverage in the Armed Services Procurement Regulation.

- Expand the test program to provide that, where appropriate, the competition for prime contracts include consideration of contractors' plans to use life cycle costing in awarding subcontracts.
- Expand the test program to include, where appropriate, noncompetitive procurements by requiring the submission of proposals offering different levels of reliability and maintainability and providing for evaluations on a life cycle costing basis.
- Place the prime responsibility for life cycle costing on the engineering and requirements personnel and provide for coordination with the procurement personnel.
- Establish goals for systematically reviewing items scheduled for procurement to identify potential candidates for application of life cycle costing.

The Office of the Secretary of Defense agreed generally with these findings, conclusions, and recommendations and informed GAO of the specific steps it was taking to implement the recommendations. (B-178214, May 21, 1973.)

IMPROVEMENT NEEDED IN MANAGEMENT OF
CONTRACTING FOR STUDIES AND DISSEMINATING
RESULTS OF STUDIES

Department of the Army

DOD and the military services contract with public and private organizations to make studies that will assist them in reaching decisions or solving problems. GAO selected 17 Army contract studies for review to determine adequacy of the Army's control over its contract study program.

Eight of the 17 studies, costing about \$1.4 million, either were of limited usefulness or were not used. It was not determinable from available records whether the remaining nine studies, costing about \$4.1 million, met their objectives satisfactorily or were used as intended.

The Army evaluated each contractor's performance after completion or termination of a contract; however, it did not make a similar evaluation of its own performance in planning and monitoring the studies. Because of the intangible nature of the subject matter of the studies, high turnover of personnel involved in contract administration, and lack of evaluation by the Army of its own performance, GAO was unable to determine the effectiveness of the Army's control over the studies or to positively determine causes of unsatisfactory study results.

Some factors contributing to unsuccessful study efforts were the Army's failure to (1) review the lessons learned on the subject through previous studies, (2) state the study assumptions used to guide the contractual effort, (3) prescribe clearly the duties and responsibilities of the study advisory group assigned to provide technical advice and assistance, and (4) provide the technical expertise to plan and monitor the study. In addition, there was some conflict between directives and regulations relating to distribution of study results and related information.

GAO recommended to the Secretary of the Army that existing regulations be revised and new procedures be established to require:

- An evaluation of management's performance after the completion or termination of each study contract.

- The advisory group to meet early enough to (1) assist in meeting all prescribed requirements for planning a contract study and (2) determine whether it is capable of monitoring the contractor's performance in accordance with the plan.

- The distribution of contract studies to the Defense Documentation Center regardless of their outcome or funding. For unsatisfactory or incomplete studies, a summary of lessons learned should be prepared and disseminated with the results of the study.

GAO also recommended to the Secretary of Defense that he consider, in conjunction with the Secretary of the Army, phasing out the Army's data bank of studies and analyses as the Defense Documentation Center obtains the data needed to function as the central repository for such information.

DOD generally concurred in these recommendations and reported that the Army was considering revising its regulations along the lines recommended. (B-177372, Dec. 11, 1972.)

NEED FOR A POLICY REQUIRING CONTRACTS WITH
FOREIGN FIRMS TO BE PRICED IN LOCAL CURRENCY

Department of Defense

The kind of currency used in pricing contracts with foreign firms (the dollar, the currency of the contractor's country, or a combination of the two currencies) is of little importance when the rate of exchange is stable. It becomes important when the exchange rate has a history of significant fluctuation or is expected to change during the contract period. Foreign contractors, when paid in dollars, generally convert them to local currency to pay local obligations. In a period of exchange-rate fluctuation, the dollars they receive may be worth more or less in local currency than was anticipated when the contractors were priced. When bidding for dollar-priced contracts, foreign contractors may increase or decrease their prices depending on the anticipated gain or loss from exchange-rate fluctuations during the contract period.

GAO examined contracts at DOD procurement offices overseas and in the United States to find out whether existing DOD policies and practices adequately protect the U.S. Government and foreign contractors when currency fluctuations occur. Contracts in countries where the Department of the Treasury held excess currency or near excess currency were not examined because the Armed Services Procurement Regulation adequately implements the Government's policy that U.S.-owned foreign currency be used when feasible.

DOD has not formulated a uniform policy for determining whether contracts with foreign firms should be priced in local currency or dollars. The determination is left to the discretion of the contracting officers. Because of this, a number of different practices exist, sometimes within the same country.

Pricing contracts in dollars has resulted in inequities to both the United States and the contractors. For example:

- In Korea, contractors have benefited or will benefit by about \$5.8 million, on the contracts GAO reviewed, because Korean currency (won) depreciated in value relative to the dollar.

--In Japan, contractors could lose as much as \$4 million on open, dollar-priced contracts as a result of the August 1971 devaluation of the dollar.

--In Europe, contractors could lose about \$1.6 million under dollar-priced contracts for fiscal year 1972 milk requirements. The contracts were awarded only days before the value of the dollar dropped in Europe.

GAO believes that the need for DOD policy guidance is critical because of uncertainty in the international monetary market. GAO recommended that the Secretary of Defense establish a policy requiring that foreign contracts be priced in local currency unless there is a compelling reason to use dollars, such as a requirement in the contract for significant purchases in the United States. Justification for pricing in dollars should be approved at a level above the contracting officer. A less preferable alternative would be to price the contracts in dollars subject to provisions for appropriate price adjustment if the exchange rate fluctuates significantly during the contract period.

DOD said that, as a result of the interest generated by the report, a study of the matter has been initiated at a number of foreign procurement offices, and at the conclusion of this study, it will be determined whether a change in policy is warranted. (B-146749, July 6, 1973.)

VALIDITY OF PAYMENTS TO THE CONTRACTOR
FOR PRODUCTION OF THE C-5A AIRCRAFT

Department of Defense

Each of the Public Laws 91-441, 92-156, and 92-436, which authorized funding for the C-5A aircraft program for fiscal years 1971, 1972, and 1973, respectively, provided that payments be made to the contractor--Lockheed Aircraft Corporation--throughout a special bank account. The laws also placed restrictions on the costs for which payments could be made from the special bank account and required GAO to audit the payments and submit quarterly reports to the Congress.

GAO audited payments, totaling \$565.6 million, made since the special bank account was set up in June 1971 through June 30, 1973, and submitted nine quarterly reports to the Congress. No payments were found to be contrary to the applicable laws. GAO questioned, however, the propriety of payments to the contractor for contributions to employees' retirement funds, which had been made well before the contractor made payments to the retirement fund trustees.

Although costs incurred but not yet paid are reimbursable if otherwise valid, the payments received from the Government were held by the contractor for an average of about 14 months before payment to the retirement fund trustees. In response to our recommendation, the Department of Defense took action to avoid making such payments significantly in advance of need. Defense Procurement Circular 114, issued in July 1973, provides that, unless contractors' contributions to retirement funds are made within 30 days of the end of a quarter, they are not eligible for reimbursement until actually paid. (B-162578, Nov. 29, 1972, Mar. 9, 1973, May 17, 1973, and Aug. 10, 1973.)

NEED FOR CONTRACTING OFFICERS TO ACT
ON AUDIT REPORTS MORE EFFECTIVELY

Department of Defense

GAO reviewed the actions taken by the contracting officials on the Defense Contract Audit Agency (DCAA) reports which recommended price reductions under the Truth-In-Negotiations Act because contractors had submitted defective data at the time of negotiations. The objective of the review was to find out (1) whether DCAA reports were providing contracting officers the information needed to reduce contract prices, (2) why the contracting officers had determined in some instances that they did not have a basis to reduce contract prices in the amounts recommended by DCAA, and (3) whether prompt action was being taken on DCAA reports.

A report on the review, submitted to the Secretary of Defense, stated that of 177 reports reviewed:

- DCAA had recommended reductions of \$46 million but contracting officials had concluded there was defective pricing of only \$21 million.
- For \$19 million of the remaining \$25 million, contracting officials disagreed with DCAA that contractors had submitted defective data.
- For \$6 million of the remaining \$25 million, contracting officials agreed that defective data had been submitted but the Government did not have a right to reduce contract prices.
- As of June 30, 1972, DCAA reports on 893 contracts, or 68 percent of those reported, had not been settled.

GAO recommended the following to the Secretary of Defense:

- Insure that contracting officers provide adequate documentation of the cost or pricing data submitted by and certified to by contractors.
- Require higher level approval when the contracting officer does not accept DCAA recommendations on either

the grounds that pertinent cost or pricing data had been disclosed to him during contract negotiations or the grounds that he was aware of the correct cost or pricing data at that time.

- Establish time standards for procurment offices to review DCAA reports, evaluate the recommendations, and take the action appropriate in the circumstances.
- Require DCAA to review its proposed reports more closely before they are issued to contracting officers.

In reply, DOD stated that the regulations are adequate and that settlements have been orderly. GAO will continue to monitor these settlements. (B-159724, Mar. 22, 1973.)

WAYS TO REDUCE ADMINISTRATIVE COSTS
OF AWARDING NEGOTIATED CONTRACTS

Department of Defense

DOD can reduce the administrative costs of its negotiated procurements of parts and components without sacrificing adequate competition, reasonable prices, or other goals of the Congress. These other goals are reflected in such laws and programs as the small business programs; the labor surplus area program; the Buy American Act; the equal employment opportunity programs; and the procurement-related labor laws, such as the Walsh-Healey Public Contracts Act and the Service Contract Act.

Millions of dollars in administrative costs could be saved annually. For example:

- DOD can save about \$900,000 annually by shortening its solicitation documents and by requiring the Navy and the Defense Supply Agency to use only two copies of the solicitation document in each solicitation package.
- DOD can realize substantial annual savings by preparing fewer solicitation packages.
- DOD's ceiling for simplified procurement procedures is limited to procurements under \$2,500. If the ceiling were raised to \$10,000 for negotiated and formally advertised procurements, administrative costs up to \$30 million annually might be avoided at procurement centers.
- DOD could save about \$150,000 annually if the requirement for preparing certain determinations and findings were repealed.

Some of the needed improvements to effect these savings can be made administratively by DOD; others will require congressional action. GAO recommended that DOD:

- Encourage greater use of master solicitations throughout DOD and, where it is not feasible, give

centers greater latitude to incorporate clauses by reference when this action would benefit the Government.

- Require procurement centers to include only two copies of the solicitation document in each solicitation package.

In response, DOD pointed out that it had already granted the services permission to use master solicitations on a trial basis and to incorporate many clauses in contracts by reference. DOD said that it was considering changes permitting incorporation, by reference, of additional clauses, solicitation provisions, and notices. DOD also said that it was considering whether procurement centers should include only two copies of the solicitation document in each solicitation package.

