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BY THE COMPTROLLER GENERAL

**Report To The Chairman  
Committee On Appropriations  
House Of Representatives  
OF THE UNITED STATES**

RELEASED

**Differences In The Services' Military Family  
Housing Programs Hinder Good Management**

For many years the Department of Defense (DOD) has not had a completely effective cost accounting and reporting system to manage its family housing inventory. DOD cannot determine the extent to which individual factors contributed to the variances among each military service's average unit costs.

GAO's review at eight service installations disclosed various housing-related problems which resulted in increased operations and maintenance costs and contributed to unit cost differences. Some of these problems may substantially affect future appropriations and spending decisions--and one involves potential health hazards.

Present family housing cost reports contain inaccuracies, and DOD's method of averaging unit costs of unlike units makes comparisons among the services meaningless. Although DOD is currently reevaluating its family housing management information system, GAO believes the benefits of an effective system will remain in doubt until some basic questions are answered concerning what should be managed and at what level.

This report also discusses DOD's budget justification process and controls.



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

B-202121

The Honorable Jamie L. Whitten  
Chairman, Committee on Appropriations  
House of Representatives

Dear Mr. Chairman:

As requested in House Report No. 96-1097, dated June 17, 1980, this report discusses the variation among the military services' cost of operating and maintaining military family housing units. It includes information concerning the basis used to develop each service's budget estimate and the controls instituted at various levels to ensure that appropriated funds are used as intended. At your request we did not obtain official agency comments.

As arranged with your office, unless you announce its contents earlier, we plan to distribute the report to other interested committees; the Director, Office of Management and Budget; the Secretaries of Defense, the Army, the Air Force, and the Navy; and the Commandant of the Marine Corps 5 days after the date of the report. Copies will also be made available to interested parties who request them.

Sincerely yours,

A handwritten signature in cursive script that reads "Milton J. Fowler".

Acting Comptroller General  
of the United States



D I G E S T

During hearings on the fiscal year 1980 military family housing budget request, the House Committee on Appropriations pointed out that there was considerable variation among the military services in the cost of operating and maintaining family housing units. At the 1981 hearings the committee found no evidence that the Department of Defense (DOD) had reviewed its concerns. Consequently, the committee requested a GAO study of this subject to be available for the fiscal year 1982 hearings on military family housing. In subsequent meetings with committee staff, the initial request was expanded and GAO agreed to determine

- the reasons for operations and maintenance unit cost variances among the services,
- the budget process DOD and each service uses in developing the military family housing operations and maintenance budget request, and
- the controls governing appropriated military family housing operations and maintenance funds use.

In fiscal years 1980 and 1981, DOD was appropriated \$1.5 billion and \$1.6 billion, respectively, to operate and maintain about 387,000 family housing units worldwide.

UNIT COST HAS LIMITED  
MANAGERIAL VALUE

Many factors contribute to the variances among the Army, Navy, Air Force, and Marines (services) individual average unit cost to operate and maintain the military family housing units in their inventories--housing-related problems, housing profiles (i.e.,

housing categories and geographic locations), and cost-accounting practices. (See p. 4.)

GAO's review at eight service installations disclosed many examples where different housing-related problems resulted in increased operations and maintenance costs. Some of the problems may substantially affect future appropriation and spending decisions requiring additional funds--and one involves potential health hazards.

For example, one installation's housing drawings showed insulation in a ceiling where no insulation was present--only a thin moisture barrier existed. Consequently, heat has been lost through the ceilings, contributing to higher utility costs for those units for the last 25 years. At another installation design deficiencies in a 10-story high rise resulted in the need to replace all windows in the building and to add a freight elevator to the building's exterior after its completion. These two changes added \$139,556 and \$168,576, respectively, to the operations and maintenance cost of the building. (See pp. 6 to 10.)

In another example, heating ducts under the slab in some types of family housing units may have to be sealed and new ducts installed in the ceiling. Termiticide vapors from chemicals used for termite poisoning have, in some instances, permeated the present slab ducts and are being spread throughout the units. In 1,259 Air Force units--where the problem was first recognized--old ducts were sealed and new ones installed in the ceiling at a cost of about \$2.9 million.

Army engineers for one intermediate command estimated that to test the presence and level of termiticide vapors and, if contaminated, to seal the old ducts and install new ones, would cost an estimated \$63.2 million for 6,200 potential units. The other services have not started testing programs to identify contaminated units and modify the existing duct work. DOD officials could not provide GAO an estimate of the total number of units that could be affected. (See pp. 10 to 14.)

DOD cannot quantify or determine the extent to which individual factors contribute to the variances in the unit cost of operating and maintaining military family housing because

--costs of unlike units (e.g., different design and location) are averaged together, making comparisons meaningless, and

--services include different types of costs and sometimes those costs are inaccurate.

The problems related to how costs are accumulated and reported and how costs of unlike units are averaged together are not new. In a 1971 report, GAO concluded that recognition was not given to the factors which contribute to the unit cost differences among the services. Consequently, meaningful operations and maintenance cost comparisons could not be made within or among the services. DOD disagreed with GAO's initial proposal to consider developing more sophisticated cost categories, saying this would increase the workload and not offer benefits commensurate with the additional costs. DOD also said that the existing categories have worked well and provide them data that is meaningful and useful for management and budgeting.

These problems still exist. Military family housing personnel at all levels expressed concern with the overall usefulness of the reports generated by the system. They included problems such as timeliness, accuracy, and usefulness as a management tool for comparisons among the services.

The Acting Director, Housing Programs Division, Office of the Secretary of Defense, told GAO DOD now recognizes the system has deficiencies. Since GAO's 1971 report, DOD attempted to develop a revised system to correct the problems, but the proposals developed were unsatisfactory and never implemented. DOD is currently working on a project to develop a more effective system covering policies, accounting, reporting, and data bases. (See p. 37.)

GAO believes that the benefits of an effective cost accounting and reporting system will remain in doubt until some basic questions about the management of military family housing are resolved: (1) What is the Department trying to manage? Very few management prerogatives exist under the present system. Most management decisions are outside the control of the housing managers located at individual military installations. (2) What cost information is needed by the Department (and at what levels) to make the proper decisions? Unit costs seem useful at the installation and intermediate command levels but become ambiguous at the service and DOD levels. (3) What other information is needed by the Department and services (and at what levels) to supplement or replace cost information? If unit costs are not useful at the Department level, would consumption data such as kilowatt hours, gallons of oil, etc., help? These are issues the appropriations committees should pursue with DOD. (See p. 41.)

DOD's BUDGETING TECHNIQUES  
MEET BASIC REQUIREMENTS;  
ADDITIONAL FEEDBACK NEEDED

DOD budget requests are based on both costs and obligations. Also the budgets are constructed both from the "bottom up" (no budget ceiling) and the "top down" (budget ceiling imposed). The Budget and Accounting Act of 1921 does not require that budgets be based exclusively on costs. GAO concluded in prior reports that there are merits to both the cost and the obligation approaches.

However, GAO is concerned about the amount of feedback provided to the activities that build the budget from the bottom up when the budget requests are modified. Each of the services provided different amounts of feedback. GAO believes that detailed feedback on budget changes makes installations aware of budget priorities and helps preserve budget discipline. GAO recommends that the Secretary of Defense direct each service not already doing so to provide detailed feedback to each of its installations. (See p. 53.)



DOD EXERCISES VARIOUS  
CONTROLS OVER USE OF  
OPERATIONS AND MAINTENANCE  
APPROPRIATIONS

DOD uses the flexibility provided it under the appropriation legislation by redistributing operations and maintenance funds within and among the services to meet changing program needs. This flexibility, however, extends only to the limits imposed by law and by DOD's voluntary adoption of controls to meet congressional intent.

The amount of control exercised by each service over appropriated family housing funds varied. The Marine Corps headquarters maintains the strictest controls by apportioning funds directly to its 17 installations in seven separate accounts. The Army and Air Force allocate funds for (1) operations and (2) maintenance while the Navy also breaks out a separate account entitled "management." Management was separated from operations in response to congressional concern over the cost of Navy management.

DOD's system for managing family housing operations and maintenance appropriations incorporates restrictions placed on the funds by the appropriations act. The system also gives DOD flexibility to manage the operations and maintenance funds, as established in the family housing management account's authorizing legislation. This management flexibility allows DOD to redistribute funds to meet changing program needs. However, DOD has controls on its flexibility: restrictions imposed by law, such as appropriation legislation and voluntary controls adopted to meet congressional intent. (See p. 62.)

As directed by the committee, GAO did not obtain official agency comments on the matters contained in the report.



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#### ABBREVIATIONS

CONUS	conterminous United States
DEH	Directorate of Engineering and Housing
DOD	Department of Defense
GAO	General Accounting Office
O&M	operations and maintenance
OMB	Office of Management and Budget
OSD	Office of the Secretary of Defense
PWC	Public Works Center

## CHAPTER 1

### INTRODUCTION

The Military Construction Act of July 27, 1962 (42 U.S.C. 1549a-1), established the Department of Defense family housing management account to provide for funding costs of military family housing. The account provides funds for the construction, acquisition, replacement, addition, expansion, extension, alteration, and operation and maintenance (O&M) of family housing. Beginning in fiscal year 1965, the family housing management account was divided into a no-year account for construction and an annual account for the operation and maintenance of family housing. In fiscal years 1980 and 1981, the Department of Defense (DOD) was appropriated \$1.5 billion and \$1.6 billion, respectively, to operate and maintain about 387,000 family housing units worldwide.

During hearings on the fiscal year 1980 military family housing request, the House Committee on Appropriations pointed out that there was considerable variation among the services in the cost of operating and maintaining family housing units. At the hearings on the fiscal year 1981 request, the committee found no evidence that DOD had reviewed its concerns. Consequently, the House Committee on Appropriations requested a GAO study of this subject to be available for the fiscal year 1982 hearings on military family housing. In subsequent meetings with committee staff, we expanded the initial request to include additional information which is identified in the following section.

### OBJECTIVES, SCOPE, AND METHODOLOGY

Our review objective was to determine whether DOD's budget and cost systems for the O&M of military family housing provide the Congress the needed information to (1) evaluate the budget and (2) control funds allocation. More specifically, we set out to determine

- the reasons for O&M unit cost variances among the services,
- the budget process DOD and each service uses in developing the military family housing O&M budget request, and
- the controls governing appropriated military family housing O&M funds use.

We agreed to provide the House Committee on Appropriations a report for use during the fiscal year 1982 hearings on DOD's military family housing O&M budget request.

Since our time was limited, we did not review military family housing in foreign countries, restricting our audit work to four service headquarters, seven intermediate commands, and eight installations. The Norfolk, Virginia, region and Hawaii were selected because they represent relatively localized concentrations of servicewide family housing. We selected one installation and its respective intermediate command for each service from the Atlantic and Pacific Armed Forces. We recognize that the installations and intermediate commands selected are not entirely representative of the worldwide military family housing program; however, our audit and comparisons dealt with practices and with procedures contained in laws, regulations, and directives and are therefore reasonable approximations of overall conditions.

The specific locations of our review work were:

Office of Management and Budget, Washington, D.C.

Office of the Secretary of Defense, Washington, D.C.

Department of the Air Force:

Headquarters, Washington, D.C.

Headquarters, Pacific Air Forces, Oahu, Hawaii

Headquarters, Tactical Air Command, Hampton, Virginia

Hickam Air Force Base, Oahu, Hawaii

Langley Air Force Base, Hampton, Virginia

Department of the Army:

Headquarters, Washington, D.C.

Headquarters, Western Command, Oahu, Hawaii

Training and Doctrine Command, Fort Monroe, Virginia

U.S. Army Support Command Hawaii, Oahu, Hawaii

Fort Eustis, Virginia

Department of the Navy:

Headquarters, Washington, D.C.

Headquarters, Pacific Division, Naval Facilities

Engineering Command, Oahu, Hawaii

Headquarters, Atlantic Division, Naval Facilities

Engineering Command, Norfolk, Virginia

Public Works Center - Pearl Harbor, Oahu, Hawaii

Oceana Naval Air Station, Virginia Beach, Virginia

United States Marine Corps:

Headquarters, Washington, D.C.

Headquarters, Fleet Marine Forces, Pacific,  
Oahu, Hawaii

Marine Corps Air Station, Kaneohe Bay, Oahu, Hawaii

Marine Corps Base, Camp Lejeune, North Carolina

During this review, we interviewed headquarters officials in the Office of Management and Budget (OMB), the Office of the Secretary of Defense (OSD), and the four military services responsible for the planning and financial management of the military family housing O&M budget. We reviewed the military family housing O&M budget process and the system of controls governing the use of military family housing O&M appropriated funds. We reviewed applicable policies, directives, and regulations governing military family housing O&M budget preparation and funds use. In addition, we examined funding documents to identify how funds flow from OSD to the four services headquarters and then to their various intermediate commands. Finally, we examined financial reports and supporting schedules justifying the four service headquarters' budget requests to OSD, and the consolidated DOD request forwarded to OMB.

At the intermediate commands and installations, we interviewed various budget and family housing officials to determine how the military family housing O&M budget is prepared, how costs are accumulated and accounted, and how funds use is controlled. We reviewed pertinent regulations and headquarters guidance governing military family housing budget preparation and funds use. Further, we analyzed the intermediate commands' and installations' budget requests and cost reports and their supporting documentation. Finally, we performed detailed analyses of selected budget items, such as utilities, furnishings, and maintenance and repair of dwellings to ascertain what factors contribute to the cost variances among the four services.