Because DOD's procurement system is tied to legislation, certain administrative costs cannot be reduced without congressional action. The Commission on Government Procurement has recognized that changes are needed and has recommended appropriate legislation to the Congress. Since GAO's study also indicated a need for the changes recommended by the Commission, GAO recommended that the Congress enact legislation:

- Authorizing agencies to solicit proposals from a competitive, rather than a maximum, number of sources.
- Raising the ceiling price of procurements subject to simplified procurement procedures.
- Repealing the requirement that contracting officers prepare determinations and findings for certain procurements. (B-168450, Sept. 17, 1973.)

ACQUISITION OF MAJOR WEAPONS AND OTHER SYSTEMS

PROBLEMS IN NAVAL SHIP CONSTRUCTION PROGRAMS

Department of the Navy

GAO reviewed the status of two of the Navy's largest shipbuilding programs, the general-purpose amphibious assault ship (LHA) and the DD-963 antisubmarine destroyer (both under contracts with the same shipbuilder), because production problems had been encountered in the shipyard where the construction work was being performed.

The shipyard was new. There is little doubt that both the shipbuilder and the Navy grossly underestimated the problems the shipbuilder faced in (1) starting a new shipyard, (2) assembling an adequate work force, (3) introducing new, untried ship construction techniques, and (4) locating the ship design organizational unit 2,000 miles away from the construction site.

The LHA was the first and the DD-963 was the second Navy shipbuilding program undertaken by the shipbuilder in the yard. These programs were intended to be carried out nearly consecutively. However, slippages in the LHA construction schedule resulted in unintended concurrent construction. This further aggravated the problems. Other aggravating factors were the high turnover of executives and key personnel of the shipbuilder and the unusual provisions in the contracts. The Navy, for the first time in its award of ship construction contracts, contractually assigned to the shipbuilder almost complete responsibility for decisions in program execution and complete responsibility for ship design.

At the time of GAO's review, the shipbuilder's cost estimates for the LHAs were more than the ceiling price allowed under the contract, and delivery had been delayed more than 2 years. The cost and construction schedule of the DD-963s had not changed significantly since June 1970, when the contract was awarded. Congressional concern was expressed, however, in deliberations on the fiscal year 1973 budget when the Congress denied authorization and funding of another block of 7 DD-963s--17 through 23 of the 30-ship program.

In fiscal year 1974, the Congress authorized and funded these 7 ships and long-lead-time items for the remaining 7 ships--24 through 30. The Congress also provided \$165 million to cover cost growth on the LHA program. (B-163058, July 26, 1973.)

PROBLEMS IN CONTROLLING COST GROWTH
OF MAJOR WEAPON SYSTEMS

Department of Defense

At the request of the House Committee on Armed Services, GAO made a special review of the cost growth of major weapon systems. A report on the review noted that most new weapon systems are intended to replace obsolete systems performing the same type of missions. The military services, however, constantly demand that the performance and capabilities of the new systems exceed those of the systems to be replaced. This, of course, increases their cost. Comparing the latest generation of eight major weapons showed that the cost of a successor system was between two and six times greater than that of its predecessor. Other significant factors contributing to cost growth were (1) optimistically low initial estimates of costs on the part of competing contractors and of the military services, (2) revisions in contract specifications as to quantities, scope, time schedules, and engineering, and (3) inflation.

Various actions have been proposed or are being tried to develop new policies and management techniques to bring about improvements. They are aimed at three key objectives: (1) making the right decision at the outset on what to develop and for what purpose, (2) learning the lessons offered by past schedule slippages, cost overruns, and disappointing performances of the weapons in the field, and (3) strengthening the overall management of the systems acquisition process.

GAO recommended that action be taken, continued, or strengthened in these 13 areas:

1. Obtain Office of the Secretary of Defense, service, and congressional agreement on the basic operational need, the fundamental weapon system characteristics, and the expected level of resources to be allocated to that need.
2. Strengthen the staff support to provide the Secretary of Defense with comprehensive and objective analyses of missions and weapons requirements.

3. Extend the span of congressional authorizations at least 1 year in advance of the upcoming budget year.
4. Strengthen congressional reviews of weapons budgets by first considering and approving budget totals for major missions. This review will be based on consideration of the overall needs of the various military missions.
5. Avoid concurrent development and production and adhere to orderly and sequential design, test, and evaluation.
6. Stress austerity in development, small design teams, freedom to innovate, and maximum competition in the design phase with clear separation of development and production. Encourage continuous development of subsystems.
7. Adopt contracting practices and Government-contractor relationships which will encourage the most effective team performance.
8. Continue to improve the Government's capability to develop cost estimates covering the development phase, as well as the production phase, of new systems.
9. Emphasize life cycle costing to gain better perspectives on proposed new systems and to strengthen cost-effectiveness analysis.
10. Continue the current, strong emphasis on upgrading the competence, stature, and tenure of program managers and procurement specialists.
11. Continue to emphasize operational test and evaluation by establishing in each military department an organization independent of the developer and the user. The senior DOD official in these activities should report to the Secretary of Defense or to his deputy.

12. One of the deputy secretaries of Defense should assume the responsibility for mission analysis and system acquisition.
13. Improve the planning for maintaining the development and production base. (B-163058, Mar. 26, 1973.)

NEED TO CLARIFY POLICY ON INFLATION AS
A FACTOR IN COST ESTIMATES OF PROPOSED
PROGRAMS

Department of Defense and civil agencies

Inflation is defined as a persistent and appreciable rise in the general level or average of prices for labor and material. When an agency requests the Congress to authorize and appropriate funds for a program, realistic cost estimates, including inflation, are needed to be considered in deliberations on the merits of the program. The Office of Management and Budget (OMB) has a long-established policy that excludes allowances for future price increases from budget requests presented to the Congress. Inflation has little effect on programs for which funds are budgeted and obligated for a single year. For long-term programs, however, OMB's policy may result in approval of programs by the Congress on the basis of incomplete information.

GAO examined the methods by which Government agencies consider inflation in estimating costs of long-term programs and disclose them to the Congress.

Some agencies included allowances for inflation in their budget requests despite the OMB policy. The allowances were not so identified, however, and the Congress did not receive budget estimates prepared on a consistent basis. Also, agencies frequently prepared cost estimates for internal use--in contrast to the cost estimates submitted to the Congress--which included allowances for inflation.

In 1969, DOD requested authority from OMB to provide for inflation in its cost estimates for major weapon systems and other large projects. The request was denied. DOD then instructed the military services to prepare two estimates--one excluding inflation for OMB use and one including inflation for DOD use. In response to DOD's later request, OMB modified its policy with respect to 1972 and 1973 fiscal year budget estimates for major weapon systems and major construction.

GAO suggested to the Director, OMB, that cost estimates for long-term programs include an estimate for inflation and that the estimate be presented to the Congress as supplemental

data. OMB did not agree. OMB believes that including inflation in cost estimates, even on the suggested supplementary basis, would tend to increase Government procurement costs.

OMB has sound reasons for not desiring to include inflation in the formal Federal budget. However, to assess and authorize long-term programs, the Congress should have information showing, as realistically as possible, the total expected program costs. Agencies should have estimates for inflation available to submit to appropriate congressional committees for their use when the programs are under consideration. (B-176873, Dec. 14, 1972.)

RESEARCH AND DEVELOPMENT

COORDINATION NEEDED AMONG GOVERNMENT AGENCIES TO INSURE MAXIMUM SHARING OF TECHNOLOGY

Department of Defense and civil agencies

GAO sought to identify ways by which DOD and Federal civil agencies can share and put to greater use the Government's technological resources to solve sociological problems in such areas as transportation, law enforcement, environmental protection, education, housing, and urban development. The contribution which DOD can make becomes clear upon realizing that DOD spends about \$8 billion a year in research and development--nearly half the Federal research and development budget--involving virtually every scientific and technical field.

This sharing process is called technology transfer. It means that technology developed for a particular purpose may be adapted and applied to fill a different need. Transfer methods may be:

1. Passive--collecting, processing, and distributing technical documents and data on request of potential users.
2. Active--personal liaison between developers of technology and its potential users, frequently aided by a third-party transfer agent.

The transfer process is complex, particularly where the developer and potential user do not have similar technical backgrounds and where the commonality of problems is not obvious.

In a report submitted to the Congress in December 1972, GAO pointed out that DOD's efforts are primarily passive. Active participation has been inhibited by the lack of policy guidance and the question of whether DOD funds may be expended for other than mission-related research. In the absence of a national policy and of guidelines which clearly define the responsibility of all agencies to encourage technology transfer, civil agencies differ widely in the extent that they seek and use DOD technology.

GAO recommended that the Secretary of Defense establish policy and procedures to encourage active transfer of DOD technology to civil agencies. GAO also recommended that the Director, Office of Management and Budget:

- Establish a Government-wide policy for technology transfer and issue guidelines for formal active transfer efforts.
- Provide for a small technology transfer team as a pilot effort to assist Federal agencies in matching technological resources with their needs in solving pressing national problems.

The Secretary of Defense has issued a policy statement endorsing nondefense work in DOD laboratories, subject to certain specified considerations. The policy statement is an essential first step; guidelines to put the policy into effect still are needed.

The Office of Management and Budget said that it had long been the Government's policy to encourage technology transfer and cited steps being taken in this regard but did not agree to provide written guidelines for active transfer efforts by Federal agencies. (B-175132, Dec. 29, 1972.)

DEVELOPMENT AND USE OF FLIGHT SIMULATORS
COULD REDUCE COST
OF MILITARY FLIGHT TRAINING

Department of Defense

GAO reviewed commercial and military uses of simulators for flight training to find out if greater use of simulators in DOD would reduce costs of flight training without weakening pilot proficiency. Pilot training programs of the Air Force and the Navy were reviewed because these services fly the most fixed-wing aircraft.

The Air Force and the Navy fly about 8.4 million hours a year, much of which is for training. Hourly operating costs for fuel, maintenance, and spare parts range from less than \$50 for light trainers and utility aircraft to more than \$1,500 for combat aircraft.

Advancements in technology are continually improving flight simulators' ability to duplicate the operating characteristics of flying and flight environment. Commercial airlines have taken advantage of breakthroughs in simulator technology and have replaced various phases of flight training with training in improved simulators. The military services have not always availed themselves of the advanced technology partly because of the operational requirements and priorities of the Southeast Asia conflict.

Air Force and Navy studies completed in 1972 projected that, with better simulators and improved training techniques, flight time at basic pilot training schools could be reduced in the mid-1980s by about 46 to 49 percent, depending on the type of aircraft involved. The extent that simulator training can replace flight training in combat aircraft used in intermediate training and operational squadrons is not known. However, substantial savings are likely. A 25-percent reduction of flight training in such aircraft would save about \$455 million annually; a 50-percent reduction would save about \$910 million annually.

The range of potential savings is necessarily broad because under the current state of the art in simulator technology there is no basis for accurately estimating the amount of flight training future simulator use can replace. However, with the development of more sophisticated visual

simulators, the range of actual flight characteristics and maneuvering which can be accurately duplicated by simulators should increase and should permit more replacement of flight training in aircraft.

The military services have recently taken several steps to increase simulator development and use for pilot training which GAO believes are constructive. However, continuing emphasis will be necessary for several years. This will require current research and development funds to be spent to achieve future long-term benefits. Accordingly, GAO recommended that the Secretary of Defense require the Navy and the Air Force to:

- Put a higher priority on developing improved simulators which can replace maximum amounts of flight training.
- Insure that development and use of adequate simulators are integral parts of acquisition or modification programs for sophisticated aircraft.
- Use simulators as much as possible to reach and maintain desired proficiency, including the establishment of simulator grading methods which will provide a more accurate evaluation of pilot proficiency.

The Assistant Secretary of Defense (Manpower and Reserve Affairs) agreed fully with the recommendations and stated that:

- DOD understands the need to explore alternatives to traditional flight training programs.
- Advance simulators have been delivered, have been placed on order, or are under development for the latest weapon systems in the inventory.
- In-depth studies will be made to objectively determine individual performance, learning transfer, and costs related to this training approach.

GAO plans to evaluate the effectiveness of these actions in future reviews. (B-157905, Aug. 9, 1973.)

PROBLEMS IN DEVELOPMENT OF THE SAM-D
SURFACE-TO-AIR MISSILE

Department of the Army

The Chairman, Research and Development Subcommittee, Senate Committee on Armed Services, asked GAO to review the SAM-D surface-to-air missile system which was in the development stage. A report on the review, submitted to the Congress in May 1973, is classified "SECRET." The following is an unclassified summary of the report.

The Army is developing the SAM-D to replace the Improved HAWK and Nike Hercules systems. The Department of Defense justifies the replacement on the basis that the SAM-D will be more cost effective. Comparing the SAM-D with the Improved HAWK shows that:

- A single Improved HAWK radar can scan a greater area than a single SAM-D radar. The Army is studying ways to increase the SAM-D radar coverage and ways to increase radar survivability against enemy antiradiation missiles.
- Reloading times for the SAM-D are significantly longer than for the Improved HAWK. However, an Improved HAWK battery is easier to overwhelm than a single SAM-D fire section, since the Improved HAWK can engage fewer targets concurrently than can the SAM-D.
- The SAM-D can track a significantly greater number of targets than can the Improved HAWK.
- The SAM-D has a longer range, a higher altitude capability, and a faster firing rate than the Improved HAWK.
- The Army expects to use fewer personnel to deploy the SAM-D than are needed for deployment of the Improved HAWK.

On the basis of these findings GAO suggested that the Congress may want to consider:

- What assumptions were made justifying that the SAM-D's greater engagement capability would offset its slower reloading time.

- Why the Army used its own assessment of enemy threat rather than that of the Defense Intelligence Agency and whether a new analysis should be made that would include consideration of all support and systems that would be available, including ground and air, to counter the threat beyond 1980.
- Whether the Army has left its forces and the assets it is to protect vulnerable to attack by developing a system, the SAM-D, that has a limited radar coverage.
- Whether the SAM-D, or any other air defense system for that matter, can survive or be effective in an environment where antiradiation missiles are used.
- Whether the Army is still assured about the prospects of being able to operate the SAM-D with fewer personnel and attain simplified maintenance in view of changes in quantities to be acquired and changes in performance characteristics.
- Whether the decisions to defer testing of critical components, such as the warhead-fuzing and guidance subsystems, until a considerable expenditure of funds has been made is justified in view of past experience.
- Whether the current trend of rising costs on the SAM-D program can be curtailed and whether continued rising costs would impact on the capabilities and quantities of fire sections acquired.
- Whether a new cost-effectiveness study is warranted in view of the changes made to the SAM-D performance characteristics, quantities, and additional changes contemplated, as well as the product improvement program on the Improved HAWK.

Another matter that the Congress may wish to examine relates to the Mutual and Balanced Force Reduction Program presently under negotiation. Since the need for the SAM-D is partly predicated on the army's assumption that its forces in Europe will be increased, reduction in the size of these forces and the Warsaw Pact Forces could impact significantly on the quantities of SAM-D fire sections needed in that area. (B-163058, May 7, 1973.)

DEVELOPMENT OF IN-FLIGHT ESCAPE SYSTEMS
FOR HELICOPTERS COULD REDUCE
FATALITIES AND SEVERE INJURIES

Department of Defense

Navy-sponsored studies show that most helicopter fatalities result from uncontrolled descents which, in turn, result in crashes causing structural failures and fires. The studies show also that in-flight escape systems could prevent over 40 percent of these fatalities. Other proposed survivability features could further reduce fatalities.

The Navy has studied such escape systems since 1962. However, the Army, which uses helicopters the most, has concentrated on reducing injuries and fatalities by developing and installing energy-absorbing seats to reduce impact forces and crashworthy fuel tanks to prevent fires. Although the Army's system is important, it offers protection to crew members and passengers only when impact forces are low.

From September 1967 to September 1972, 210 Army and 10 Marine Corps Cobra pilots were killed in Vietnam. A Navy analysis indicated that in-flight escape systems could have prevented 6 out of every 10 Cobra pilot deaths.

In March 1972 the Navy obtained \$500,000 to begin developing individual-type escape systems for Cobra helicopters. The Army is helping to fund this development effort. Although the Army agrees that an in-flight escape system is desirable for its new advanced attack helicopter, its current design requirements do not provide for such a system. GAO believes that the development of an in-flight escape system should be emphasized to insure its availability for this helicopter.

The Navy has deemphasized developing and testing a capsule-type in-flight escape system for larger troop transport helicopters primarily because of additional weight involved.

GAO recognizes that development of in-flight escape systems for cargo-passenger helicopters may pose severe problems and constraints regarding weight and complexity. However, available technology for capsule-type in-flight escape systems

has been demonstrated. Therefore effort to develop a feasible system for the troop-carrying helicopters should be continued.

GAO recommended that the Army:

- Emphasize and give priority to developing an in-flight escape system for the advanced attack helicopter.
- Monitor the current development of the escape system for the Cobra helicopter to determine whether the concept could be applied to the design of the advanced attack helicopter.
- Reevaluate the design requirements for the advanced attack helicopter to insure that it will be capable of accepting an in-flight escape system when it becomes available.

GAO further recommended that effort to develop a feasible solution to provide an in-flight escape capability for the larger cargo-passenger helicopters be continued.

DOD said it would continue efforts to increase the effectiveness of escape systems but disagreed that emergency in-flight escape systems should be included in helicopters now being developed or planned for development. DOD contended that an in-flight escape system had not been "demonstrated to be the most effective method of improving flight safety, considering both human life values and dollar costs."

GAO believes that DOD is not adequately considering the costs of not having emergency in-flight escape systems:

- Trained and experienced aviators and other trained military personnel are killed. Army and Navy estimates of the initial cost of training each helicopter pilot range from \$20,000 to \$100,000.
- Death benefits must be paid.
- New pilots must be trained.
- Helicopter pilot and crew morale as well as military readiness is adversely affected.

GAO recognizes that it may be expensive to develop, install, and maintain an in-flight escape system but believes that the potential decrease in the number of fatalities and severe injuries warrants further consideration. (B-177166, June 12, 1973.)

IMPROVEMENT NEEDED IN DEVELOPMENT
AND USE OF COMPUTER MODELS

Department of Defense

A substantial part of the cost of conducting computer simulations, war games, and analytical studies was represented by the development and operation of models used in these activities. A model is a documented set of rules, methodologies, techniques, procedures, mathematical formulas, and logic designed to simulate or approximate selected elements and/or functions of reality that are deemed essential to the particular situation or system being studied.

Modeling is one of the principal tools the operations research and systems analysis community uses to simulate, "game," or study complex problems or situations involving (1) technical performance of equipment or systems, (2) policies, strategies, and tactics, and (3) force structures, including the determination of optimum size and appropriate mixes of personnel and weapons. Its purpose is to provide decisionmakers with results that should present objective and statistically reliable bases for decisions in these areas.

GAO reviewed the development and use of computer models in DOD.

Numerous models have been developed in DOD over the past 10 years to cover a broad spectrum of simulated war, defense, and military problems. GAO obtained data on 132 models which represented a fairly complete picture of the modeling activity throughout DOD. Some observations derived from analyzing the data were:

- Development of models was about equally divided between contractor and in-house activities.
- Reported costs of building 104 models totaled \$28,805,500, and the average model cost was about \$276,900. The cost of individual models ranged from about \$1,200 to \$3 million.
- Building a model is generally a lengthy undertaking. The average reported development time was 18 months; some models were under development for as long as 7 years.

- Many models were related to previously developed ones and formed the basis for follow-on models.
- Independent checks were not made to insure the accuracy, timeliness, consistency, and overall quality of the data used in about one-third of the models.
- Technical, doctrinal, and force-structure evaluations were the principal stated purposes for building models; models were then used to answer specific questions and to study operational problems in five major areas: logistics operations, ground combat, nuclear exchange, air warfare, and naval warfare.

There were indications that uncertainties may not be adequately considered in the studies employing a computer model and that DOD decisionmakers frequently may not be made aware of the uncertainties inherent in the study results. The proper use of study results requires that the relevant qualifications reflecting the inherent uncertainty be presented to the decisionmaker along with the results. If a decisionmaker is to be enlightened and is to receive full benefit from a study, he should be fully informed of the limitations and uncertainties and how they were treated, the range of assumptions that were made, as well as other qualifying factors that influenced the study results and conclusions.

GAO recognized the efforts within DOD to improve the use of computer modeling and simulation techniques in studies and analyses programs. The review indicated, however, that additional emphasis was needed in this area. Accordingly, GAO recommended that the Secretary of Defense:

- Formally adopt, as DOD policy, guidelines for reporting study results similar to those of the Operations Research Society of America.
- Establish a requirement for periodic, independent technical reviews of computer models to insure continued improvement in their development and employment as well as in the studies in which they are used.