As directed by the committee, we did not obtain official agency comments on the matters discussed in this report.

## CHAPTER 2

### UNIT COST HAS LIMITED

#### MANAGERIAL VALUE

Different housing-related problems contribute to average O&M unit cost variances among the services. Housing managers at different locations face different problems in operating and maintaining their housing inventories. Many problems relate directly to differences in housing design and quality of construction. In other instances, housing managers have similar problems but use different approaches to handle them. Our review at eight individual locations disclosed many such differences. Some of the housing-related problems we identified may substantially affect future appropriations and other spending decisions and one involves potential health hazards. For example, approximately \$63.2 million may be necessary to redesign and modify heating ducts that are spreading termiticide vapors throughout as many as 6,200 housing units at one Army intermediate command.

DOD cannot quantify or determine the extent to which individual factors contribute to the variances in the unit cost of operating and maintaining military family housing because

- costs of unlike units are averaged together, making comparisons meaningless, and
- services include different costs and sometimes those costs are inaccurate.

The problems related to how costs are accumulated and reported and how costs of unlike units are averaged together are not new. In a 1971 report, we concluded that recognition was not given to the factors which contribute to the unit cost differences among the services. Consequently, meaningful O&M cost comparisons could not be made within or among the services. DOD disagreed with our initial proposal to consider developing more sophisticated cost categories, saying this would increase the workload and not offer benefits commensurate with the additional costs. In reply to our proposal, DOD said that the existing categories have worked well and provide them data that is meaningful and useful for management and budgeting.

DOD is currently working on a project to develop a more effective family housing management information system covering policies, accounting, reporting, and data bases. We believe that the benefits of an effective cost accounting and



reporting system will remain in doubt until some basic questions about the management of military family housing are resolved. They are issues DOD will need to address as it reevaluates its management information needs. These questions are:

1. What are DOD and the services trying to manage? (Very few management prerogatives exist under the present system, and many decisions are outside the control of housing managers located at the individual installations.)
2. What cost information do DOD and the services need and at what level to make the proper decisions? (Unit cost seems useful at the installation and intermediate command levels but becomes ambiguous at the service and DOD levels, where comparisons would be most useful.)
3. What other information do DOD and the services need to supplement or replace cost information? (If unit costs are not useful at the DOD and OSD levels, would consumption data such as kilowatt hours, gallons of oil, etc., help?)

#### O&M COSTS ARE AFFECTED BY HOW HOUSING MANAGERS HANDLE PROBLEMS

O&M costs as well as each service's average unit costs are influenced by how family housing managers handle housing-related problems both at the service headquarters and the installation levels. Housing managers at different locations have some problems which are unique. For example, some problems which must be corrected relate to initial design and quality of construction. In other instances, housing managers may be faced with similar problems but choose to handle them differently.

During our review at eight installations we found specific examples of both unique problems as well as different management solutions to similar problems. The recognition of problems--some involving potential health hazards and potentially large future expenditures--differed at individual installations and services. The affects these problems have on O&M costs contribute to variances in average unit costs among the services, but since the differences are combined with differences caused by other uncontrollable factors (i.e., age, location, etc.), unit cost is not a good indicator of good, or

deficient, housing management. The following are examples of problems we found at the eight installations and how the housing manager's handling of the problems affected O&M costs.

Utility and maintenance costs have increased due to inaccurate drawings and poor conservation practices

At several installations we visited, housing problems related to the specific housing designs and conditions at those installations. These different housing designs and conditions resulted in increased utility and maintenance costs unique to those installations. We found four problem conditions, discussed below, which, if perceived earlier by housing managers, could have been corrected years ago with large energy savings and corresponding decreases in utilities and maintenance costs.

Inaccurate drawings

U.S. Army Corps of Engineers drawings showed 4 inches of insulation in the cathedral ceiling of some housing units at Ft. Eustis. We had a housing inspector open a hole in the ceiling and found there was no insulation, just a very thin moisture barrier. (See photographs on p. 7.) In subsequent discussions with the housing manager and a command engineer, they stated that this condition is prevalent in all housing of this style, constructed below about 38 degrees north latitude (just south of Washington, D.C.). Consequently, heat has been lost (or gained) through the ceilings of these houses for about 25 years, contributing to higher utility costs and higher average unit costs for those housing units.

Louvers not closed and exhaust fans rendered inoperative

Two-story townhouses at Ft. Eustis had large vent fans on the second story exterior wall located near the ceiling to draw hot air out of the house. Our inspection, conducted in December 1980, showed that many of the louvered openings for the fans had not been covered or otherwise sealed. Wind blowing across the opening lifted the louvers and drew heated air from the unit, further contributing to rising utility costs.

The fans are no longer used. When air conditioning was installed in these units, the maintenance people cut the electric line to the fan because they did not want occupants using the fan and air conditioning at the same time.



**NO INSULATION. THIN MOISTURE BARRIER. FT. EUSTIS**



### Vents in soffits nailed shut

Our inspections at Ft. Eustis showed that their solution to freezing pipes in the attic was to nail the vents in the soffits shut with strips of wood. (See photograph on p. 11.) The purpose of the vents in the soffits is to ventilate the attic so moisture does not accumulate, causing damage to ceilings and framing. Instead of annually nailing the soffits shut in the winter and removing the strips of wood in the spring, one-time pipe insulation could have saved the recurring labor and materials expended, and accumulative damage incurred. In some cases, water pipes in the attic froze and burst, damaging the units. (See photographs on p. 9.) Repairing the damaged units would also contribute to higher overall maintenance costs for the installation.

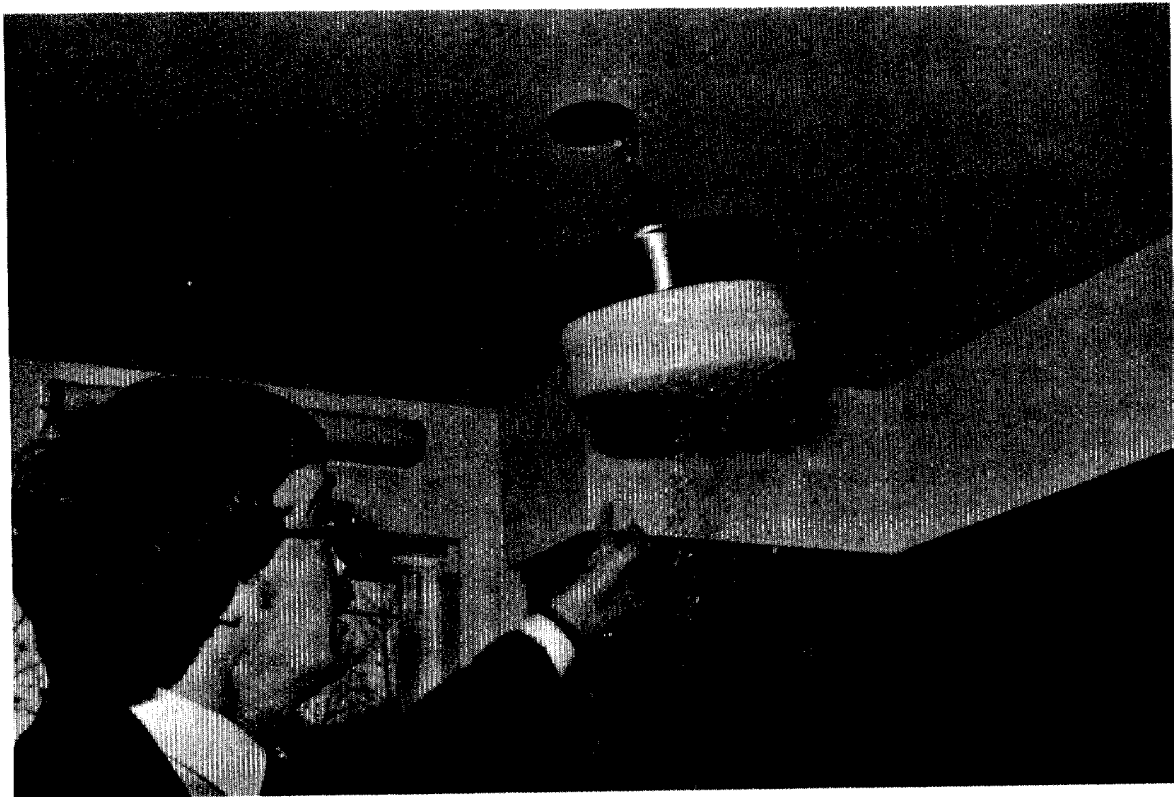
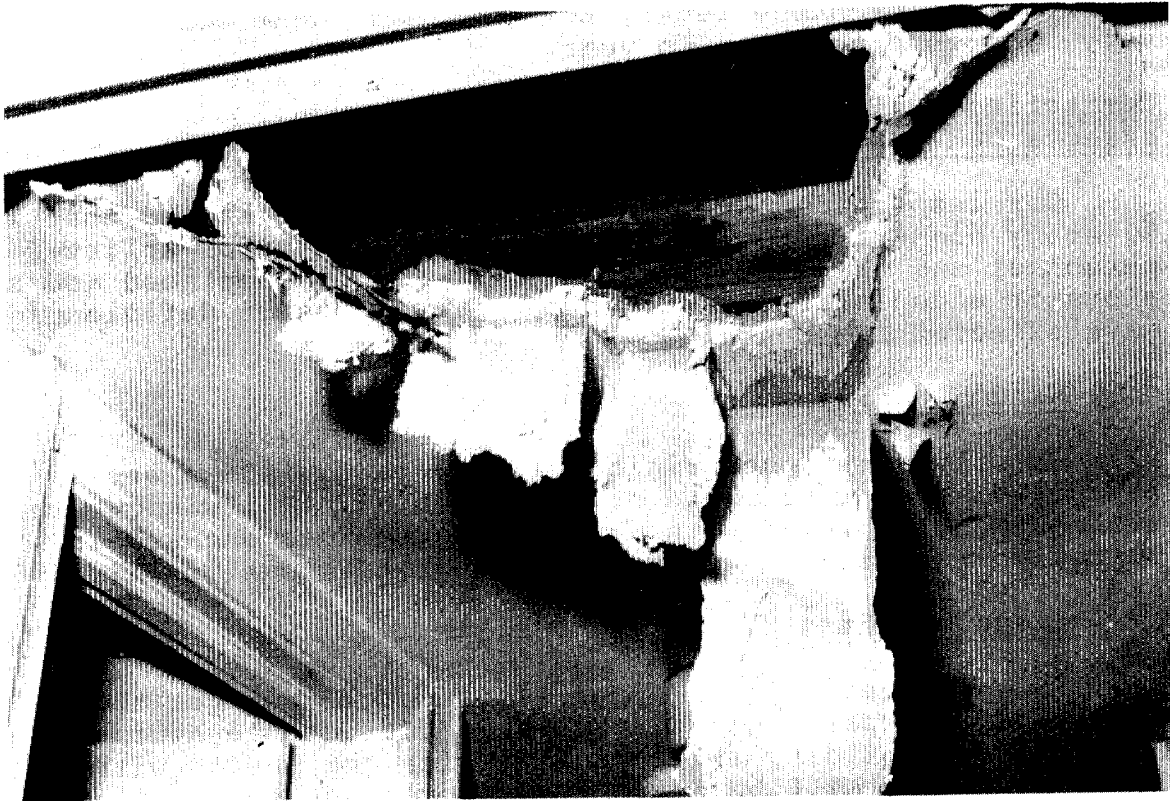
### House heat vented to attic

Our inspection of housing at Camp Lejeune showed holes in ceilings directly above oil furnaces, which were located near the center of the house. These were not exhaust holes nor were they air-intake holes. We were told that original construction plans called for holes in the ceiling (in lieu of pipe insulation) to keep water pipes in the attic from freezing. The units were about 25 years old. Consequently, heat has been convected into the attics and out the vents for a quarter of a century, contributing to escalating utility costs.

### Deferred major maintenance affects current and future unit costs

Major maintenance is needed to preserve units and reduce operating costs; repair is defined as restoring, i.e., fixing a part of a unit. For example, roof patching is repair; roof replacement is maintenance. If a roof is at the end of its useful life and is not replaced, more frequent repairs are necessary and the likelihood of damage to the unit is increased. Water can cause extensive damage to framing, ceilings, floors, electrical systems, etc..

The Army's Training and Doctrine Command has been deferring major maintenance for the last 2 fiscal years, and it appears likely that it may not accomplish major maintenance for a third year. Previously programmed major maintenance money had to be transferred to pay rising energy bills. This command's average unit costs for maintenance are thus lower in the 2 years maintenance was deferred. Its future year maintenance costs will likely have to be higher, to make up for the deferred maintenance. While over the long term the



**WATER DAMAGE CAUSED BY BURST PIPES IN CEILING. FT. EUSTIS**

maintenance achieved is the same as other commands which keep a regular maintenance level, the commands' unit costs will vary when compared year to year.

Correcting design deficiencies  
affects O&M costs

Our inspections at Langley Air Force Base showed that its 10-story high-rise, containing 99 units for junior enlisted personnel and their families, had all windows replaced and an elevator added after construction. These design deficiencies have affected O&M costs.

Window replacement

Shortly after the original single-pane windows were installed, many were blown out by the wind. All windows were subsequently replaced with movable thermopanes encased in corrosion-resistant anodized aluminum at a cost of \$139,556.