DOD endorsed the general concepts indicated in the report; namely, that the use of large-scale computer modeling to assist decisionmaking must be accompanied by continued review of these models, and that principles, such as those outlined by the Operations Research Society of America, should be followed. As for establishing more formal guidelines, DOD was of the opinion that adequate guidelines are present in existing directives and manuals and that extending reporting requirements was unnecessary. (B-163074, May 3, 1973.)

SUPPLY MANAGEMENT

ECONOMIES AVAILABLE THROUGH IMPROVED MANAGEMENT OF NAVY SHIPBOARD INVENTORIES

Department of the Navy

During fiscal year 1970 budget hearings, the Defense Subcommittee, House Committee on Appropriations, expressed concern over the Navy's request for \$740 million to buy repair parts and supplies needed to fill the operating requirements of its ships in view of the estimated \$1 billion inventory of such items already on board the ships. GAO made this review to determine if the Navy was making maximum use of available repair parts and supplies and to evaluate the adequacy of its system for managing shipboard inventories.

GAO found (1) an estimated \$5.8 million worth of excess inventories were loaded on 57 new ships because of delays in applying an improved supply support concept to these ships, (2) excess repair parts valued at \$2.3 million were accumulated at two private shipyards because outfitting inventories for 14 ships were purchased before firm requirements were established, (3) millions of dollars worth of excess outfitting inventories were held at private shipyards for periods of up to 5 years, and (4) at one Navy shipyard over 1,000 usable items were removed from ships being modernized and were unnecessarily disposed of and replaced with new items.

GAO also found that the Navy does not have an adequate system for promptly identifying and redistributing excess repair parts and supplies aboard ships in the operating fleet which are needed by other ships. As a result, an estimated \$59 million worth of excess inventories are accumulated aboard Navy ships during the 3-year period between supply overhauls. GAO estimated that between \$11 million worth and \$29 million worth could be used to support other ships.

GAO further found an estimated \$100 million worth of idle inventories on inactive ships and at inactive ship maintenance facilities. Although the Navy is using some of

these inventories to support active ships, possibly as much as \$20 million worth could be used without impairing the mobilization readiness of inactive ships.

GAO recommended that the Secretary of the Navy insure that:

- Eleven ships scheduled for delivery after September 1, 1973, be outfitted with revised, rather than conventional, allowances of hull, mechanical, and electrical repair parts.
- Inventories taken off ships undergoing shipyard work be used where possible to resupply the same ships undergoing concurrent work at the same shipyard.
- A system is established to provide for prompt identification and redistribution of inventory excesses on board active ships.
- The need for strict compliance with prescribed ship-board procedures for recordkeeping and requisitioning material is emphasized.
- The Navy's policy concerning the use of inventories on inactive ships is further revised.

The Navy agreed with the intent of GAO's recommendations but did not, in some case, agree with the method of implementation. The Navy cited a number of actions which had been taken or which were being taken, that should, if properly carried out, bring about many of the needed improvements. The navy disagreed with GAO's estimate of the amount of excesses, particularly aboard ships in the operating fleet. They estimated actual excesses to be about one-fourth as large as GAO projected. After discussing this matter with Navy officials, GAO concluded that its estimate of \$59 million, while imprecise, was reasonable and represented a fair indication of the significance of this problem. (B-125057, Apr. 9, 1973.)

SAVINGS ATTAINABLE BY REVISING
PACKAGING CRITERIA

Department of Defense

At the outset of the U.S. buildup in Vietnam, fast logistical response was strained severely because facilities there were too meager to handle vast quantities of supplies. Many supplies could not survive the rigors of transportation, outdoor storage in a hostile environment, and multiple and rough handling.

Great material losses were sustained. To correct this situation, stringent and costly packaging criteria were specified across the board, regardless of destination.

Many of those stringent criteria continue in effect although conditions giving rise to them have changed significantly. As a result, DOD is spending millions of dollars a year for packaging it doesn't need. In addition, bidders and contractors are required to wade through voluminous standards, specifications, and guidelines which are repetitious, redundant, or not applicable.

Contractors whose own commercial packaging often equals that specified are further confronted by inconsistent methods of packaging required by different DOD buyers.

GAO recommended that the Secretary of Defense discontinue blanket assignment of packaging levels for "protection against the most severe conditions known or anticipated;" determine the suitability of commercial packaging and make greater use of it where it meets minimum Government requirements; and closely monitor the progress of the U.S. Army Materiel Command Packaging, Storage, and Containerization Center--DOD's focal point for developing and monitoring the packaging program--and reaffirm its authority to carry out its intended objectives.

DOD, concurring in the report's objective, considers that actions have been taken or are part of an ongoing program to carry out the intent of the recommendations. Its guidance to various DOD elements has been revised and expanded to incorporate some of GAO's recommendations.

(B-157476, May 21, 1973.)

REQUIREMENTS FOR MODULAR ELECTRONIC
EQUIPMENT FOR AIRCRAFT COULD BE REDUCED

Department of the Air Force

The Air Force has invested billions of dollars in electronic equipment used in aircraft (avionics). For example, the avionics and spare parts for its F-111D aircraft alone have cost more than \$900 million.

A significant development in the field of electronics has been the introduction of modular design; under this concept many expensive "black boxes" making up an avionics system contain plug-in-type components known as modules.

The principal advantages of modular design are:

- Avionics units or black boxes can be rapidly replaced in aircraft on the flight line, so the time aircraft are out of service is minimized.
- Most black boxes can be repaired rapidly and more time can be taken to repair modules.

Because avionics are becoming more and more costly, investment in less expensive spare modules, rather than in more expensive spare black boxes, means substantial savings.

GAO found that the Air Force could have substantially reduced its requirements for avionics spares for the A-7D and the F/FB-111 if its management personnel had used more realistic estimates in determining the requirements. The estimates used did not recognize all the advantages of modular design. For example, estimates were based on the premise that:

- Repairing black boxes would take more time than was actually being experienced.
- More black boxes modules were being sent to depot repair facilities.

The second premise was the result of a management reporting system which did not routinely show actual repair cycle time. As a result, expensive black boxes rather than less expensive

modules continued to be bought; many black boxes were awaiting repair because of the lack of subcomponents and maintenance capabilities to repair them.

The Air Force is considering modular design for other types of equipment in its inventory. In view of the significance of the problem, GAO made several suggestions to the Secretary of the Air Force to insure that the maximum benefits were achieved from the modular concept.

DOD generally agreed with GAO's suggestions, and said GAO's information, provided during the review, had proven useful to Air Force logistics planning and had resulted in improved management. The Air Force reduced requirements for items for F/FB-111 and A-7D aircraft by \$79 million. More importantly, the Air Force has begun preventing a recurrence of the matters discussed in the report. (B-133396, July 3, 1973.)

MAINTENANCE, REPAIR, AND OVERHAUL

LITTLE PROGRESS IN ACTING ON OPPORTUNITIES FOR SIGNIFICANT SAVINGS BY CONSOLIDATING REAL PROPERTY MAINTENANCE ORGANIZATIONS

Department of Defense

In 1968 GAO reported potential annual savings of \$3.4 million by consolidating real property maintenance organizations on Oahu, Hawaii, and in the Norfolk, Virginia, area. DOD, which spends \$3 billion yearly on real property maintenance, promised to consider consolidation at those locations and elsewhere. GAO reviewed DOD progress in carrying out the 1968 recommendations because of the increasing costs, concern with high Federal budgets, and need for managing the military establishment more efficiently.

In the 4 years since GAO's last review, almost no consolidation had taken place. DOD made studies at 25 locations, including Oahu and Norfolk. Most of these did not seriously consider consolidation. Instead of considering the feasibility of consolidation, the Interdepartmental Committees making the studies emphasized the joint use of equipment and increased use of and/or consolidation of contracts. Some savings have been reported. The effectiveness of the committees was reduced because:

- Many members represented maintenance organizations that would be affected by consolidation.
- Informal guidance from committee members in Washington, in conflict with the original intent of the studies, advised the Interdepartmental Committees not to be concerned with the feasibility of consolidation.

Although efforts to date have merit, potential savings from consolidation seem far larger than those attained. Some of the above studies and other studies have identified various locations where consolidation would be economical. Benefits of consolidation are demonstrated by Navy experience with Public Works Centers. For example, three locations where centers have been serving installations in their vicinity for 6 years report annual savings of \$1 million. Some Navy Public Works Centers, however, are underused

because individual installations are not required to use them but, instead, maintain their own duplicative maintenance force.

GAO recommended that the Secretary of Defense should have maintenance organizations consolidated where studies indicate consolidation would be economical. GAO also recommended that the Secretary of the Navy should require, where feasible, that all naval activities within a reasonable distance of a Public Works Center use it fully.

DOD said that interservice support agreements have been most effective in consolidating real property maintenance activities. The use of such agreements has resulted in savings by avoiding unnecessary duplication of functions and by increasing the use of consolidated contracts. Although stressing limitations that must be overcome in complete organizational consolidation, DOD said that such consolidation was its ultimate goal. DOD also said the Navy is improving use of Public Works Centers. Revised guidance issued by DOD in March 1972 is an initial step toward consolidating maintenance organizations wherever practical. GAO plans to look into the implementation of this guidance and the effectiveness of DOD's continuing efforts in this area. (B-164217, Dec. 12, 1972.)

POTENTIAL FOR GREATER CONSOLIDATION
OF MAINTENANCE WORKLOADS

Department of Defense

In a report issued to the Congress, we disclosed problems concerning the effectiveness of interservice maintenance programs of the military services. We found that each of the military services has overemphasized developing its own in-house depot maintenance capability instead of trying to use other services' existing ones. Although existing policy encourages interservicing, the services have circumvented the spirit and intent of this policy. Consequently, they have extensively duplicated, and thus, underused maintenance capacities. The Secretary of Defense has not been able to effectively control the services' continued use of their own maintenance capabilities because they have claimed a need to maintain mission-essential equipment in their own facilities.

GAO recommended that the Secretary of Defense form a plan to realign the management of depot-level maintenance. This plan should consider the following alternatives: (1) establishing an independent agency, similar to the Defense Supply Agency, to assume responsibility for the depot-level maintenances of all commonly used equipment items or (2) assigning a single manager to be responsible for maintenance of specific classes of items. DOD agreed to consider implementing our recommendation for a single manager responsible for maintenance of specific classes of items. (B-178736, July 6, 1973.)

NEED FOR IMPROVEMENT
IN INDUSTRIAL MANAGEMENT

Departments of the Army and Navy

In 1971, GAO advised the Congress that industrial management reviews can effectively identify ways a Government contractor's costs can be reduced and that it would be practicable for GAO to undertake such reviews.

GAO conducted reviews at the Naval Air Rework Facility, Alameda, California, and the Army Aeronautical Depot Maintenance Center, Corpus Christi, Texas, and identified opportunities for improving overall industrial operations with related savings which could amount to several million dollars a year. Some areas identified were common to both installations:

- Converting idle time of the production workforce would allow each depot to absorb substantially more work without increasing the workforce.
- Improving the work measurement systems and labor standards programs would improve workload scheduling and production control, thus enhancing total productivity of both installations.
- Recording machine usage would assist management in decisions regarding retention, redistribution, and acquisition of equipment, as well as form a realistic basis for preventive maintenance programs.
- Repair costs could be reduced through more systematic decisionmaking regarding repair parts which could be purchased more economically than the present practice of making or repairing the parts.
- Inventory economies can be achieved by reducing large quantities of parts accumulated in maintenance shops.

In addition to the potential savings these areas indicate, improvements in DOD industrial activities play an important role in the level of operational readiness of respective military forces. For example, the Alameda report states that average repair time for critically needed aircraft components during fiscal year 1971 was 57.8 calendar

days, exceeding the standard time by 35.8 days. GAO estimated that 26 additional aircraft would have been fully operational if the repair standard had been met.

Each facility began implementing suggested corrective actions during the reviews. GAO recommended that DOD plan periodic industrial management reviews of its industrial facilities.

DOD told GAO that it was exploring the feasibility of making such reviews but believed the types of studies GAO performed were already being done through internal audit, Inspector General, and other functional management reviews. (B-133014, July 3, 1973.)

NEED FOR MORE REALISTIC PROJECTIONS OF
FUNDING REQUIREMENTS FOR SHIP OVERHAUL PROGRAMS

Department of the Navy

Fiscal years 1972 and 1973 were characterized by substantial changes in the Navy's ship overhaul program. Although the Navy received all the funds they requested in these years, fewer ships were overhauled than originally planned. Because of this, your Committee directed that GAO review the Navy's ship overhaul and repair programs for 1972 and 1973.

GAO found that the Navy did not anticipate, and therefore did not budget for, the substantial increase in the cost of overhaul work in Navy shipyards. Actual ship overhaul costs were 27 percent higher in 1972 than original estimates. As of March, the 1973 ship overhaul costs were about 20 percent higher than original estimates.

Because overhaul costs were higher than available funds, the Navy had to defer planned overhaul work. The original 1972 overhaul schedule of 139 ships was reduced to 102 ships, and the 1973 overhaul schedule of 95 ships was reduced to 84.

Budget requests were based on overhaul experience in fiscal years 1969 and 1970. Cost estimates were developed from (1) forecasts of the amount of repair that ships would need when they entered overhaul in 1972 and 1973, expressed as direct labor man-days and (2) projections of man-day rates and material costs in those years.

The procedures used to forecast the number of man-days needed for overhaul were not accurate because:

- Generally, the man-days required for overhaul work were understated.
- Some planned work was not included in the estimates.
- Labor and material costs were allocated arbitrarily.
- Prior overhaul costs, which were incomplete, were used to estimate future work.

Also, projections of man-day rates in Navy shipyards were substantially understated. Shipyard repair costs, expressed as a cost per man-day, increased from \$69 in 1969 to \$109 in 1973--an increase of almost 60 percent. Most of the \$40 increase, about \$28 a man-day, is attributable to wage and salary increases for direct and indirect employees. The remainder, about \$12 a man-day, is attributable to increased overhead costs.

Various factors contributed to the overhead cost increase, but the most significant factor was reduced employment at the shipyards. Employment dropped from about 90,000 in 1969 to an estimated 67,000 at the end of 1973--a decrease of about 25 percent.

The increased cost for overhauls in 1972 and 1973 revised the outlook for ship maintenance. Although the Navy originally anticipated that only one ship's overhaul would be overdue at the end of 1972, 21 ships with overhaul costs of \$87 million were overdue by June 30, 1972. Because this backlog carried over into 1973 and because overhaul costs increased, the number of ships overdue for overhaul has further increased. The Navy projects that 33 ships, with an estimated overhaul cost of \$233.4 million, will be overdue at the end of 1973. This undoubtedly will affect the plans for ship overhauls in 1974 and future years. Furthermore, the full impact of the Vietnam operation on overhaul costs may not have been totally realized or provided for in the 1974 overhaul program.

The Navy has changed its procedures for estimating the work needed when ships are overhauled. These new procedures, which appear to be improvements, were used to prepare the 1974 overhaul program.

The Navy continues to be faced with high costs for repair work in its shipyards. Additional pay raises can be expected in the future as well as increased material costs.

The most significant cost influence is the low use of the Navy shipyards in terms of their capacity. If shipyard capacity is expressed as a function of shipyard employment levels, the 10 existing shipyards are operating at about 75 percent of their 1969 levels. Since overhead costs have not dropped proportionately to the use, the overhead cost per unit of production has increased.

The Navy has several options to control costs.

- Close selected shipyards and increase use of remaining yards.
- Emphasize improving efficiency and cost effectiveness of its shipyards.
- Reduce fleet size by inactivating older ships with less reliability and high maintenance costs.

The closures of two shipyards, recently announced, should help this situation. Although we did not specifically review the effect of these closures, ship overhaul and repair workloads at those yards can eventually be redistributed to increase the use of other shipyards. (B-133170, June 7, 1973.)

ADMINISTRATION OF MANPOWER MATTERS

PROBLEMS IN MEETING MILITARY MANPOWER NEEDS IN THE ALL-VOLUNTEER FORCE

Department of Defense

As July 1, 1973, drew near, the Congress was faced essentially with three choices in legislating the future method of obtaining men and women to serve in the Armed Forces: (1) let the existing draft authority expire and rely entirely on volunteers, (2) extend the existing draft system, or (3) rely on an all-volunteer force but enact some form of standby draft authority. GAO's report to the Congress sought answers to some of the major issues associated with putting the volunteer system into operation.

The report stated that obtaining and retaining sufficient officers, except those in health professions, did not appear to be a problem. However, there appeared to be less optimism about the services' ability to obtain a sufficient number of qualified enlisted personnel. On the basis of the services' prior experience with true volunteers and quality goals, it appeared that there would be a shortfall of between 11,000 and 83,000 new enlistments in fiscal year 1974, compared with a total requirement of 354,000. The shortfall would occur primarily in the Army and the Marine Corps and to a small degree in the Navy.

To avoid these shortfalls, the services could accept more men with below average mental qualifications (Category IV) and more enlistees who had not graduated from high school. According to DOD officials, service quality goals had been set at levels difficult to attain and were unrealistically high. The Army and the Navy had achieved their high school graduate goals with true volunteers in only 1 month since January 1970; the Marine Corps' goal had not been achieved at all during that period. The Air Force, on the other hand, had no difficulty in maintaining quality.

In its report, GAO illustrated the importance of obtaining the desired quality of enlistees by stating that the services had imbalances in skills resulting from a combination of (1) insufficient men of required aptitude and school preference and (2) inadequate retention of men in desired

skills. GAO reported that over one-half of the skill categories in the Army and Marine Corps were either overmanned or undermanned by more than 20 percent at June 30, 1972, and that filling school seats for technical occupations would be difficult because true volunteers tended to have less education and lower test scores than draft-motivated volunteers. The report also stated that a 20-percent shortfall would occur in the Army's combat arms enlistments in fiscal year 1974 and that the Office of the Secretary of Defense had forecast that, without special incentive pay, there would be physician shortages beginning in fiscal year 1975 and perhaps sooner.

The report identified several alternatives to using male volunteers to fill military requirements. These included increasing the use of military women and converting military positions to civilian positions.

With respect to the Reserve and National Guard, which would be the initial and primary sources for increasing the Active Forces in any future emergency, GAO pointed out that DOD was predicting that, at June 30, 1974, these forces would be 97,000 below their mobilization objective level of 971,000.

GAO reported that DOD programs for the all-volunteer force contributed about 23 percent of the increased manpower costs occurring since 1968. The Office of the Secretary of Defense's Project Volunteer costs budgeted for fiscal year 1974 were about \$3.192 billion. GAO estimated that as much as \$1 billion of additional costs related to the all-volunteer force were incurred annually but were not specifically identified for all-volunteer purposes. GAO expressed the view that, if force levels need to be increased in the future, the cost of volunteers may increase sharply.

The report raised several questions that GAO believed the Congress and/or its committees might wish to explore with DOD:

1. What are realistic minimum quality standards for each service?
2. What is the probable force level of minimum quality that could be supported without using the draft?

3. Should some form of standby induction authority be enacted?
4. Should some type of draft be required for physicians after fiscal year 1974?
5. Should some type of draft be required for the Reserve components?
6. Will the Uniformed Services Special Pay Act overcome the foregoing problems? (B-177952, May 2, 1973.)

IMPROVEMENTS NEEDED TO INCREASE
EFFECTIVENESS OF THE GOVERNMENT
EMPLOYEES' INCENTIVE AWARDS PROGRAM

Department of Defense

GAO reviewed the Government Employees' Incentive Awards Program to determine whether cash performance awards (lump-sum special achievement awards and quality increases) and cash suggestion awards had been effectively encouraging employees to help improve Government operations. Of the more than 1,900 randomly selected employees responding to a GAO questionnaire, 56 percent indicated that the program had not motivated them to do a better job. During fiscal year 1972, Government agencies granted over \$16 million for 91,161 special achievement awards, \$4.6 million for 56,606 employee suggestions, and 42,570 quality increases having an estimated first-year cost of \$17 million. Since these increases are reflected in subsequent years' pay, these awards will eventually cost the Government much more.

The Civil Service Commission reported measurable benefits of \$315 million related to special achievements and adopted suggestions. Related benefits were not determined for quality increases.

GAO's review was made in 10 civilian and Defense departments and agencies, which represented a cross section of the Federal Government, and in the Civil Service Commission. GAO found that:

- Cash performance awards had been used inconsistently.
- There was no clear distinction between the criteria for granting a special achievement award and a quality increase, although the latter is much more expensive.
- Many employees were not told why specific awards were granted.
- About one-fourth of Federal civilian employees are not eligible for the quality increase award because of restrictions in Commission regulations.

- The Commission does not officially include quality increases in the program although the agencies contacted treated them as incentive awards.

GAO found that employee participation in the suggestion award portion of the program could be increased by actively promoting and publicizing this portion and by processing suggestions promptly. Further, GAO found that the Commission's annual report on the incentive awards program did not present a complete picture because it did not include the substantial costs of quality increases and program administration and may have significantly overstated measurable benefits. Also, neither the Commission nor the agencies had made reviews of sufficient frequency or depth to identify problems in the program.