Elevator added

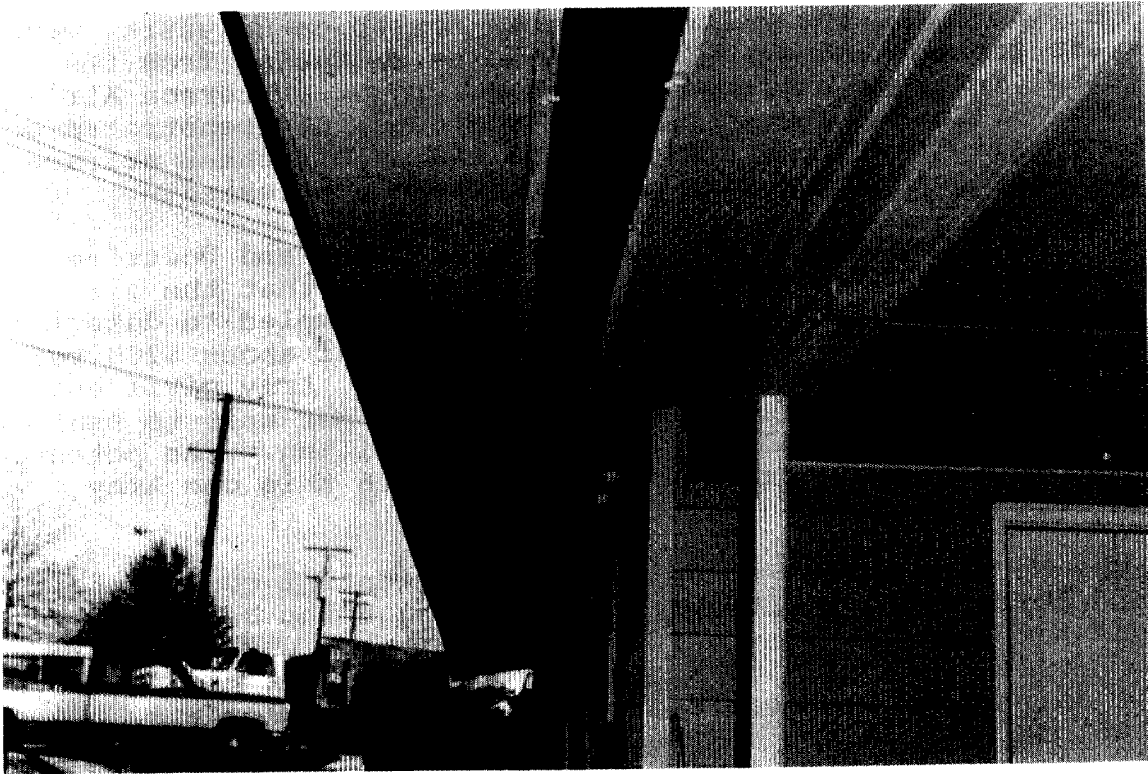
Because residents of upper floors could not get their furniture into passenger elevators, a freight elevator was added to the building exterior after its completion with O&M funds at a cost of \$168,576. (See photograph on p. 11).

Heating and cooling duct design have  
created potential health hazards,  
have increased costs, and could  
require large future expenditures

During our inspections of Army, Marine Corps, and Air Force family housing at Ft. Eustis, Virginia; Camp LeJeune, North Carolina; and Langley Air Force Base, Virginia, we noted a common design feature in the housing which could pose substantial problems for housing managers at those and other locations. How the services handle the problem could affect their unit costs. Discussions with Army officials and examination of construction drawings disclosed that heating and cooling ducts as well as unit sewer lines are either in or under floor slabs of many Capehart-type units. Other documents showed that these ducts are common in several types of military family housing. Such ducts may be spreading toxic termiticide vapors throughout a large number of family housing units. The Acting Director of OSD's Housing Programs Division told us that DOD has no idea how many units in its inventory have ducts in or under the slab.



**OUTSIDE ELEVATOR INSTALLED USING O&M FUNDS AFTER BUILDING WAS COMPLETED. LANGLEY AIR FORCE BASE**



**VENTS NAILED SHUT. FT. EUSTIS**

As built, the ducts may be in the slab, partially in the slab, or under the slab, as are the sewer lines. A U.S. Army Corps of Engineers drawing for the units at Ft. Eustis showed the duct diagonally traversing the entire slab. Ducts constructed in this manner were inexpensive. They were made of various materials including cardboard. As settling and aging occurred (after 25 years in the ground), some ducts and sewer lines were breached by shearing forces and decomposition.

Over the years, ground poisoning--primarily to control termites--with very long-lived termiticides such as chlordane, aldrin, dieldrin, and heptachlor; untreated sewage vapors; and effluent, carrying a mixture of these elements has seeped into the ducts. At Langley Air Force Base, we were told that the ducts must be pumped out after a rain. An Army Engineer said when heating and/or cooling blowers force air through the ducts, vapors are distributed throughout the unit, penetrating interior surfaces. Tests are currently being conducted to further determine the effect such vapors have on people living in the units. In some cases the vaporization occurred to the extent that droplets condensed on uninsulated ceilings.

In 1,259 Air Force units, where the problem was first recognized, the ducts had been sealed and new ducts installed in the ceilings at a cost of \$2.9 million. While this may have diminished the termiticide vapors, it has not eliminated them. When the new ceiling ducts were used, the vapors, which had penetrated the units' surfaces for up to 25 years, were again present and were believed to be emanating from the units' interior surfaces. Tests at Wright-Patterson Air Force Base, Illinois, showed that the compounds had penetrated so thoroughly that they could not be washed off these surfaces. Furnishings belonging to residents were not tested.

An entomologist at the Army's Training and Doctrine Command, Ft. Monroe, Virginia, informed us that the air in potentially contaminated units could be sampled to detect the presence of termiticide vapors at a cost of about \$200 per unit. This command has 6,200 such units. Army civil engineers estimated that it may cost \$10,000 per unit to seal the old ducts and install new ones in the ceiling. The potential cost to test and correct all the units in this one Army intermediate command is \$63.2 million.

We were unable to estimate the potential cost to test and correct all military family housing units because DOD did not know how many units had ducts in or under slabs. DOD-wide there are 300 "sets" of quarters that are known to be uninhabitable because of high levels of chlordane, but DOD had no estimate of the total cost to test and correct, if necessary, units that are currently inhabited.



If the affected units are shut down and families have to rent commercial quarters, then basic allowances for quarters expenditures will represent an actual cash flow from the U.S. Treasury, instead of a noncash transaction within Government accounts. This could add a substantial amount to the costs associated with this problem.

Threshold for damage  
to health unknown

Tests of the toxicity and carcinogenic capacity of chlordane are underway by the Environmental Protection Agency. A tentative threshold for harmful effects has been set by the World Health Organization at 5 micrograms per cubic meter, continuous exposure. This limit does not consider general population variations or special conditions such as infants, the elderly, or pregnant females. The National Academy of Sciences said it "...could not determine a level of exposure to chlordane below which there would be no biological effect under conditions of prolonged exposure of families in military housing." In the interim the National Academy of Sciences has also set the tentative threshold for damage to human health at 5 micrograms per cubic meter, as set by the World Health Organization. The U.S. Army Environmental Hygiene Agency has set a limit of 0.5 micrograms per cubic meter.

This is an extremely small quantity. In the meantime, however, people, furnishings (which are carried to other places), and buildings continue to be exposed. DOD has banned the use of chlordane in housing and other units with sub/inter-slab ducts, but has not initiated comprehensive air sampling tests to find out how many units (and people) may be affected. It should be noted that a tort action concerning the use of chlordane at Scott Air Force Base, Illinois, has been filed in the U.S. District Court for the Southern District of Illinois.

Current actions being taken

As discussed in our August 5, 1980, GAO report entitled "Need For a Formal Risk/Benefit Review of the Pesticide Chlordane" (CED-80-116), this problem extends far beyond DOD. The report estimated that there were literally millions of homes in the United States that could experience similar problems from chlordane exposure. Subsequently, EPA initiated a risk/benefit analysis to identify those termiticide chemicals which may require further regulatory action. The report also notes that some Air Force housing is constructed in accordance with HUD minimum property standards. While the Air Force recommended that HUD reevaluate its standards for termiticide treatments, HUD did not act on the recommendation.

DOD banned the use of chlordane in military family housing with slab or sub-slab ducts in May 1980. To date, the Army, Navy, and Marine Corps have done little to identify the number of potential units in their inventory or to correct contaminated units. The Air Force has taken the lead and instituted several positive steps to deal with the situation. These include

- identifying and surfacing the problem,
- eliciting a threshold limit,
- surveying its bases in the conterminous United States to identify the number of potentially affected units,
- sampling suspected units to determine chlordane level,
- sealing ducts in some contaminated units, and
- informing other cognizant agencies such as the Environmental Protection Agency and Department of Housing and Urban Development.

In addition to contributing to the variances in unit cost among the services, this situation could require significant future Federal expenditures to identify and correct contaminated units.

DIFFERENCES IN SERVICES'  
HOUSING INVENTORIES AND COST  
ACCOUNTING PRACTICES AFFECT  
USEFULNESS OF UNIT COSTS

Average unit costs are an inadequate measure of military family housing costs. Basic differences in the services' housing profiles--housing categories and geographic locations--distort the meaningfulness of unit cost averages. Also, differences in the services' cost-accounting practices contribute to the limited comparability of unit costs among the services. In addition, inaccurate O&M cost reports make the accuracy of unit costs suspect.

Averaging of unlike units  
results in noncomparable costs

OSD directs the military services and defense agencies to prepare various budget and actual cost statistics for the family housing program, including average cost statistics for operating and maintaining a family housing unit. This average unit cost is obtained by dividing the total O&M costs

for a group of housing units by the average number of housing units in the inventory over a certain period. Each service includes average unit cost statistics in its family housing budgets and cost reports. The services develop unit cost data for all housing units worldwide and by specific housing category and geographic location.

The four military services have widely varying concentrations of family housing units in each of the major housing categories and geographic locations. Further, the services have widely varying unit costs in each housing category and geographic location. These individual differences among categories can distort the services' average unit cost figures. As a result, analyzing or comparing unit cost statistics for a service's total inventory is meaningless without information on the categories which make up the total inventory.

We also found other dissimilarities within individual housing categories which affect the usefulness of those unit costs. The categories grouped housing units that differ widely in type of construction, size, and age. Combining the costs of unlike housing units results in an average unit cost with little relation to the actual cost of any individual unit.

Unit costs vary by  
geographic location

DOD requires average unit cost data to be accumulated by various geographic locations. They are:

--Worldwide.

--Conterminous United States (CONUS)--the 48 States and the District of Columbia.

--U.S. Overseas--Alaska, Hawaii, Puerto Rico, and U.S. possessions.

--Foreign.

Each service's family housing units are concentrated primarily in the conterminous United States. The number of units in each location varies considerably in proportion with the service's total inventory size. The total percentage in each geographic location also varies considerably for each service, as shown in the following table.

Table 1  
Distribution of Family  
Housing Inventory  
Fiscal Year 1979

	<u>Worldwide</u>	<u>CONUS</u>	<u>U.S. overseas</u>	<u>Foreign</u>
Army	150,006 (100%)	87,152 (58%)	13,847 ( 9%)	49,007 (33%)
Air Force	146,204 (100%)	107,206 (73%)	9,413 ( 7%)	29,585 (20%)
Navy	75,151 (100%)	54,145 (72%)	12,522 (17%)	8,484 (11%)
Marine Corps	20,988 (100%)	18,798 (89%)	2,055 (10%)	135 ( 1%)

The above chart shows that foreign housing units represent a greater portion of Army's total housing inventory than the other services. Units located in U.S. overseas and foreign locations combined comprise about the same percentages of Air Force's and Navy's inventories. The Marine Corps has the smallest percentage of foreign units and the smallest percentage combined of U.S. overseas and foreign units.

Each service has different average unit costs in each geographic location where it has family housing. The following tables show the services' family housing O&M costs incurred in fiscal year 1979, not including military labor costs, which are funded separately from family housing.

Table 2  
Average Unit Costs for Family Housing  
Operations and Maintenance  
Fiscal Year 1979

	<u>Worldwide</u>	<u>CONUS</u>	<u>U.S. overseas</u>	<u>Foreign</u>
Army	\$3,629	\$2,258	\$3,898	\$5,991
Air Force	2,746	2,333	3,185	4,103
Navy	3,530	2,982	4,392	5,717
Marine Corps	2,695	2,616	2,984	9,220

The figures illustrate the wide variances in O&M costs among the services' geographic locations in 1 year. The worldwide average unit costs for each service are skewed upward from the lower CONUS figures by higher concentrations of housing units in more costly U.S. overseas and foreign locations. The Army's worldwide average unit cost of \$3,629 is much higher than its CONUS average unit cost of \$2,258, because 42 percent of its inventory is in the much higher cost areas-- U.S. overseas and foreign locations. The Marine Corps had the

highest average unit cost of any location for the year with its \$9,220 foreign average unit cost figure. Because foreign units were less than 1 percent of the Marine Corps' total inventory, this had relatively little impact on its worldwide average unit cost.

These differences in inventory concentrations and average unit costs in each location distort the meaningfulness of worldwide unit cost averages. Even with additional information by geographic location, however, we found other limitations which reduced the validity of comparing and analyzing O&M average unit costs.

Unit costs vary by housing category

DOD requires average unit cost data to be accumulated and reported by various housing categories. DOD established this uniform accounting and reporting system to assist managers at all levels in administering the program. The housing categorization is based on factors such as date of construction and its adequacy for occupancy. The categories include:

Wherry Housing--constructed with private financing under the National Housing Act with federally insured mortgages, from fiscal years 1950 to 1955, and subsequently acquired by the Government.

Public Quarters, 1970 and after--constructed or acquired with funds appropriated during or after fiscal year 1970.

Public Quarters, 1950 through 1969--constructed or acquired with appropriated funds or under other special programs in fiscal years 1950-69. This category includes housing constructed under the Capehart program, with private financing and Government-insured mortgages, and operated by the Government.

Other Public Quarters--all other family housing designated as adequate public quarters and not included in any other category. This includes housing acquired or constructed before 1950.

Substandard Housing--includes public quarters designated as inadequate. This may include housing from any other category which is considered inadequate because of its condition or size, and other types of units such as trailers.

Inactive Housing--family housing units and properties placed in caretaker status which were not required or not available for occupancy for more than half of the reporting period.

DOD has other categories for Government-leased housing, private housing owned or leased by DOD personnel, and other miscellaneous properties under the family housing program.

In addition to the different concentrations by geographic location, the six major housing categories show different concentrations among the services.

Table 3  
Distribution of Family Housing  
Inventory by Housing Category  
Fiscal Year 1979

	<u>Army</u>	<u>Air Force</u>	<u>Navy</u>	<u>Marine Corps</u>
<u>Total</u> (Percent)	150,006 (100)	146,204 (100)	75,151 a/(100)	20,988 (100)
<u>Wherry</u> (Percent)	13,139 (9)	22,571 (15)	8,589 (11)	4,009 (19)
<u>1970</u> <u>and after</u> (Percent)	15,634 (10)	13,048 (9)	13,756 (18)	3,302 (16)
<u>1950-69</u> (Percent)	52,552 (35)	73,271 (50)	34,887 (46)	7,733 (37)
<u>Other Public</u> <u>Quarters</u> (Percent)	50,639 (34)	21,750 (15)	7,715 (10)	1,319 (6)
<u>Sub-</u> <u>standard</u> (Percent)	6,539 (4)	7,101 (5)	5,812 (8)	4,625 (22)
<u>Inactive</u> (Percent)	2,860 (2)	2,579 (2)	4,392 (6)	0 (0)
<u>Others</u> (Percent)	8,643 (6)	5,884 (4)	0 (0)	0 (0)

a/Percentage totals differ due to rounding.

In the table, the units in the Army and Air Force "others" category were leased housing.

Each service has the largest portion of its inventory in the 1950-69 category. The distributions are scattered among the other categories. Army has its next largest percentage in the other public quarters category, representing mostly older units constructed before 1950. The Marine Corps has its next largest percentage in substandard housing units. Air Force has its next largest percentage in Wherry housing and other public quarters while Navy's next largest grouping is the 1970 and after housing category.

Each service has different average unit costs in each of its family housing categories. The following table shows the services' O&M average unit costs incurred in fiscal year 1979, broken down by housing category.

Table 4  
Worldwide Average Unit Costs  
for Family Housing Operations and Maintenance  
Fiscal Year 1979

	<u>Army</u>	<u>Air Force</u>	<u>Navy</u>	<u>Marine Corps</u>
<u>Total costs</u>	\$3,629	\$2,746	\$3,530	\$2,695
<u>Wherry</u>	1,918	2,437	2,718	2,943
<u>1970 and after</u>	1,384	1,833	2,856	1,645
<u>1950-69</u>	2,205	2,508	3,002	2,818
<u>Other Public Quarters</u>	4,516	4,048	5,821	3,606
<u>Sub- standard</u>	1,727	1,778	1,921	1,534
<u>Inactive</u>	35	709	5	0

The unit cost averages for these housing categories show few similarities among services in the same housing category. Breaking down the categories' average unit costs further by geographic location shows other variances.

Table 5  
Average Unit Costs for Operations  
and Maintenance by Housing Category  
Fiscal Year 1979

	<u>Worldwide</u>	<u>CONUS</u>	<u>U.S. overseas</u>	<u>Foreign</u>
<b>Wherry Housing:</b>				
Army	\$1,918	\$1,921	\$1,730	\$ 0
Air Force	2,437	2,437	0	0
Navy	2,718	2,410	3,963	0
Marine Corps	2,943	2,943	0	0
<b>1970 and After:</b>				
Army	1,384	1,281	1,760	0
Air Force	1,833	1,808	1,971	2,173
Navy	2,856	2,658	3,427	3,374
Marine Corps	1,645	1,532	2,207	0
<b>1950-69:</b>				
Army	2,205	1,855	4,087	2,217
Air Force	2,508	2,261	2,829	4,378
Navy	3,002	2,646	3,471	4,238
Marine Corps	2,818	2,809	2,858	2,525
<b>Other</b>				
<b>Public Quarters:</b>				
Army	4,516	4,253	3,908	4,588
Air Force	4,048	3,959	4,042	4,072
Navy	5,821	5,132	5,578	7,074
Marine Corps	3,606	3,139	2,699	8,670
<b>Substandard:</b>				
Army	1,727	1,747	1,212	0
Air Force	1,778	1,589	3,445	2,654
Navy	1,921	1,909	1,682	2,332
Marine Corps	1,534	1,534	0	0
<b>Inactive:</b>				
Army	35	35	0	0
Air Force	709	1,508	12	6
Navy	5	5	0	82
Marine Corps	0	0	0	0

The average unit costs in each housing category show wide variations among the services. Many of these variations are not in line with the general characterization of costs being lowest in CONUS and progressively higher in U.S. overseas and foreign locations, as shown on page 16.



OSD and service officials we talked to identified many factors which affect the average unit cost for houses in the same housing category. Some of these were related to services' management practices; some were related to the housing's location within the overall geographic group; and some were related to differences in the housing units themselves within the same housing category.

Because of the variety and number of these factors affecting average unit costs, OSD and the services have stated, and we agree, that it would be very difficult to quantify how each factor affects a service's average unit costs. Although DOD breaks down average unit costs for housing units in the same broad geographic location and within the same broad housing category, these breakdowns include housing units with many dissimilarities. Averaging the O&M costs of unlike units results in noncomparable average unit costs within the same housing category and geographic location.

Family housing differences  
affecting unit costs at  
two locations

The four services' family housing at the two geographic regional locations we visited illustrate some of the problems related to average unit costs. The problems arise from differences we found in the family housing units both among the services and between the locations.

The service officials we talked with believe that average unit cost statistics are of limited usefulness because of basic differences in housing units even within the same housing category. Some of the reasons they listed for differing average unit costs are:

- Different types of heating systems.
- Air conditioning.
- Occupant turnover rate.
- Geographic location, which affects utilities from a usage standpoint because of climate and a relative cost standpoint because of varying utility rates between localities.
- Size of housing unit, which affects utility and maintenance requirements.

--Amount of maintenance which has been deferred on the units and the different levels of maintenance and repair which can change greatly from year to year.

The average unit costs experienced by the services in Hawaii and the Norfolk region illustrate wide variances in unit costs between locations and among the services at each location.

Table 6  
Average Unit Costs  
for Family Housing Operations and Maintenance  
at Service Installations in Hawaii  
Fiscal Year 1979

	<u>Army</u>	<u>Air Force</u>	<u>Navy</u>	<u>Marine Corps</u>
<b>Operations:</b>				
Management	\$ 164	\$ 114	\$ 161	\$ 175
Services	135	140	182	52
Utilities	897	979	920	878
Furnishings	251	383	212	121
Miscellaneous	<u>1</u>	<u>-</u>	<u>4</u>	<u>-</u>
Total operations	<u>a/ 1,447</u>	<u>1,616</u>	<u>1,479</u>	<u>1,226</u>
<b>Maintenance:</b>				
Maintenance and repair, dwellings	1,391	1,086	1,820	1,235
Exterior utilities	77	99	318	28
Maintenance and repair, other property	134	176	542	151
Alterations and additions	<u>32</u>	<u>45</u>	<u>-</u>	<u>68</u>
Total maintenance	<u>1,634</u>	<u>1,406</u>	<u>2,680</u>	<u>a/ 1,483</u>
Total O&M	<u>\$3,081</u>	<u>\$3,022</u>	<u>\$4,159</u>	<u>\$2,709</u>

a/Totals may not add due to rounding.

Table 7  
Average Unit Costs  
For Family Housing Operations and Maintenance  
at Service Installations in Norfolk Region  
Fiscal Year 1979

	<u>Army</u>	<u>Air Force</u>	<u>Navy</u>	<u>Marine Corps</u>
<b>Operations:</b>				
Management	\$ 163	\$ 132	\$ 111	\$ 139
Services	81	141	103	186
Utilities	751	1,080	869	935
Furnishings	88	35	92	84
Miscellaneous	<u>4</u>	<u>6</u>	<u>20</u>	<u>-</u>
Total operations	<u>1,087</u>	<u>1,394</u>	<u>1,195</u>	<u>1,344</u>
<b>Maintenance:</b>				
Maintenance and repair, dwellings	1,107	1,018	969	833
Exterior utilities	107	111	64	9
Maintenance and repair, other property	122	113	118	83
Alterations and additions	<u>8</u>	<u>59</u>	<u>-</u>	<u>19</u>
Total maintenance	<u>1,254</u>	<u>1,301</u>	<u>1,151</u>	<u>944</u>
Total O&M	<u>\$2,341</u>	<u>\$2,695</u>	<u>\$2,346</u>	<u>\$2,288</u>

The eight installations we visited included, in total, each of the major categories of active family housing. The installations in Hawaii are included in the U.S. overseas category. The Norfolk region installations are in the CONUS category. The breakdown of the services' family housing inventory at each location follows.

Table 8  
Family Housing Inventory  
at Service Installations  
in Hawaii and Norfolk Region  
Fiscal Year 1980

	<u>Army</u>	<u>Air Force</u>	<u>Navy</u>	<u>Marine Corps</u>
Hawaii:				
Total	7,183	2,475	6,767	1,881
Wherry	-	-	1,850	-
1970 and after	3,837	628	1,026	550
1950-69	2,915	1,244	2,968	1,300
Other public quarters	419	603	923	31
Sub- standard	12	-	-	-
Inactive/ other	-	-	-	-
Norfolk Region:				
Total	1,325	1,647	1,134	4,450
Wherry	370	-	-	895
1970 and after	-	600	600	250
1950-69	950	799	25	1,235
Other public quarters	5	244	1	424
Sub- standard	-	4	508	1,646
Inactive/ other	-	-	-	-

We observed many factors at each location which contribute to these differences among the services. With the information available at each location, however, we were unable to quantify all the factors which could result in differences in average unit costs. The following are examples of some factors which we believe affect unit cost averages.

Differences in building type--At one Air Force installation we found a 99-unit, 10-story high-rise with oil heat included in the same category with 1-story, two-family buildings heated by electricity. They were both built in the 1960s and therefore both were included in the category of public quarters, 1950-69.

The totally different nature of these buildings results in different O&M requirements for each. Combining the O&M costs for both types of buildings to get an average unit cost for the category results in an average figure with little relevance to either building's true unit costs.

A nearby Marine Corps installation also has family housing in the 1950-69 public quarters category. These units are primarily single-family houses with oil heat, built within a 4-year period. With such similarity among units, the average unit costs for the category would probably be representative of each unit's true costs.

The unit cost figure for the Marine Corps units can be meaningful if compared with other similar units. While the Air Force and Marine Corps units are in the same DOD housing category and the same geographic location, the similarities beyond that are inadequate to base a comparison.

Differences in building size and age--At a Navy installation we visited, the other public quarters category was made up of one officer's house constructed in 1810, having about 5,000 square feet of space. A Marine Corps installation in the same general location has several hundred single-family housing units also in the other public quarters category. These houses were constructed in the 1940s with about 1,891 square feet in each unit.

The differences in the size and age of the units at these locations are reflected in their average O&M costs. The Navy's unit cost figure for its single unit was \$18,785 in fiscal year 1980, which included major repair work. The Marine Corps' average unit cost for its housing was \$4,529 in fiscal year 1980. While the housing units were both single-family with oil heat, the differences in size and age made comparing unit cost figures alone meaningless.

Splitting of Wherry housing--At two service installations we visited, most of the units in the substandard category were inadequate Wherry houses. Also included in the substandard category were older non-Wherry units constructed in the 1920s and 1940s.

The two installations maintained a separate category for Wherry housing identified as adequate. The Wherry units in both categories were similar in age, size, and construction.

Although DOD has separated Wherry housing as a distinct category, the average unit costs for inadequate Wherry housing are included with the average unit costs for substandard housing. Unit cost figures shown for Wherry housing, therefore, do not identify unit costs for all Wherry units at these locations.

Differences in utility requirements--Very few housing units in Hawaii are constructed with heating systems. Most of the units also have no air conditioning because of the moderate climate. Units in the Norfolk region all have heating systems and most have air conditioning.

Such basic design differences between locations result in different utility requirements for each location. However, even in the same location the services have different utility requirements which would affect their costs. In Norfolk, the services operate five different types of heating systems: gas, electric, oil, heat pump, and kerosene. In Hawaii, some units are all-electric while other are served by both gas and electricity.

Cost-accounting practices result in reporting of higher costs

Service installations we visited are using different cost-accounting practices to charge the family housing program. As a result, some services are recording higher costs than others. Furthermore, the varying costs make any comparison among the installations within each service and among the services of limited value.