GAO recommended that the Chairman, Civil Service Commission:

- Establish criteria limiting cash performance awards to employees whose performance has clearly improved Government operations.
- Revise standards to clearly distinguish between the level of performance needed to receive a special achievement award or a quality increase so that quality increases will be relatively more difficult to obtain.
- Emphasize the importance of keeping employees well informed of the specific reasons for awards.
- Include quality increases as part of the Incentive Awards Program and consider creating a comparable value award for employees who are now ineligible for quality increases.
- Insure that agencies promote and publicize the program and that suggestions are processed promptly.
- Increase the usefulness of the Commission's annual report by including quality increase and administration costs and by improving the accuracy of reported benefits and costs.

--Make reviews and evaluations necessary to identify program strengths and weaknesses.

The Commission said that GAO's report presented a clear and accurate perspective on the Incentive Awards Program and that it believed GAO's conclusions and recommendations were constructive. As a result, the Commission said it had taken, or planned to take, certain corrective actions and will fully discuss with agencies the approaches to be taken to deal with the problems GAO identified. (B-166802, Nov. 1, 1973.)

INCONSISTENT POLICIES IN ADMINISTERING
DISABILITY RETIREMENTS

Department of Defense

After reviewing military disability retirements, GAO reported to the Secretary of Defense that inconsistent policies and practices of the military departments might be resulting in undue costs to the Government as well as inequitable treatment of disabled service members. During the review it was noted that excessive time was elapsing between the date Army and Air Force members were declared medically unfit for active service and the effective date of their retirements. For the 2-month period sampled, GAO estimated that the Army and Air Force could have saved between \$825,000 and \$1,845,000 by processing disability retirements as expeditiously as the Navy and Marine Corps. The report included recommendations directed at overcoming this problem.

GAO also noted significant variances among the services in the ratios of permanent to temporary disability retirements, and it appeared that consolidating the disability processing functions of the four military departments would eliminate some of the inconsistencies discussed above. GAO suggested that DOD consider these two matters in a study of military disability retirement that was then underway.

DOD generally agreed with GAO's findings and indicated that its recommendations were being implemented. The actions taken on the recommendations to expedite the processing of disability retirements should result in annual savings to the Government of about \$8 million. (B-168308, Mar. 19, 1973.)

ENLISTED AIDE PROGRAMS REQUIRE MODIFICATION

Department of Defense

GAO reported to the Congress the results of a review of the enlisted aide program of the military services. The review was made at the request of Senator William Proxmire. GAO reported that, as of December 1972, 1,722 enlisted men were assigned as aides to 860 admirals and generals and 110 Navy captains. The remaining 457 admirals and generals were not assigned enlisted aides. Tasks performed by enlisted aides were generally those associated with domestic servants. Personnel costs of the enlisted aide program for fiscal year 1973 were about \$21.3 million; training costs were about \$360,000. In requesting that the review be made, Senator Proxmire asked GAO to clarify the statutory and budgetary justification for the programs and to determine the nature and propriety of tasks assigned to enlisted aides, which the report provided.

The Secretary of Defense informed GAO that the report resulted in several changes in the program. Major changes included a 28-percent reduction in the number of enlisted aides and the closing of training schools for aides. These changes should result in annual savings of more than \$6.2 million. (B-177516, Apr. 18, 1973.)

NEED FOR CENTRALIZED MANAGEMENT
CONTROL OF CLOSED-CIRCUIT TELEVISION
FOR TRAINING AND EDUCATION

Department of Defense

At the end of the fiscal year 1972, the Army, Navy, and Air Force were using closed-circuit television equipment, costing about \$27.3 million, for education and training purposes. The personnel costs associated with operating and maintaining the equipment were estimated to be about \$8.1 million. GAO's report to the Secretary of Defense highlighted the importance of effective coordinated or centralized management control over those highly specialized, costly resources.

The report stated that:

1. Most studios GAO visited did not have catalogs of television video tapes produced by other services, and tapes usable by several services generally were produced independently by each service.
2. The services were individually testing different types of new audiovisual equipment for similar education and training applications although it would appear likely that the services' joint testing of new equipment would result in reduced costs.
3. Each military service had incurred significant investment and costs in operating its own closed-circuit television studios, although (1) some studios were in close proximity to one another and were not being fully used and (2) the specialized-skilled operating personnel were in short supply.

GAO made several recommendations to have DOD provide more aggressive centralized direction over the services' use of television equipment in meeting training needs. DOD officials generally agreed with the facts and recommendations presented in the report. (B-177350, Nov. 29, 1972.)

IMPROVEMENTS NEEDED IN ADMINISTRATION AND
MANAGEMENT OF TECHNICAL TRAINING

Department of the Navy

GAO's report to the Secretary of the Navy discussed the findings of a review made at selected naval facilities to assess the Navy's administration and management of technical training. About \$550 million was spent during fiscal year 1973 in the Navy technical training activities. GAO reported that differences in the interpretation of instructions governing determination of instructor requirements, as well as the lack of management review at the training locations visited, resulted in both overstatements and understatements in Navy training instructor requirement submissions. GAO also found that the Navy had not established a formal system which would provide for collecting, assessing, and disseminating information needed to insure the adequacy of technical training. In addition, the report stated that, in the absence of a standardized instructor training policy, instructors could spend as much as 30 percent of their tours of duty observing classroom presentations of experienced teachers, thereby increasing the overall stated requirements for instructors. After being apprised of these findings, Navy officials initiated action to deal with most of the problem areas discussed in GAO's report. (B-175773, June 14, 1973.)

ADMINISTRATION OF THE
RESERVE OFFICERS TRAINING CORPS PROGRAM
SHOULD BE COORDINATED

Department of Defense

GAO reported to the Secretary of Defense the results of its review of the management of the ROTC program administered by each military service. The senior ROTC program, in which 72,500 students were enrolled during the 1972-73 school year and which prepares selected college students for commissions in the military services, cost an estimated \$155 million during fiscal year 1973. The junior ROTC program, in which 140,000 high school students were enrolled during the school year and which fosters national pride and provides these students with a knowledge of military subjects, cost about \$16 million during the fiscal year.

The report stated that increased coordination among the services was needed because:

- Some senior ROTC units do not meet DOD's prescribed officer production requirements.
- Services fail to uniformly apply statutory restrictions for establishing and maintaining junior ROTC units.
- Enrollments in the senior ROTC program are declining.
- Ratios of staff to enrolled students in the senior program vary because the services have separate staffing criteria.
- Some applicants for ROTC scholarships receive physical examinations by more than one service.
- Program dropouts cause a loss of investment in students.
- Services lack complete and uniform program cost reporting.

Agency officials generally agreed with GAO's findings and advised that remedial action would be taken. (B-146947, Feb. 28, 1973.)

FURTHER IMPROVEMENT NEEDED IN
ASSISTING MILITARY PERSONNEL IN
FINDING ADEQUATE HOUSING NEAR BASES

Department of Defense

In July 1967 DOD established Housing Referral Offices (HROs) at military bases to promote its policy of relying on nearby communities as a primary source of family housing for military personnel. HROs were to assist military personnel, as well as DOD civilian employees, in locating adequate, suitable, economical, and nondiscriminatory offbase housing near their duty stations. In this initial review of the program, GAO sought to learn how effectively HROs were achieving their purposes.

GAO found that, although required to do so, many incoming military personnel were not reporting to base HROs. This precluded HROs from providing valuable centralized information on availability of onbase housing and the type and cost of available private housing.

GAO also found that at some bases, reports prepared from HRO records were not prompt, accurate, reliable, or complete. Therefore, it was not feasible for GAO or agency officials to evaluate HROs' effectiveness.

Although reported cases of racial discrimination in off-base housing were few, GAO found several instances where house hunters felt they had been rejected because of race but did not lodge a formal complaint for a variety of reasons. One reason given to GAO by persons involved was that they were not aware of procedures to follow. Another was that, since the discrimination was subtle, it would be difficult to prove. The problem, therefore, may not be as minor as the few reported cases seem to suggest.

DOD requires landlords to give written assurances that they will rent to all military personnel regardless of race, creed, color, or national origin. Of 17 installations checked, GAO found that only 6 had current and adequate landlord assurances on file. Some military personnel have entered into rental or sales agreements for units which are supposed to be officially restricted because of landlords' failure to furnish assurances.

GAO suggested that the Secretary of Defense should take steps to insure that:

--Nondiscrimination assurances are obtained from owners and landlords.

--Maximum coordination among HROs in metropolitan areas is attained.

DOD agreed that HRO operations could be improved and cited action taken or planned to accomplish objectives in GAO's recommendations. GAO met with agency officials and learned that subsequent actions, such as revising reporting-in procedures and giving more attention to intensive management, should alleviate the problem of personnel failing to process through the HRO. DOD said procedures for recording and reporting HRO operations had been strengthened since GAO's review. A directive is being revised which addresses the recommendations.

DOD said its instruction on equal opportunity in housing emphasized GAO's suggestion that HROs provide greater assurance that alleged cases of discrimination will be promptly and thoroughly investigated. GAO believes proper implementation of the instruction should correct delays in investigating complaints. However, GAO feels that some cases of apparent discrimination may continue to be unreported for one reason or another, and increased attention should be given to interviewing minority personnel to identify such problems.

DOD said military departments were notified of deficiencies GAO found in DOD's policy requiring signed nondiscrimination assurances from owners and landlords. DOD plans to revise Instruction 4165.51 to provide for a periodic review of written assurances to insure they are current and correct. (B-133102, June 12, 1973.)

CONSTRUCTION OF LODGING FACILITIES
WITHOUT ADEQUATE CONSIDERATION
OF AVAILABILITY OF COMMERCIAL MOTELS

Department of Defense

In 1970 and 1971 the Army, Navy, and Air Force began to construct temporary lodging facilities (TLFs) to provide temporary accommodations at modest prices for military personnel and their families attempting to find permanent quarters at new duty stations. The services said TLFs were needed because of a lack of adequate commercial motels at reasonable rates. Construction was financed from the services' welfare funds, which are largely profits generated from post exchange sales.

At the request of the Subcommittee on Small Business Problems in Smaller Towns and Urban Areas, Select Committee on Small Business, House of Representatives, GAO examined actions taken by DOD and the military services in connection with their TLF program. The review was based on the Subcommittee's concern that DOD's promise to curtail construction of unneeded TLFs was not materializing. The Subcommittee had conducted several hearings wherein private industry had voiced complaints that local motels near many bases where TLFs were planned could meet the need for such facilities. Complainants felt that such projects, if constructed, would constitute unfair competition since their modest prices (about \$8 a night for a family of five) were possible only because of Government subsidy. The Subcommittee requested that GAO examine the validity of justifications for TLFs at six specific Air Force installations.

In a report to the Subcommittee issued in September 1973, GAO concluded that surveys the Air Force used to support the requests to build TLFs at six installations did not meaningfully explore the capabilities of nearby communities to provide suitable facilities through leasing arrangements. GAO informally advised DOD and Air Force officials of its findings on two projects, still to be built at the time of our review, and requested that they reconsider plans to build. The officials continued to feel the projects were needed, and construction was undertaken.

In December 1972 DOD issued a directive on TLFs to guide military services. The directive provided for information on the capabilities of the local communities to meet TLF needs and for close liaison on the subject with those communities. Although sufficient time has not elapsed to permit a valid evaluation of the effectiveness of the TLF directive, GAO believes that it could be improved.

Because of the Subcommittees' desire to obtain the results of the review as soon as possible, GAO didn't follow its customary practice of obtaining agency comments. (B-169926, Sept. 27, 1973.)

DEFENSE INTERNATIONAL ACTIVITIES

NEED FOR TIGHTER CONTROL OVER U.S. COMMITMENTS TO OTHER NATIONS

Department of Defense and Department of State

In recent years the Congress has been concerned over the number and scope of agreements by the executive branch committing the United States to provide substantial assistance to foreign countries.

DOD reported that, as of September 30, 1972, approximately \$12.6 billion of defense funds had been used to support the military forces of Vietnam, Korea, Thailand, Laos, and the Philippines.

GAO found that the U.S. Government, through its military and diplomatic officials, enters into numerous types of agreements and arrangements with foreign governments, not all of which require coordination with or approval of the Department of State. The agreements committed the United States to substantial cash payments directly to the concerned governments and to material support of their military forces--commitments ultimately resulting in the expenditure of many millions of dollars.

GAO found no evidence that the Congress, which is responsible for establishing levels of Federal spending, was notified or advised by the executive branch before entering into these agreements.

GAO believes there is a need for the executive branch to exercise more coordinated control and management, especially by the Departments of State and Defense, over our commitments to foreign governments. GAO recommended that the Secretary of State: (1) establish procedures to require that all agreements be subject to his approval, including those subordinate to or designed to implement basic government-to-government agreements which commit the United States to specific performance requiring the expenditure of substantial amounts of money, (2) require a central repository to be established within the Department for all such international agreements, arrangements, and commitments similar to the one now existing for treaties, and (3) provide annually to the appropriate

committees of the Congress a list and description of all such agreements, together with estimates of the future years' costs that each agreement involves.

State said that GAO recommendations concerning a documentation procedure and a central repository for international agreements warranted careful study and would be seriously considered.

The Congress in late 1972 passed Public Law 92-403, requiring the Secretary of State to transmit to the Congress the text of all international agreements other than treaties. The Secretary, however, may not consider most of the subordinate and implementing agreements, such as those covered in the GAO review, to be subject to Public Law 92-403 because reporting of the parent agreement would suffice. GAO therefore suggested that the Congress consider legislation requiring the Secretary to submit annually to the Congress a list and description of all such subordinate and implementing agreements involving substantial amounts of U.S. assistance. (B-159451, Apr. 24, 1973.)

DESIRABILITY OF IMPROVED REPORTING
ON U.S. CONTRIBUTIONS TO NATO

Department of Defense and Department of State

The cost to the United States for participating in the North Atlantic Treaty Organization (NATO) is not readily determinable, because funds come from several different appropriations. In 1972, the U.S. contribution to the NATO budgets was about \$85 million. GAO found however, that the U.S. spent at least an additional \$40 million as a result of its NATO membership, primarily for personnel assigned to NATO. U.S. contributions and other costs are paid from several different appropriations and authorizations, including DOD, the Department of State, and the Foreign Assistance Act.

Other costs were incurred in paying for U.S. forces committed to NATO, unrecovered costs for prefinanced construction in Europe, and the cost of moving from France. The total U.S. cost for participating in NATO amounts to as much as \$16 billion annually. GAO believed that this diffused funding of U.S. NATO activities makes congressional overview and control difficult.

In GAO's view, the costs incurred by the agencies involved are for international security assistance, even though some of the costs may also be for national programs. Therefore, GAO believes that all of these costs should be taken into consideration along with the requests for direct funding of international security programs.

DOD stated that U.S. participation in NATO represents funding for the defense of the United States and did not agree with GAO's view that the cost of NATO to the United States is international security assistance. DOD felt, however, that NATO support is but one of many DOD responsibilities that are subject to changing requirements. Establishing a separate appropriation would eliminate the flexibility required to meet these changing needs.

GAO therefore recommended to the Congress that it consider either placing all direct costs of NATO financing under the Foreign Assistance Act and requiring the executive branch to report on other costs incurred or requiring the executive branch to report all costs incurred. (B-156489, Feb. 23, 1973.)

PAYMENTS FOR PHANTOM TROOPS IN THE
CAMBODIAN MILITARY FORCES

Department of Defense and Department of State

At the request of a member of the Congress, GAO investigated allegations that Cambodian Army unit commanders inflate their payrolls and pocket the pay of phantom (nonexistent) troops.

American officials acknowledged that corrupt payroll practices have existed for some time and that, despite corrective efforts, the problem of phantom troops had not been eliminated. However, neither the American officials nor the Cambodian Government knew the extent of the corrupt practices. Using estimated percentages of padded troop strengths provided by U.S. officials in Cambodia, GAO estimated that Cambodian military commanders may have drawn the local currency equivalent of \$750,000 to \$1.1 million in January 1973 for phantom-troop pay.

In 1971 and 1972, the United States provided the local currency equivalent of about \$56 million to support military pay and allowances. These funds were commingled with Cambodian Government resources and could not be attributed to payments to specific troops or units. However, the availability of such large amounts undoubtedly facilitated corrupt pay practices. (B-169832, July 3, 1973.)

OTHER AREAS OF OPERATION

POTENTIAL FOR REDUCTION OF COMMUNICATION COSTS THROUGH CENTRALIZED MANAGEMENT OF MULTIPLEX SYSTEMS

Department of Defense and civil agencies

In 1960, the Defense Communications System (DCS) was established and the Defense Communications Agency (DCA) was organized to manage DOD's single integrated long-distance communications system. The objective was to obtain maximum economy and efficiency in allocating and managing DOD communications. In 1961, the General Services Administration (GSA) was authorized to establish the Federal Telecommunications Systems (FTS) to integrate, with certain exceptions, all Government civil communications systems. In 1963, the National Communications System (NCS) was established to strengthen the communications support of all major Government functions. The NCS includes the DCS and the FTS, as well as other telecommunication networks. GAO has previously reported problems caused by the diffused management of Government communications and the unique relationships between DCA and the military departments and between DOD and civil agencies.

GAO made this review to demonstrate possible cost savings through centralized management in a specific application-- increased use of multiplex systems for both military and civil Federal agency communications. Multiplexing is a technique in which electronic devices at each end of a single circuit simultaneously transmit a number of messages, thereby eliminating the need for numerous individual long-distance circuits between terminal points.

Although multiplexing has been available since June 1968, when the Federal Communications Commission removed restrictions on the use of inter-connecting devices not furnished by common carrier, Federal agencies have made little use of the technique in the continental United States.

GAO's study, which included 200 circuits, showed that new multiplex systems could be established and communications costs could be reduced by about \$400,000 a year. For example, by installing multiplex equipment at Homestead Air Force Base, Florida; Andrews Air Force Base, Maryland; and Norfolk, Virginia, and connecting them by a single multiplexed circuit,

54 individual circuits leased for 8 agencies (including 2 civil agencies) could be eliminated. The multiplex system costing about \$72,000 would result in savings of over \$50,000 a year compared with current circuit costs.

The savings potential is significant because:

- DOD leases, at about \$15 million annually, 3,200 circuits of the type included in GAO's review, many of which appeared susceptible to multiplexing.
- Only a token number of circuits civil agencies leased were included in GAO's review.
- The lease costs of circuits had increased significantly.
- Systems GAO proposed included only low-speed data and teletype circuits, whereas multiplex equipment capable of handling higher speed DOD and civil agency requirements is available.

GAO believes that the benefits of multiplexing can best be obtained by a single organization with authority and responsibility to develop and manage systems meeting requirements of all Government users. Without additional policy and procedural guidance in the framework of the NCS, the present fragmented and parochial arrangements would continue and would result in unnecessary costs as well as in duplicate systems.

GAO recommended that:

- The Director, Office of Telecommunications Policy (OTP), establish a policy that departments and agencies identify their communications requirements which are susceptible to multiplexing and that the requirements be satisfied by multiplexed facilities when economically and operationally feasible. In forming such a policy, he should consider establishing a single entity to be responsible for developing and managing multiplex systems for the entire Government.
- The Secretary of Defense, in accordance with his responsibilities as Executive Agent, NCS, develop specific procedures for coordinating civil and

nontactical military communications which are susceptible to multiplexing.

DOD advised GAO that it plans to make DCA the central organization in DOD with authority and responsibility for all nontactical multiplex systems. OTP and DOD questioned the desirability or necessity of centralized management or high-level policy direction, rather than suitable and appropriate interagency coordination, although OTP agreed that the Government should take advantage of the benefits of multiplexing and is proceeding with the establishment of a Government policy in this area. GSA said that it is responsible for telecommunications for the civil activities of executive departments and agencies. On the basis of responses to the matters discussed in this report and on its experience on communications matters discussed in previous reports, GAO believes that coordination may only continue separate multiplex systems within and between military and civil agencies and that therefore more definitive management arrangements are needed. (B-169857, Jan. 18, 1973.)

GOVERNMENT NOT EQUITABLY COMPENSATED BY
TELEPHONE COMPANIES FOR USE OF ITS EQUIPMENT
TO SERVE PUBLIC PAY TELEPHONES

Department of Defense and civil agencies

DOD provides telephone service by means of Government-owned systems at about 160 military installations. Some commercial telephone companies use these system facilities (cables) in conjunction with their public pay telephones installed on military installations.

Revocable licenses permitting telephone companies to install public pay telephones on military installations provide that the telephone companies may use those Government-owned cables, wires, poles, etc. which are required to provide service. The companies must pay the standard commissions that would apply to all other public pay telephones under similar circumstances. Commissions range from 9 to 20 percent on revenues collected from public pay telephones.