U.S. Navy

The Navy's general family housing costing concept is that costs should be charged to the extent that they are directly and practically identifiable and measurable to the family housing program. The costs charged to family housing, however, can vary depending on whether support is provided by a Naval Public Works Center (PWC) or a public works department. They

each provide about 50 percent of the Navy's family housing program support. During our review, we visited a Navy PWC activity on Oahu, Hawaii, and a Navy Public Works Department in Virginia Beach, Virginia.

The 6,767 Navy family housing units on Oahu, Hawaii, are administered by a public works center. A PWC provides a multitude of services for a concentration of Navy activities in a geographic area and must "break even" and operate without direct appropriation of funds. It maintains liquidity by charging its customers all the applicable direct and indirect costs for the services provided.

In Hawaii, the PWC--PWC-Pearl--provides its services on a predetermined rate basis. Before each fiscal year starts, PWC-Pearl publishes the rates it will charge for services. These rates include not only direct costs (labor, incidental materials and supplies, and services), but overhead costs as well. The overhead costs include (1) production overhead--the overhead associated with operating the production shop (phone service, supervision, training, shop equipment, etc.) as well as (2) service and administrative overhead--the production shop's share of the cost incurred by the supporting shops. All overhead costs are charged based on direct labor hours. The only service and administrative overhead costs not paid by the family housing program are police and fire protection and civilian personnel office services. For fiscal year 1981, the estimated cost of these three activities was:

Police protection	\$1,771,000
Fire protection	1,804,000
Civilian personnel office	<u>170,000</u>
	<u>\$3,745,000</u>

To illustrate a PWC-Pearl service rate, if a carpenter worked on a family housing unit any time during fiscal year 1980, the family housing program would have been charged \$20.18 a hour. Of that amount, \$13.40 represented direct labor and material costs and \$6.78 was for overhead costs--\$3.20 for production overhead and \$3.58 for service and administrative overhead.

In contrast, the 1,134 family housing units at the Oceana Naval Air Station, Virginia Beach, Virginia, are administered by the station's Public Works Department, which does not operate under the PWC concept. As a result, Oceana's family housing program will be charged only direct costs (labor, materials, supplies, and services) for work or services

provided by the station's Public Works Department or other production shops. Only in rare instances when a production shop performs work or services for the sole benefit of family housing will the production overhead rate be applied to the direct labor hours and charged to family housing. The service and administrative overhead rate will not be charged to family housing, regardless of the cost center performing the work or services.

### Marine Corps

The Marine Corps follows the Navy's general family housing costing concept--costs should be charged to the extent that they are directly and practically identifiable and measurable to the family housing program. The costs charged to family housing, however, can vary depending on whether a Navy Public Works Center or an installation public works/facilities department provides support.

The Marine Corps Air Station family housing program at Kaneohe Bay, Oahu, Hawaii, is administered and maintained by the station's Facilities Department. Within the Facilities Department, the responsibility for managing the 1,881 family housing units has been assigned to the Housing Division.

The Facilities Department provides the family housing program all its O&M support. It charges family housing only direct labor and material costs for work or services provided--a production overhead rate and service and administrative overhead rate are not charged. There is, however, one exception--the family housing program absorbs some service and administrative overhead costs for accounting support by the Facilities Department.

In comparison to the PWC-Pearl \$20.18 hourly rate (\$13.40 direct labor and \$6.78 overhead), a Facilities Department carpenter at the Marine Corps Air Station, Kaneohe Bay, would have charged the family housing program \$14.60 an hour for any work performed during fiscal year 1980. This compares more favorably with the direct labor portion of the PWC-Pearl hourly rate.

For the fiscal year 1981 budget, the Marine Corps Air Station, Kaneohe Bay, was requested to separate indirect support costs (or service and administrative overhead costs) applicable to the family housing program. This amount was to be funded through the military family housing O&M account; however, it was not approved by the Congress. The estimated costs are detailed on page 29.



Police protection	\$ 21,060
Fire protection	<u>N/A</u>
	<u>21,060</u>
Other operational support:	
Civilian personnel office	11,500
Payroll services	4,400
Comptroller	132,440
Supply services	22,600
Administrative support	1,800
Transportation support	17,100
Maintenance support	48,700
Maintenance control	28,000
Shop overhead	<u>89,200</u>
	<u>355,740</u>
Total	<u>\$376,800</u>

### Army

The Army, like the Navy and Marine Corps, follows the general family housing costing concept discussed previously. The costs assigned the family housing program, however, can vary depending on whether a base facilities engineer or an industrially funded activity provides support.

The Army Western Command, Oahu, Hawaii, has only one subordinate activity, U.S. Army Support Command-Hawaii, which handles family housing. The Housing Division, within the Directorate of Engineering and Housing (DEH), manages the 7,183 housing units, which are located at eight installations.

DEH and PWC-Pearl provide the family housing program all its O&M support, excluding Housing Division support. DEH maintains most of the units, but under an agreement with the Navy, PWC-Pearl handles the 2,635 units at Alimanu Military Reservation and Ft. Kamehameha--which are located near PWC-Pearl.

DEH charges the family housing program all direct labor and material costs, plus a production shop overhead rate for any work or service provided. The DEH production shop overhead rates include costs that are not chargeable to a particular job, such as supervisory costs. DEH does not charge family housing for service and administrative overhead costs, such as DEH management.

PWC-Pearl, which is an industrial-funded activity, charges the Army family housing program a flat rate for each work or service order, depending on the requirements. As previously discussed, PWC-Pearl rates include direct costs (labor, incidental materials and supplies, and services) and overhead costs--production shop and service and administrative.

There is a substantial difference between PWC-Pearl and DEH rates for work and services provided the Army's family housing programs on Oahu, Hawaii. To illustrate, during fiscal year 1981 PWC-Pearl charges \$30.00 an hour for carpenters and \$25.00 an hour for painters. On the other hand, DEH charges only \$16.10 an hour for carpenters and \$17.24 an hour for painters.

Services' varying cost-accounting practices affect maintenance and repair cost estimates

Because the individual services use different cost-accounting practices to charge the family housing program, maintenance and repair cost estimates can vary among the services. We requested the four services we visited on Oahu, Hawaii, to prepare cost estimates for three somewhat routine maintenance and repair jobs in a family housing unit. They were:

- Replace a water closet.
- Repair a 10-inch hole in gypsum wallboard.
- Paint a 10-foot by 15-foot room.

We asked each service for two cost estimates. One estimate if the work was done by "in-house" work forces and another if the work was contracted out. No other details were provided because we wanted the estimates to reflect the services' usual method of maintaining and repairing family housing units.

The following table illustrates the substantial differences among the services' cost estimates. They vary because of the services' different costing concepts as well as their management policies.

Table 9  
Maintenance and Repair Cost Estimates  
In-House Forces and Contractor  
U.S. Armed Forces  
Oahu, Hawaii

<u>Job</u>	<u>Work force</u>	<u>Army</u>	<u>Air Force</u>	<u>Navy</u>	<u>Marine Corps</u>
Replace water closet	In-house contractor	\$200.00 a/	\$155.00 131.84	\$160.00 100.00	\$145.00 a/
Repair wall	In-house contractor	52.00 a/	24.50 26.62	b/80.00 6.00	40.00 a/
Paint room	In-house contractor	210.00 a/	72.00 105.00	b/600.00 61.47	65.00 a/

a/Data not available.

b/Represents PWC-Pearl's cost to perform the work at Army's Aliamanu Military Reservation.

As the above table illustrates, the cost estimates for the three jobs done with in-house forces varied considerably. The percentage variance between the high and low cost estimate for each job was

--38 percent - replace water closet,

--227 percent - repair wall, and

--823 percent - paint room.

Our analysis of the individual job cost estimates disclosed that no one cost factor attributed to the differences. We found that labor hours required, per labor hour cost, and material cost varied widely on all three job estimates. The following tables detail our analyses.

Table 10  
Maintenance and Repair Cost Estimates  
To Replace a Water Closet Using In-House Forces  
U.S. Armed Forces  
Oahu, Hawaii

<u>Service</u>	<u>Labor</u>		<u>Labor cost</u>	<u>Material cost</u>	<u>Total cost</u>
	<u>Hours required</u>	<u>Per hour labor cost</u>			
Army	<u>a/</u>	<u>a/</u>	\$ 51.00	\$149.00	\$200.00
Air Force	<u>a/</u>	<u>a/</u>	28.00	127.00	155.00
Navy	4.0	\$ 25.00	100.00	60.00	160.00
Marine Corps	4.2	\$ 15.24	<u>b/</u> 64.00	81.00	145.00

a/Data not available.

b/Difference in calculated labor cost due to rounding.

Table 11  
Maintenance And Repair Cost Estimates  
To Repair a Wall Using In-House Forces  
U.S. Armed Forces  
Oahu, Hawaii

<u>Service</u>	<u>Labor</u>		<u>Labor cost</u>	<u>Material cost</u>	<u>Total cost</u>
	<u>Hours required</u>	<u>Per hour labor cost</u>			
Army	2.0	\$ 16.10	<u>a/</u> \$ 27.00	\$ 25.00	\$ 52.00
Air Force	<u>b/</u>	<u>b/</u>	21.00	3.50	24.50
Navy	2.0	30.00	60.00	20.00	<u>c/</u> 80.00
Marine Corps	1.8	15.00	27.00	13.00	40.00

a/Differences in calculated labor cost due to rounding.

b/Data not available.

c/Represents PWC-Pearl's cost to perform the work at Army's Aliamanu Military Reservation.

Table 12  
Maintenance And Repair Cost Estimates  
To Paint a Room Using In-House Forces  
U.S. Armed Forces  
Oahu, Hawaii

<u>Service</u>	<u>Labor</u>		<u>Labor cost</u>	<u>Material cost</u>	<u>Total cost</u>
	<u>Hours required</u>	<u>Per hour labor cost</u>			
Army	7.3	\$17.24	a/\$126.00	\$ 84.00	\$210.00
Air Force	b/	b/	42.00	30.00	72.00
Navy	16.0	25.00	400.00	200.00	c/600.00
Marine Corps	3.2	15.00	48.00	17.00	65.00

a/Differences in calculated labor cost due to rounding.

b/Data not available.

c/Represents PWC-Pearl's cost to perform the work at Army's Aliamanu Military Reservation.

We found that the PWC-Pearl cost estimate for painting the room--almost 10 times higher than the Marine Corps--was high because it included surface preparation and three coats of paint in an occupied unit (thus requiring moving furniture and covering with drop cloths). If only one coat of paint was applied, the job would have cost about \$250.00. A PWC-Pearl official told us most painting jobs get two coats.

We asked service officials to explain the differences in the job cost estimates and were given the following reasons:

- Contractors are willing to absorb costs on some jobs because they make it up on other jobs.
- Contractors usually assume they will be doing other work on the dwelling at the same time, therefore, the travel time is spread over a large number of jobs.
- In-house job estimates include travel time costs.
- Different estimators will estimate the same job differently.

Representatives from OSD and the four services questioned the validity of this example, stating that:

--The figures we used were estimates and were not necessarily related to actual costs.

--The Navy request was only given to the service desk manager and the estimate was not reviewed by the Chief of Operations, Housing Division. Navy personnel emphasized that they do not generally use three coats of paint.

--The labor costs (shown in tables) could not be developed without the cost per hour and number of hours.

We realize that the estimates provided do not represent "actual costs" and that the actual cost (had the work actually been done) might have varied from the estimates. However, as stated in the example, one purpose of the exercise was to demonstrate the services' different costing concepts and philosophies in performing these hypothetical repairs.

The requests for the estimates were provided to the following:

Army - Chief, Family Housing Management Branch, U.S.  
Army Support Command, Hawaii

Navy - Chief of Operations, Housing Division, PWC-Pearl Harbor

Air Force - Director, Family Housing, Hickman Air Force Base, Oahu, Hawaii

Marines - Director, Maintenance Control, Marine Corps Air Station, Kaneohe Bay

We do not know who was specifically designated by the representative contacted above to develop the actual estimates and we do not know what review process each service observed.

We were told by the PWC estimator that the Navy's cost to paint a room was high because it included surface preparation and three coats of paint in an occupied unit (the estimate as requested was "paint a 10' x 15' room"--no further instructions were provided, assuming the estimate would reflect the service's usual method of accomplishing the task).

All estimates were developed by service representatives. When questioned about hours required and labor costs per hour, service representatives in some instances (see tables 10, 11, and 12) could not provide the additional details.

Granted, the example does not represent an actual repair; and although actual cost may have varied, we still feel that it helps to demonstrate that cost concepts and management policies are different and can affect unit cost variances.

Services' cost reports may not provide accurate data

Average unit cost data on the O&M of family housing is only as accurate or valid as the data input into each service's cost-accounting system. Although we did not attempt to evaluate each service's cost-accounting system, service officials at the intermediate command and installation levels told us that cost reports were often inaccurate.

At Oceana Naval Air Station, Virginia, budget office personnel told us that Oceana's fiscal year 1980 housing cost reports contained the following types of errors:

- Cost information was charged to the wrong account.
- Cost accounts showed work units, but no dollar expenditures.
- Unexpensed obligations were shown as costs.

The fiscal year 1979 cost report showed only 728 service calls for the whole year. This figure represented only emergency calls rather than total service calls. The Housing Manager also stated that he seldom uses the cost report because of its inaccuracies.