At six military installations reviewed, GAO found that the companies paid standard commissions although the installations furnished some of the cable facilities used to provide public pay telephone service, whereas commercial concerns and other Government organizations normally do not furnish such facilities. GAO estimated compensation due the Government to be about \$52,000 annually at the six locations on the basis of the prevailing area rate for leasing such cables. Other methods of computing the compensation for using facilities may also be equitable and appropriate. Even after deducting the above compensation, the average revenue per telephone still exceeded that of public pay telephones installed in General Services Administration buildings in the San Francisco, California, area.

GAO recommended that DOD establish, as policy, that standard commissions are applicable when no cable facilities are furnished but that adjustments be made when circumstances differ from other public pay telephones. GAO also recommended that DOD direct the renegotiation of existing agreements or licenses which conflict with this policy.

The Office of Telecommunications Policy stated that compensating the Government for use of its facilities appears reasonable and that there appeared to be no obstacle to doing

so. The DOD response was inconclusive. Subsequently, GAO was advised that the Army (the action agency) had attempted to work out mutual agreements with the telephone companies and the companies had agreed to review this matter. Results of those studies are expected in the spring of 1974. (B-133201, Mar. 15, 1973.)

OPPORTUNITIES FOR REDUCING THE COST OF
CONSTRUCTING AND OPERATING HEALTH FACILITIES

Department of Defense and civil agencies

Pursuant to a law enacted by the Congress, GAO undertook a comprehensive study of the costs of constructing and operating health facilities and reported to the Congress on ways to reduce these costs for facilities built with assistance provided under the Public Health Service Act. GAO also examined into ways in which the demand for facilities could be reduced or eliminated.

Constructing and operating
health facilities

In a November 1972 report to the Congress, GAO identified many opportunities for improving the planning, construction, and operation of health facilities, including advance analysis of specific health care needs, identification of alternative sources of funds, reuse of building designs, and different construction techniques.

Hospital planners generally do not evaluate on a life-cycle basis alternative construction techniques, material, designs, and operating systems. Many hospital administrators and architects, to curb the rising cost of hospital construction, search for obvious savings in initial construction. These initial savings often preclude later savings in operations and maintenance that exceed the initial cost savings.

To demonstrate the impact that certain alternatives would have on initial construction and life-cycle costs, GAO selected a recently opened hospital for detailed study. The demonstration showed that

- initial construction costs of the redesigned facility would have been as much as 8.6 percent lower than those of the facility that was built and
- life-cycle costs of as much as \$10.4 million could have been saved by incorporating the alternate improvements into the redesigned hospital.

GAO recommended that the Department of Health, Education, and Welfare (HEW) (1) compile and publish information on the essential factors to be considered in project planning, (2) explore the feasibility of reusing hospital designs, (3) adopt a common set of construction requirements for HEW-administered programs, (4) develop and disseminate a scientific base of knowledge on construction requirements, and (5) require that the fast-tract and total-concept approaches be considered for health facility projects assisted under the Public Health Service Act.

GAO also recommended that HEW establish the capacity to provide life-cycle cost data to health facility planners and require that applicants for Federal funding justify the use of construction techniques, materials, designs, and operating systems which differ from those HEW recommended. GAO recommended further that, until HEW establishes the capacity to provide life-cycle cost data to health facility planners, HEW should encourage planners to consider the information presented in this report, along with local operating conditions and costs, in identifying the alternatives for life-cycle analyses that are likely to be the most appropriate for inclusion in the facility.

Demand for health
facility construction

GAO also identified and studied ways in which health facility construction could be avoided by either reducing the demand for such facilities or increasing the productivity of existing facilities. The study showed that the demand for hospitals and, to a lesser extent, other health care facilities could be reduced and that, by more efficiently using existing facilities, millions of dollars in construction costs would not need to be spent. These results are attainable by (1) placing greater emphasis on preventive medicine practices, (2) making more appropriate use of various types of health care facilities, (3) increasing the use of more efficient and economical medical care delivery systems, (4) using more effective utilization review techniques, (5) changing health insurance incentives that emphasize inpatient care, (6) sharing more hospital services, (7) organizing more efficient and economical health care systems, and (8) strengthening the role and increasing the capabilities of areawide health planning agencies.

GAO made a number of recommendations to the Secretary of HEW calling for the changes cited above. In implementing these changes, GAO recommended that HEW solicit the cooperation of other Government agencies, private health organizations, and medical professionals and assume leadership in these areas.

Some health care providers have changed traditional health care demand and utilization patterns, decreasing the need to construct acute care and other types of health facilities. The economic benefits emanating from these changes and the means by which such changes have been effected, as discussed in GAO's report, should be of particular interest to the Congress. Accordingly, GAO recommended that the Congress consider these matters in relation to legislative health care proposals, such as those providing for the reorganization of the existing health care delivery system and for programs on national health insurance.

HEW, 5 other Federal agencies, and 17 private organizations were requested to review and comment on all or parts of the study. The agencies and organizations agreed with the report. (B-164031(3), Nov. 20, 1972.)

NOT ALL COSTS OF PUBLIC AFFAIRS ACTIVITIES
ARE CONSIDERED IN APPLICATION OF THE LIMITATION
ON SUCH COSTS

Department of Defense

GAO reviewed selected activities (aerial teams, military ceremonial bands, civilian tours, museum programs, exhibit groups, and educational activities) which are, at least in part, promotional in nature and found that costs amounting to \$24 million for these activities are not included in the \$28 million limitation on annual obligations for public affairs activities imposed by the Senate Appropriations Committee. GAO has not concluded that all of these activities are, in fact, public affairs activities.

Operating costs for activities, which fall within DOD's interpretation of its definition of public affairs, and salaries of employees who spend more than 50 percent of their time in these defined public affairs activities are included in the public affairs expenditures reported to the Congress. For fiscal year 1972 DOD estimated that expenditures for public affairs were approximately \$22 million.

GAO recommended that DOD reexamine its position on what it includes as public affairs costs, since many of the activities mentioned in GAO's report meet, at least in part, DOD's definition of public affairs. The Office of Management and Budget considered some of these promotional activities as public relations activities in OMB Bulletin 70-10.

GAO also recommended that procedures be established to account for and report costs of all employees who work in public affairs activities. In addition, GAO suggested that the Senate Committee on Appropriations may wish to clarify what types of DOD activities it expects to be reported under the \$28 million limitation.

In commenting on GAO's conclusions and recommendations, DOD stated that it had reexamined its definition of public affairs and found it valid and viable. While DOD agreed that the activities selected by GAO contributed, in part, to the accomplishment of the public affairs mission, DOD stated that only civilian tours have this as their primary mission. DOD also stated that only the costs of activities which have

public affairs as their primary mission are included in the \$28 million limitation. DOD has directed the military departments to charge against the limitation any incremental costs incurred in operating civilian tours. (B-161939, July 20, 1973.)

NEED FOR FEDERAL AGENCIES TO IMPROVE
SOLID-WASTE MANAGEMENT PRACTICES

Department of Defense and civil agencies

Federal legislation and Executive orders have stressed the importance of proper solid waste disposal, resource recovery, waste reduction, and the Federal agencies' responsibilities for providing leadership in the nationwide effort to protect and enhance the quality of the environment. To determine how well Federal agencies were fulfilling their responsibilities, GAO reviewed disposal policies and practices of those agencies--Bureau of Land Management, Forest Service, National Park Service, and the Department of the Army--that managed the bulk of the Federal land having disposal sites.

Federal regulations generally prohibit Federal agencies from burning wastes in open fires and using open dumps. GAO reported open burning and open dumping on Federal lands administered by the Bureau of Land Management, the Forest Service, and the National Park Service to be widespread. The Army generally was disposing of its unsalvageable wastes in a satisfactory manner.

The agencies generally lacked a systematic approach to identifying and solving waste disposal problems. GAO recommended that the Secretaries of Agriculture and the Interior direct the Forest Service, Bureau of Land Management, and National Park Service to:

- Establish, at the various organizational levels, responsibility centers for solid waste matters.
- Establish procedures so that (1) solid-waste management policies are communicated effectively to all officials, (2) headquarters provides adequate policy guidance to regional personnel, and (3) regional officials carry out agency policies effectively.
- Require periodic inspections and reporting of inspection results of (1) agency-operated and lessee- and permittee-operated disposal sites on Federal land and (2) disposal sites used by the agencies on private land.

GAO reviewed also the procurement, resource recovery, and recycling policies and practices of the General Services Administration (GSA) and the Department of the Army and reported that although both agencies had been recovering some wastes for reuse or recycling, much more could be recovered. Generally the Army was recovering wastes only when it was economically advantageous; little consideration was given to salvaging and recycling primarily for environmental benefits.

GAO recommended that GSA and the Army, in their procurement activities, should be aware of and should emphasize to their suppliers the environmental benefits that could be obtained through using more reusable or recyclable materials, containers, and packaging.

The agencies generally agreed with GAO's findings and recommendations and specified steps they were taking to implement GAO's recommendations. (B-166506, Oct. 26, 1972.)

MILITARY READINESS

NEED FOR IMPROVEMENT IN READINESS OF THE AIR FORCE IN EUROPE

Department of the Air Force

Aircraft squadrons of the United States Air Forces in Europe (USAFE) were not fully combat-ready generally because of factors beyond their control, such as funding limitations, Air Force-wide combat crew shortages, priorities of the war in Southeast Asia, and the forced relocation of U.S. Forces from France.

Also the readiness status of USAFE's aircraft units was lower than reported because the criteria used to measure readiness of the units did not consider all pertinent factors and because some measurable areas, such as manpower and equipment, were not always properly reported.

Readiness reports should fully disclose to higher commands all factors which could limit a combat unit's ability to perform its missions. Complete, accurate, and uniform readiness reporting would permit the Air Force to more realistically assess immediate needs and would provide a sound basis for obtaining additional resources or relocating those available.

Consequently, GAO proposed that the Air Force revise its instructions for measuring readiness to disclose all significant factors. GAO also proposed that action be taken to provide uniform interpretation of the criteria and that the Air Force Inspector General emphasize the accuracy of reporting operational readiness in his instructions.

The Air Force has taken steps to improve criteria and has also developed a readiness measurement system that incorporates many of the guidelines we suggested.

The Air Force agreed that many factors limited the readiness of forces assigned in Europe and stated that, within budgetary constraints, every possibility was being explored to remedy the situation.

GAO also suggested that, in view of the combat readiness level of the USAFE squadrons, the Secretary of Defense consider the following alternatives:

- Increase the funding support so that sufficient munitions and fuel can be prepositioned.
- Reduce the number of squadrons maintained in Europe to a level that could be effectively supported with available funds, personnel, and materiel.
- Accept the risks associated with having combat squadrons in Europe at a reduced readiness level.

(B-146896, Apr. 25, 1973.)