Navy personnel at Pacific Division and PWC-Pearl, Hawaii, were unable to explain why some cost report totals did not reconcile to the sum of the subordinate elements. The effect of this error was not realized at the installation level because it does not use the cost report. However, if the report is used at higher levels, decisions could be based on data whose accuracy is questionable.

At Langley Air Force Base a budget analyst told us that the Air Force cost reports are also frequently inaccurate. (We found that the fiscal year 1980 control total did not reconcile to the sum of the subsidiary accounts.) The analyst told us that the cost report is used only as a general confirmation that the budget estimates are within the range of the costs reflected in the cost report. The budget analyst said this was done primarily to satisfy Air Force requirements that cost reports be used to prepare budget estimates.

The Chief of the Housing Division, U.S. Army Support Command-Hawaii told us that the Standard Financial System is the accounting system for the family housing account. The Housing Division does not have direct access to the financial system and must depend on the accuracy of others such as the Navy's Public Works Center, which provides cost information for the financial system through the Western Command's finance office. The chief told us that housing office personnel are concerned that family housing costs are not being correctly charged. The Housing Division is currently studying the cost system to determine how accurate costs charged to family housing are.

SYSTEM FOR ACCUMULATING  
AND REPORTING COSTS IS  
NOT A NEW PROBLEM

The problems we have discussed are not new. Our observations concerning the usefulness of average unit cost as a management tool are consistent with those in our earlier GAO report entitled "Better Cost Accounting Need for Operation and Maintenance of Military Family Housing" (B-159797, July 2, 1971). That report stated that

"\* \* \* the comparison of cost for operation and maintenance of family housing among the installations within each military department and among the departments is of very limited value."

The report identified the following problems with using average unit costs for comparison among the services.

--"Costs recorded for operations and maintenance of family housing at the 14 Army, Navy, and Air Force installations included in this review were inaccurate and incomplete in a number of cases."

--"DOD's method of cost accumulation lumps together housing units that are widely dissimilar in age, size, type of construction, and condition. Operation and maintenance cost figures are distorted by averaging out the differences."

The report proposed that DOD consider expanding the categories for accumulating and reporting O&M cost data to provide a more valid basis for comparison among the services. DOD disagreed, stating that the task force which developed



the cost criteria for family housing recognized that a capability to compare similar housing units would be useful, but would not offer benefits commensurate with the additional costs. In reply to our proposal, DOD said that the existing categories have worked well and provide them data that is meaningful and useful for management and budgeting.

Our review indicates these problems still exist. Military family housing personnel at all levels expressed concern with the overall usefulness of the reports generated by the system. They included problems such as timeliness, accuracy, and usefulness as a management tool for comparisons within and among the services.

One objective established by the task force which developed the cost system was to provide a valid basis for cost comparison. We believe that DOD still does not have an effective mechanism to provide managers, especially above the installation level, the necessary information for controlling and managing its housing inventory.

The Acting Director, Housing Programs Division, OSD, told us they now recognize the family housing management and information system has deficiencies. Since our 1971 report, they attempted to develop a revised system to correct the problems identified in our report, but the proposals developed were unsatisfactory and never implemented.

BETTER MANAGEMENT SYSTEM  
NEEDED, BUT FIRST SOME  
PROBLEMS SHOULD BE RESOLVED

DOD is currently working on a project to develop a more effective family housing management information system. The project is examining management policies and practices, accounting, reporting, and data bases. We believe that the benefits of an effective management system will remain in doubt until some basic questions about the management of military family housing are resolved, such as: (1) What is DOD trying to manage? (Very few management prerogatives exist under the present system because a large segment of expenses--utilities, procurement of appliances, etc.--is beyond DOD's control. In addition, most management decisions are outside the control of the housing managers at the individual military installations.) (2) What cost information does DOD need (and at what level) to manage effectively? (3) What additional information does DOD need, and at what level, to supplement or replace cost information? Some of these questions are included in DOD's current examination of its management system.

Most O&M costs  
are not managed

O&M costs for military family housing are prescribed by law, regulations, and/or policies and are difficult, if not impossible, to "manage" effectively. For example, many management prerogatives available to commercial managers (such as raising rents to cover increasing utility costs) are unavailable to DOD's housing managers.

The military family housing program is administered mostly at the installation and intermediate command levels. Installation duties consist primarily of paying bills, making repairs, checking residents in and out, and other administrative duties. Housing managers may determine or assist in determining what major maintenance projects are needed but final decisions are made at higher levels. About the only additional responsibility assumed by the intermediate command level is validating and setting priorities on major maintenance projects among the command's installations. DOD issues regulations and sets policy for the commands' subordinate housing organizations. The Congress passes laws and authorizes appropriations for family housing. Thus, all levels participate in the administration of military family housing, but because most costs are "fixed" there are fewer incentives to reduce costs and strive for excellence in managing military family housing. For example, maintenance projects have been delayed or canceled to pay rising utility bills. The delayed maintenance often creates additional problems (e.g., leaking roofs can cause additional unit damage).

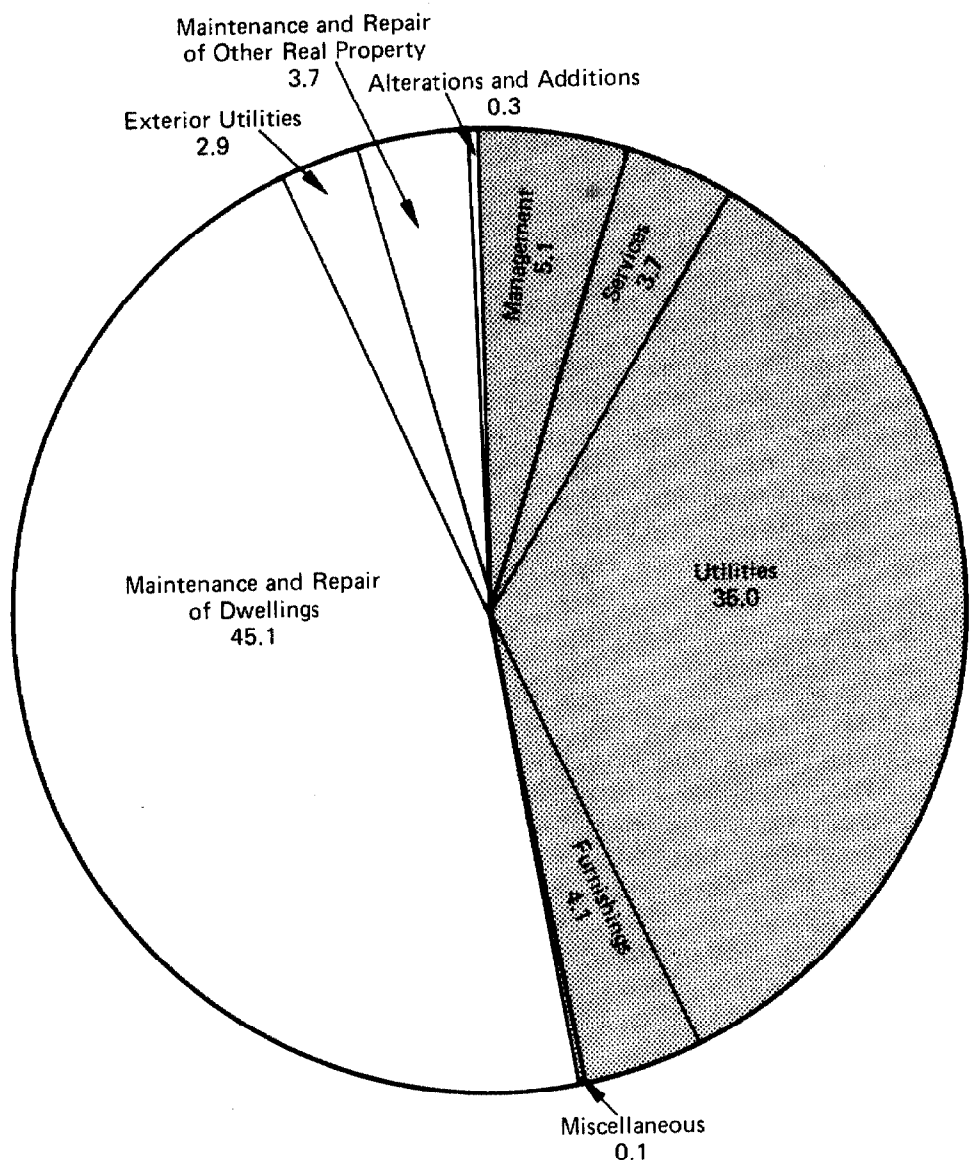
Costs which are not controlled

Many, if not all of the incentives and cost controls available to property managers in the private sector are not available to military family housing managers. The degree of control over major O&M costs (see illustration on p. 39) is discussed below.

Operations costs

1. Utilities cannot be controlled. Tenants have little incentive to conserve. Yet all other expenditures are to a very large degree dependent on what is left after utility bills are paid. One Army intermediate command, for example, has postponed valid major maintenance projects for more than 2 years because nothing was left after paying utility bills.

# Percentages Of Major O&M Line Items For FY 1981



 **Operations**  
 **Maintenance**

2. Appliance procurement and repair are also beyond the housing manager's control. By regulation appliances must be bought from the General Services Administration. Payback analyses of energy efficient appliances are not (cannot be) considered. Limiting makes and models, and consequent repair parts stock, are not (cannot be) considered.
3. Management compensation is set by law and regulations in various pay acts and position descriptions.

#### Maintenance costs

1. Maintenance and repair of dwellings manageability largely depends on the identification of the need and the availability of funds. This item is frequently dependent on the level of funding in utilities, the inflexibility of the floor for maintenance, and its own funding level. As discussed on page 8, use of these funds is frequently diverted to pay utility bills or held back until near the end of the fiscal year.

#### Is better control desirable and feasible?

In fiscal year 1981, more than \$1.6 billion was appropriated for military family housing. Utilities, appliances, and maintenance accounted for about \$1.4 billion, or almost 90 percent, of the total military family housing appropriation, yet these items are largely outside the control of managers. Housing managers we talked to felt the use of other O&M funds to pay utilities affected the few management prerogatives they had--identifying and accomplishing unit-preservation projects, some of which have concomitant reductions in operating costs.

As demonstrated elsewhere in this report, unit cost analysis as a management tool has very limited usefulness. DOD has recognized these management problems and, in its current project, plans to develop a uniform family housing manual for all the services and a more standardized data base and information reporting process. The project is scheduled to take up to 10 years to complete and implement. As DOD reevaluates its military family housing management concept and redesigns its management information system(s), a number of very basic questions should be answered, such as what is to be managed and what information (and at what level) is needed to effectively manage its housing inventory.

ISSUES THE APPROPRIATIONS  
COMMITTEES SHOULD PURSUE

The following issues are presented for the appropriations committees to pursue because we believe they will continue to affect DOD's ability to effectively manage its military family housing. They are issues DOD will need to address as it reevaluates its management information needs.

1. What are DOD and the services trying to manage? (Very few management prerogatives exist under the present system, and many decisions are outside the control of housing managers located at the individual military installations.)
  - a. Is there a need to strengthen design, construction, and inspection procedures to avoid costly alterations/repairs later and minimize maintenance?
  - b. Are there reasonable economic alternatives to unlimited energy consumption by occupants?
  - c. Can appliance diseconomies be resolved?
2. What cost information is needed by DOD and the services, and at what levels, to make the proper decisions? (Unit costs seem useful at the installation and intermediate command levels but for many reasons pointed out earlier, become ambiguous at the service and DOD levels.)
  - a. Would managers have a better perspective on O&M dollars if capital expenditures--including appliance procurement and major repairs such as those necessary to correct the chlordane-related problem--were separated from Operations-Furnishings, and Maintenance, respectively?
3. What other information is needed by DOD and the services, and at what levels, to supplement or replace cost information?
  - a. If unit costs are not useful at the Department and OSD levels, would consumption data, such as kilowatt hours, gallons of oil, etc., help?

- b. Would engineering analyses of payback periods for energy efficient appliances and higher quality materials be useful?

### CHAPTER 3

#### DOD s FAMILY HOUSING BUDGETING

##### PROCESS IS TAILORED BY EACH

##### SERVICE TO MEET ITS NEEDS

DOD budget requests are based on both costs and obligations. Also, the budgets are constructed both from the "bottom up" and the "top down." The Budget and Accounting Act of 1921, as amended (31 U.S.C. 53), does not require that budgets be based exclusively on costs. In addition, we have concluded in prior reports that there are merits to both approaches. One area where improvements are needed concerns feedback provided to the activities when the budget requests are modified. Each of the services provided different amounts of feedback. We believe detailed feedback should be provided when budgets are modified to ensure that activities are aware of funding priorities and to preserve budget discipline.

##### DOD BUDGET REQUESTS ARE BASED ON COSTS AND OBLIGATIONS AND ARE FORMULATED FROM THE "BOTTOM UP" AND THE "TOP DOWN"

OSD issues DOD's guidance on budget preparation for all the services, using OMB guidelines. Each service has issued its own implementing instructions on budget preparation to suit its own needs. The installations develop their budget estimates following their services' instructions and using either "bottom-up" or "top-down" planning. <sup>1/</sup> The installations base their estimates on historical financial and nonfinancial data.

##### The budget cycle covers 1-1/2 years

The entire budget process covers approximately 1-1/2 years. Following is a chart depicting the steps in this process; using fiscal year 1981 as our example.

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<sup>1/</sup>Budget requests developed through a process involving field offices and no prior dollar guidance use "bottom-up" planning. "Top-down" planning occurs when top levels set the budget request amount in advance with little or no field office work.

February/March 1979	OSD issues its program and fiscal guidance providing both mandatory and suggested program guidance. This establishes the basis for the subsequent budget preparation.
May 1979	Each service headquarters submits a 5-year program plan as part of the Program Objective Memorandum process.
June/July 1979	The intermediate commands submit their budgets to service headquarters. These are based on installations' budget requests.
July 1979	OSD issues tentative decisions on the services' program objectives in the Program Decision Memoranda. Services may appeal the decisions.
July/August 1979	OSD issues detailed budget guidances to the services, referring to program decisions in the Program Objectives and Program Decision Memoranda.
August 1979	OSD issues final program decisions in the Amended Program Decision Memoranda. These establish the ceilings for the services' upcoming budget submissions.
September 1979	Each service headquarters submits its budget estimates for simultaneous OSD and OMB review.
September/December 1979	During this period, a process known as the decision package set cycle occurs. OSD reviews and, subject to service appeal, approves or disapproves the decision package set. Approved sets comprise the total recommended budget. OMB participates jointly in preparing for this review process.
January 1980	The President's budget is submitted to the Congress.
March 1980	The Congress holds hearings on the President's budget submission.



October 1980

Following passage of appropriation act, services begin execution of the budget.

OSD provides guidance on how budgets should be prepared

Each year OSD provides the services with detailed guidance on how to prepare their budgets. OSD's guidance incorporates any general OMB guidances which may affect the family housing budget requests. In addition, certain guidance remains in effect from year to year. Each service headquarters interprets this guidance and issues its own implementing instructions to its intermediate commands. The commands pass essentially the same instructions to their installations.

In February or March of each year, OSD publishes program and fiscal guidance for the services to use in establishing their program objectives for the upcoming budget year. The services submit to OSD program decisions, activity levels, and estimated obligations in their Program Objective Memoranda. These program objectives, as amended by OSD in the Program Decision Memoranda, are then used in developing the services' subsequent budget submissions.

In July and August of each year OSD publishes its budget guidances for the services to use in preparing their budget submissions. The guidances provide specific detail on format, content of justifications, submission dates, pricing factors, and funding levels to be addressed. In addition, OSD outlines areas of program emphasis and special concerns as expressed by the Congress in previous years' appropriation hearings and committee reports.

OSD provides each service one total ceiling for the entire family housing program, out of which operations, maintenance, leasing, new construction, minor construction, improvements, and debt payment are funded. The ceilings are based on the program objectives submitted by the services in the Program Objectives Memoranda, which are reviewed and finalized by OSD in the Amended Program Decision Memoranda.

In addition, OSD has prepared instructions for the services to follow from year to year. DOD Instruction 7150.6, "Financing the DOD Family Housing Program - Administration and Management of Funds," provides guidance for the implementation of Federal budget concepts and details which charges belong to the family housing O&M accounts. The Budget Formulation Manual provides the services with guidance for budget preparation including detailed instructions on required forms, the level

of justification needed for each form, and additional information. These instructions form a permanent record of budget requirements and are updated as changes occur.

Services use DOD's overall guidance  
but develop budgets to suit their  
own needs

Each service headquarters issues its own budget preparation implementing instructions. These require different levels of intermediate command and installation involvement and varying amounts of supporting detail for the funds requested. The intermediate commands essentially pass these instructions along to the installations, which use them to prepare their budgets.

Early in the budget process, the services' headquarters develop budget ceilings for O&M of family housing, based on OSD guidance and the services' program emphasis.

The Air Force and Navy do not pass budget ceilings down to intermediate commands and installations. They prefer that budgets reflect total requirements, so that headquarters can make cuts to meet the imposed ceiling limitation. They both require detailed backup data to support the requested funds.

The Army requires that its intermediate commands and installations budget to a specified ceiling rather than their total requirements. Unfunded requirements (those requirements above the imposed ceiling) are identified separately in each budget submission to headquarters. For example, the U.S. Army Support Command in Hawaii requested almost \$20 million in its fiscal year 1982 budget submission. However, it identified an additional \$22 million in unfinanced requirements. The Army requires some support data for budget maintenance figures but generally requests little backup data from installations to support their budget requests.

The Marine Corps receives its budget guidance through the Navy comptroller's office. The Marine Corps imposes budget ceilings on each installation and directs the installations' submissions to also identify requirements above these ceilings. Headquarters retains responsibility for budgeting for major repair and replacement projects, alterations and additions, pay raises, and inflation. The Marine Corps requires very little backup data from installations to support the funds requested.

All the installations we visited identified their total requirements broken down by each of the nine budget line items 1/ regardless of ceilings received from higher commands. In their formal budget request submissions, however, both of the services given a ceiling (Marine Corps and Army) differentiated between funded requirements (those under the ceiling) and unfunded requirements (those above the ceiling). The Navy and Air Force budget submissions reflected total requirements because they did not receive ceiling limitations from their intermediate commands.

For the most recent budget cycle, fiscal year 1982, the Marine Corps required its installations to show three budget estimates:

- Unconstrained requirements.
- Funding to maintain the current level of support.
- Funding at 95 percent of the fiscal year 1981 ceiling imposed by headquarters.

Each Army installation estimated its total unconstrained requirements and then decided which costs should be reported as "unfinanced requirements" in the formal budget submission. The "limit" must conform to the ceiling contained in the installation's program budget guidance.

The installations we visited developed their budget estimates using information such as

- historical financial data (costs and obligations);
- known cost increases (for instance, contracts);
- historical incidence of actions or consumption (for example, number of service calls and utilities used);  
and
- need for major repair projects.

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1/The nine budget line items are management, services, utilities, furnishings, miscellaneous (under operations); and maintenance and repair of dwellings, maintenance and repair of exterior utilities, maintenance and repair of other real properties, and alterations and additions (under maintenance).

For example, at several installations we visited, we traced budget estimates for utilities to prior years' utilities bills showing consumption and current year's rate schedules.

Installations' budgets are forwarded to their intermediate commands for review. <sup>1/</sup> The intermediate commands' review processes varied among the services. Generally, the Navy and Air Force command representatives told us they performed detailed reviews using information such as historical cost and incidence data, prior years' budgets, and trends and projections. However, Army and Marine Corps reviews were less detailed.

After the submissions are reviewed, each intermediate command prepares its consolidated budget. Only Air Force intermediate commands adjust the installations' submissions for inflation and pay raises.

The services' headquarters receive budget submissions from their immediate commands during June and July. Each has developed a different review process, varying both in detail and areas of review.

Navy has the most complex and detailed review process. Two reviews are made, generally concurrently, by the family housing office at headquarters. The first, performed by program managers, reviews different O&M line items for validity. Usually one to three people review all six intermediate commands' submissions for one line item, such as utilities. The operations line items are reviewed using cost reports. The program managers informally track trends using data from previous years. Prior year budgets are compared for inconsistencies. The maintenance line items are evaluated using

- maintenance and repair inspection reports,
- the incidence level of various types of maintenance for which funds are requested, and
- impact of the whole house repair projects included or not included in the budget request.

The second review, performed by financial managers, evaluates the requests and validated needs for conformance to OSD's

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<sup>1/</sup>Except for those Marine Corps installations that report directly to Headquarters, Marine Corps.

established ceiling. In late June or early July, the Navy family housing office meets with each intermediate command to finalize its review.

The other three services have much smaller staffs at the headquarters level, making this kind of review difficult.

Air Force budget submissions are reviewed using the obligation reports, prior year budget submissions, and staff knowledge of the program. Changes are made based on projected future construction plans and guidance from OSD. The cost reports have limited use in the review process because of different bases for recording costs (expenditures vs. obligations) and known inaccuracies.

The Army evaluates budget submissions from intermediate commands using

- cost reports,
- projections for the coming year,
- revisions to the upcoming fiscal year's budget, and
- the budget program developed in the Program Objective Memoranda cycle.

The Marine Corps also reviews budget submissions for

- adherence to budget guidelines and
- inclusion of improper activities, such as major repair projects.

In addition, the Army and Marine Corps make adjustments for future pay raises, inflation, and major repair projects.

In September each service headquarters sends its consolidated budget estimates for simultaneous OSD and OMB review. At OSD the budget is reviewed concurrently by the Installations and Housing Office and Comptroller's Office. The Installations and Housing Office reviews the budget in a more general, overall sense. It analyzes it using historical trends, the impact of inflation on housing, and the services' use of military vs. civilian personnel. 1/ The

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1/Military labor is budgeted and funded separately from family housing.

Comptroller's Office, on the other hand, performs a more detailed review. It examines services' justifications for adequacy of support and analyzes the dollar estimates using

- the 5-year defense plan developed by OSD and the services,
- cost reports,
- budget guidance,
- congressional intent expressed in the previous year's committee reports and hearings, and
- similarity to line item requests of other services.

Starting in mid-September, OSD and OMB hold "hearings" for the services, similar to the congressional hearings. The hearings are presided over by a representative from the OSD Installation and Housing Office, the OSD Comptroller's Office, and OMB. The services respond to questions from OSD and OMB and agree to supply additional information supporting their budget requests.

DOD's final decision on its request for family housing O&M is spelled out in a document called a decision package set. This document lists the total amounts requested by the services for O&M and alternative amounts based on OSD's and OMB's detailed review. The decision document also describes the background of OSD's detailed analysis, the basis for its decisions to alter the services' requests, and the dollar amounts involved. The services are given an advance opportunity to supply new information not previously brought out or to correct erroneous information in the proposed alternatives.

The Deputy Secretary of Defense makes the final decision from the services' requests and OSD's alternatives. In the decision documents we examined for fiscal years 1979, 1980, and 1981, the Deputy Secretary selected the alternative recommended by OSD each year.

The final budget request is then forwarded to OMB for inclusion in the President's January budget. OMB, if not satisfied with DOD's request, may seek to have it changed before it is included in the President's budget. However, where disagreements have arisen, the amounts and issues involved were not large enough to warrant additional action by OMB.

DIFFERENT BUDGET FORMULATION  
AND JUSTIFICATION METHODS  
ARE ACCEPTABLE

The Federal Government's budget formulation process allows the Federal agencies a great deal of flexibility in developing budget estimates. Budgets can be constructed from the "bottom up" or "top down" and can be based on either obligations or costs.

Different budget formulation  
processes are acceptable

We found that DOD's family housing process involved some "top-down" and some "bottom-up" planning, varying among services and among command levels within the service.

In an earlier review, we found a wide variation of acceptable budget formulation styles. ("Budget Formulation: Many Approaches Work but Some Improvements Are Needed," PAD-80-31, Feb. 29, 1980.)

Some budget requests were developed through a process that involved field offices and no prior dollar guidance from higher levels ("bottom up"); in other cases the request amount was set in advance by top levels with little or no field office work ("top down"). In broad terms (since the Director of OMB provides agencies dollar targets each year), budget formulation begins in a "top down" manner.

We concluded that no single approach appeared most suitable for all programs, and variations in program objectives and methods led to different budget formulation procedures.

Advantages to both cost and  
obligation-based budgets

Both costs and obligations have their advantages in the budget process. In a 1975 report entitled "Advantages of Costs vs. Obligations as Basis for Budget Estimates" (B-178205, Sept. 10, 1975), we concluded that cost-based budgeting offers several advantages for management purposes.

Cost-based budgets, for example, provide management a complete financial picture of proposed operations. They also provide management with the information it needs to evaluate financial plans and a standard for measuring actual performance and determining unit cost.

Obligations, on the other hand, present the Congress with information which is more compatible with congressional budget actions (authorizations, budget targets, and appropriations) which are either expressed in terms of or based on obligations. Therefore, obligation-based budget presentations also have significant advantages.

We urged the departments and agencies to continue using cost accounting and cost-based budgeting for internal management purposes. Moreover, we also noted that the Budget and Accounting Act of 1921, as amended, does not specifically require that agencies present their budgets in terms of cost.

ADDITIONAL FEEDBACK IS NEEDED  
WHEN BUDGETS ARE MODIFIED

The services' headquarters, and in turn the intermediate commands, provide installations varying amounts of feedback on their budget submissions. This affects installations' knowledge of funding priorities and understanding of the use and importance of their input to the overall budget process.

Navy headquarters provides each intermediate command a detailed listing of changes to its budget requests, suggested fund distribution, and reasons for funding differences (by the subdivisions of the nine budget line items). The intermediate commands provide the same feedback detail to their installations. Navy officials told us the feedback provides its commands and installations program emphasis information and identifies problem areas. They felt detailed feedback was needed since budget requests were detailed submissions. They acknowledged the need for feedback to assure installations made good budget estimates.

Army headquarters provides its intermediate commands details on suggested funds distribution for the nine budget line items and reasons for changes from what was requested. An Army official told us this information is passed down to installations. However, we found that one intermediate command we visited did not provide its installations with the reasons for differences between funds requested and provided.

The Marine Corps headquarters (because it distributes and controls funds for seven detailed elements of housing expense) provides its installations feedback through the formal funding documents. Other feedback is provided when cuts are made to an item that Marine Corps headquarters wants to go unfunded.



Air Force headquarters provides its intermediate commands/ installations no formal feedback on why funds requested are different from those received. The only data provided is the funds authorized for operations and for maintenance and any restrictions placed on these two figures.

#### CONCLUSION

Detailed feedback should be provided when budgets are modified to ensure that activities are aware of funding priorities and to preserve budget discipline. The Navy has provided its installations the greatest degree of feedback on funding differences; the other services provide varying amounts of feedback in lesser detail.

#### RECOMMENDATION TO THE SECRETARY OF DEFENSE

We recommend that the Secretary of Defense direct each service not already doing so to provide feedback to each installation showing a detailed listing of changes to its initial budget request, suggested fund distribution, and reasons for funding differences (broken down by the nine standard budget line items).

## CHAPTER 4

### DOD EXERCISES VARIOUS CONTROLS

#### ON USE OF O&M APPROPRIATIONS

The laws creating the family housing management account appropriate the funds as a lump sum entitled "operation, maintenance" to permit maximum management flexibility. The only restriction the Congress imposes is a minimum funding level for maintenance. DOD also attempts to comply with congressional intent as expressed in the hearings and committee reports related to the appropriations act. DOD utilizes the flexibility provided it under the authorizing legislation by redistributing O&M funds to meet changing program needs. This flexibility to redistribute, however, extends only to the limits imposed by law and by DOD's voluntary adoption of controls to meet congressional intent.

#### LUMP SUM APPROPRIATION PROVIDES FLEXIBILITY

Although the overall DOD family housing budget request to the Congress is justified using the detailed subaccounts (management, services, utilities, etc.) (see p. 47), the appropriation for "family housing, Defense" is a lump sum figure entitled "operation, maintenance."

Prior to fiscal year 1979, no restrictions were placed on the lump sum appropriation. However, in fiscal year 1979 the Congress became concerned that funds budgeted for maintenance were not emphasized by DOD and were also subject to reprogramming. To ensure that approved amounts were spent for maintenance, the 1979 and 1980 Military Construction Appropriation Acts set a minimum funding level for maintenance of real property. In addition to setting a minimum, or floor, for maintenance, the 1981 act prohibited the use of family housing funds for payments of real property taxes in any foreign nation.

#### OSD USES CONGRESSIONAL RESTRICTIONS AND INTENT TO ESTABLISH FUNDING ALLOCATIONS FOR THE SERVICES

OSD complies with restrictions placed on funding in the appropriations law by imposing similar restrictions on the services. In addition, through its budgetary and apportioning processes, OSD tries to conform with congressional intent as expressed in the hearings and reports related to the appropriations act.

OSD establishes limitations to meet congressional restrictions

OSD divides the lump sum appropriation from the Congress into a total for operations and maintenance for each of the four services, which is transmitted in obligating authority documents. Each service's obligating authority document spells out its authority for each quarter in two figures--one each for operations and maintenance.

In addition to detailing the quarterly apportionment of funds, the obligating authority document specifies the maintenance floor for each service. In fiscal years 1979 and 1980, the Congress set the maintenance floor approximately 3 percent and 11 percent, respectively, below the amount recommended for maintenance. This action allowed OSD flexibility to move funds, within the limits of the maintenance floor, from maintenance to operations. In fiscal year 1981, however, the Congress set the maintenance floor at the amount recommended for maintenance. The following chart illustrates OSD's lack of flexibility in fiscal year 1981.

<u>Fiscal year</u>	<u>Military family housing maintenance funding recommended by the Congress (note a)</u>	<u>Military family housing maintenance floor set in appropriation legislation</u>
1979	\$656,832,000	\$635,000,000
1980	716,216,000	645,000,000
1981	811,711,000	811,711,000

a/This amount is noted in the House Appropriations Committee and conference reports. DOD is not required to fund maintenance at this level.

OSD must get congressional approval to spend less than the floor for maintenance.

OSD considers congressional intent in budgeting and apportioning funds

While OSD is bound only by the restrictions spelled out in the appropriations act, OSD officials told us that they are aware of and try to abide by congressional intent as expressed in the hearings and the reports relating to the appropriations act.

OSD officials told us they consider congressional intent when preparing future budget guidance. For example, this year's guidance instructed each service to consider (1) the issue of replacement costs versus the high maintenance costs for uneconomic units and (2) providing more housing for series E-2 to E-4 personnel.

In addition, OSD reviews the services' budget submissions to ensure conformity with congressional concerns. For example, one year the Army budgeted an increase for its housing management staff when the previous year the House Appropriations Committee expressed concern over the management staff's large size. OSD considered the request imprudent in light of the committee's previous comments and cut the request.

OSD also considers congressional intent by placing specific funding restrictions in the services' obligating authority documents. The fiscal year 1979 obligating authority documents showed a limitation on what each service could spend for the procurement, repair, moving, and handling of furnishings. The fiscal year 1980 documents showed a limitation on leasing and furnishings. The 1981 documents show only that funds may not be moved from maintenance to operations which reflects the congressional action making the maintenance floor and the budget request equal.

#### SERVICES ALLOCATE AND CONTROL FUNDS DIFFERENTLY

The services impose their own more detailed restrictions on the use of the family housing O&M funds OSD apportions them. These vary according to the services' family housing management philosophies.

#### Headquarters level

For the fiscal year 1981 appropriation, the service headquarters' family housing organizations apportioned their O&M funds differently. The only similarity is that all apportioned the funds by fiscal year quarters.

The Air Force and Army funded their intermediate commands for (1) operations and (2) maintenance. In addition, they specified a maintenance floor and imposed other restrictions in response to congressional intent expressed in hearings or OSD direction. For example, in fiscal year 1981, a limit was imposed on funds for furnishings.

The Navy apportioned family housing O&M funds to their intermediate commands for (1) operations, (2) maintenance, and

(3) management. Management was separated from the operations account in response to congressional concern over the cost of Navy management. The Navy authorized its intermediate commands to transfer funds out of operations or management into maintenance and out of management into operations. However, only headquarters can approve adding funds to management. The Navy also specifies a maintenance floor to each intermediate command.

In addition, Navy headquarters provides its intermediate commands an information document showing how they feel funds should be distributed among subaccounts. This is suggested guidance rather than a restriction.

Of all the services, the Marine Corps headquarters provides the strictest controls over its family housing O&M funds. It apportions funding directly to its 17 installations by the following accounts:

1. operations 1/
2. furnishings
3. housing referral
4. utilities
5. recurring maintenance and repair
6. major repair and maintenance projects
7. minor construction and alterations

The services' headquarters withhold (delay) distribution of some funds to the next lower level as another control over funds. Funds withheld are apportioned to the intermediate commands throughout the year for unexpected increases in expenses and for emergencies, and to redistribute funds after the midyear review. All funds withheld are distributed to the intermediate commands by the end of the fiscal year; however, the funds are not necessarily distributed as initially planned.

In addition, Marine Corps headquarters directly manages funds for certain functions rather than allocating the funds to the installations. It distributes funds for major repair projects, minor construction, and a portion of furnishings to each installation on a case-by-case basis, reserving the right to prioritize. The other services manage their major repair projects funding similarly, but have delegated control to the intermediate commands. However, service headquarters have

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1/This is the same operations account the other services use minus leasing, furnishings, housing referral, and utilities.

already initially approved or disapproved projects for funding. This control is to assure that funds are not lost because obligations cannot be made during a fiscal year.

All the service headquarters monitor intermediate commands' use of funds (by installations in the case of the Marine Corps) through a review of monthly Status of Funds Authorization reports which show authorizations, obligations, commitments, and disbursements for the categories by which they allocate funds. In addition, they can review quarterly housing cost reports by the nine subaccounts used in the budget submissions. However, it includes current and prior fiscal years' funds, so it cannot be compared to that fiscal years' budget without adjustments.

#### Intermediate command level

The intermediate commands generally apportion funds to the installations as they were apportioned to them. The Navy's intermediate commands also provide each installation suggested guidance on how the funds might be used, by distributing the total apportioned funds among the subaccounts (e.g., gas, oil, electricity, water, and sewage treatment for utilities). The guidance provided compares these figures to the amounts requested in each installation's budget.

We found that three of the seven intermediate commands visited had withheld some fiscal year 1981 installation funds for later distribution to cover unknown future needs. Also, five of the seven withheld funds for major repair projects to more closely manage these. In addition, one Navy intermediate command withheld funds for furnishings and exterior painting.

The intermediate commands monitor and control funds use mainly through the midyear and end-of-year review processes. Funds required for the remainder of the fiscal year are identified and redistributed among the installations under their command. In addition, managers monitor monthly and quarterly reports showing funds authorized, obligated, committed, and expended.

#### Installation level

Within funding restrictions, installations can move funds between subaccounts. For example, Marine Corps installations are not permitted to move funds from furnishings to utilities; however, other services' installations have this authority. Most housing managers at

the installations we visited monitored funds on a day-to-day basis by comparing obligations and expenditures from accounting records to authorizations.

DOD CONTROLS FUNDS  
REDISTRIBUTIONS AT  
DIFFERENT LEVELS

In accordance with the flexibility provided in the appropriations act, funds are constantly shifted between budget subaccounts within the same budget account (e.g., from furnishings to utilities; both are within the same budget account--operations) in response to changing requirements. To a lesser extent, funds are also transferred between budget accounts (e.g., from operations to maintenance). For example, after analyzing reports such as the Status of Funds Authorization reports and the quarterly housing cost reports, installations, intermediate commands, or services may need to redistribute funds to meet changing or unanticipated needs.

The controls on fund redistributions correspond to the controls established by OSD and the services on initial allocations. The restrictions which apply to the initial allocation, such as the maintenance floor or ceilings on furnishing and leasing, also limit the extent funds can be redistributed into or out of the accounts and subaccounts.

The authority to shift funds between budget subaccounts has generally been delegated to the installations, whereas shifting between budget accounts must be approved by an intermediate command or headquarters. For the most part, these alternatives enable an activity to obtain additional "new" funding--both through a redistribution of funds from other activities at all levels or from a supplemental appropriation.

Installation level

Army, Air Force, and Navy installations are permitted to move funds from one budget subaccount to another, within the same account, without prior approval in order to meet changing requirements (e.g., increased costs or program modifications). Marine Corps installations are permitted to move funds only from their operating services subaccount to their recurring maintenance and repair subaccount. If merely shifting between budget subaccounts will not "free" the necessary funds, installations can request permission from the intermediate command to shift funds between budget accounts. An intermediate command may, however, be reluctant to authorize such shifts until near the end of the fiscal year because of the restrictions

discussed earlier. If the installation's requirements are severe, it may submit a special request for additional funds. If the installation is successful in obtaining the additional funding, it probably will not know the source of the funds.

When unpredictable events arise, installations are expected to meet the additional expenses with the funding they have already been authorized. To the extent necessary, they will use the procedures just discussed to "free up" or obtain additional funding. We did not find any installation budgeting expressly for disasters or future unknowns.

Midyear budget reviews are conducted with varying emphasis at the different services' installations. U.S. Army Support Command, for example, no longer holds a formal midyear review, but rather sends a message to headquarters requesting additional funds. Navy installations conduct in-house reviews and report to their intermediate commands any excess funding they have or justify requests for additional funding. Marine Corps installations, however, prepare formal midyear review packages evaluating funds authorized for the fiscal year against the estimated funding needs and submit the reviews to their commands. All unfunded requirements are prioritized and justified in a brief narrative. Air Force installations prepare a midyear review and submit it to their commands.

In addition, towards the end of the fiscal year, funds are monitored more closely to ensure that all available funds are identified for redistribution to intermediate commands and installations where they are most needed.

#### Intermediate command

All intermediate commands are authorized to give their installations permission to transfer money from one budget account to another, subject to the restrictions discussed earlier. They may also redistribute funds from one installation to another--particularly in the case of major repair and replacement projects. If the installation requests additional funds, the intermediate command might be able to reapportion funds. If redistribution is not sufficient, the intermediate command forwards a request to the headquarters level. This procedure can occur at any time during the year, but is conducted formally at the midyear review.

Contingency funds, per se, are not established at the intermediate commands; therefore, for intermediate commands to send additional funds to an installation, they must either redistribute available funds or make a request for supplemental funding.



## Headquarters level

The service headquarters can redistribute funds among the intermediate commands within the limits described earlier.

Prior to fiscal year 1981, all four services withheld the difference between the total maintenance funded and the maintenance floor, from the funds allocated to the intermediate commands to use for unexpected emergencies. These funds were distributed as needed or based on the results of the midyear review. The commands were notified of changes (either plus or minus) through amendments to their total obligating authority documents. However, in fiscal year 1981, it will not be possible to withhold this emergency fund. Expenditures and obligations will have to be monitored very closely to ensure proper distribution of funds to each command.

Each service headquarters conducts a midyear review to obtain more detailed information on the past and projected funds use for the fiscal year. The process takes about 2 months and results in redistribution of funds among the commands.

If the services' funding needs cannot be met, they must go through OSD with a request for additional funds. OSD can redistribute funds among the services or go to the Congress with a supplemental request. Supplemental requests can be initiated by either the services or OSD. The same request procedures are used as discussed for budgeting. Both OSD and the services are already working on a supplemental request for fiscal year 1981.

Because funds received from a supplemental request or a redistribution among the services are shown only in total on the obligating authority documents, the services are unsure of the exact source of funds. The obligating authority documents are not footnoted to indicate the source of additional funds.

## CONCLUSIONS

DOD's system for managing family housing O&M appropriations incorporates restrictions placed on the funds by the appropriations act. In the past, these restrictions have been few. The system also gives DOD flexibility to manage the O&M funds, as established in the family housing management account's authorizing legislation. This management flexibility allows DOD to redistribute funds to

meet changing program needs. However, DOD has controls on its flexibility: restrictions imposed by law, such as appropriation legislation; and voluntary controls adopted to meet congressional intent.

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