United States General Accounting Office

GAO

Testimony

Before the Subcommittee on Readiness and Management Support, Committee on Armed Services, U.S. Senate

For Release on Delivery
Expected at
2:30 p.m., EDT
Tuesday,
October 26, 1999

MILITARY REAL PROPERTY MAINTENANCE

Improvements Are Needed to Ensure That Critical Mission Facilities Are Adequately Maintained

Statement of Kwai-Cheung Chan, Director, Special Studies and Evaluations, National Security and International Affairs Division

GAO
Accountability * Integrity * Reliability

GAO/T-NSIAD-00-51

Mr. Chairman and Members of the Subcommittee:

I am pleased to be here today to share the results of our examination of the management of real property assets by the Department of Defense (DOD) and the military services. The military services are collectively responsible for maintaining more real property than any other entity in the world—more than 320,000 buildings (with about 2.1 billion square feet), tens of thousands of miles of roads, and 1.1 million square yards of pavement (like runways). The replacement value of this property is more than $500 billion. Real property facilities maintained by the services include barracks, administrative space, classrooms, ports, hangars and runways, roads and railroads, day care centers, schools and churches, and utility structures and systems. The annual maintenance and repair budget for these facilities has averaged about $5 billion for each of the past 4 years (fiscal years 1996-99). Separate accounts fund maintenance and repair of family housing, many industrial-related and military medical facilities.

As you know, DOD's management of its properties has been of long-standing concern to the Congress. At your request, we reviewed DOD's maintenance of its real property. We focused on the properties that the services maintain and repair using funds from DOD's operation and maintenance account. Real property maintenance includes daily maintenance, small repairs, and minor construction. My testimony today is based on our September 1999 report to you on this subject.[1] I will discuss (1) whether DOD has a comprehensive strategy to address its real property maintenance needs; (2) how the services determine and prioritize maintenance needs and allocate resources to them; (3) promising practices in facilities maintenance by non-military entities that we identified; (4) some barriers that the services face in implementing such practices; and (5) our recommendations on how DOD could improve management of its real property maintenance to ensure that the military's assets are maintained adequately and cost-effectively.

To meet our objectives, we sent questionnaires to 571 military bases and major commands worldwide; 93 percent of them responded. We visited 35 bases and commands nationwide to interview experts and DOD maintenance and repair personnel. Our work was conducted from May 1997 through March 1999.

[1]See *Military Infrastructure: Real Property Management Needs Improvement* (GAO/NSIAD-99-100, Sept. 7, 1999).

Results in Brief

DOD does not have a comprehensive strategy for managing its maintenance and repair needs. Although DOD planned to pay for development of an overall real property maintenance plan in fiscal year 1999, it shifted these funds to other priorities in early 1999. Similarly, although DOD instructed the services in 1997 to provide sufficient funding by 2003 to meet three-fourths of their estimated real property maintenance needs, DOD eliminated this goal in 1999, leaving it up to the services to decide how much to budget for maintenance.

In the absence of a comprehensive DOD strategy, each service sets its own standards for maintaining its property, using different methods to assess property conditions, prioritize repairs, and allocate funds for maintenance and repairs. As a result, a barracks rated "satisfactory" by one service could be rated as "unsatisfactory" by another. Also, bases and major commands within services apply their own rating criteria inconsistently, according to responses to our questionnaire. Finally, the services have different maintenance funding goals through 2005 and plan to fund repairs below the levels required to keep most facilities at current conditions. Therefore, the backlog of repairs, some rated "critical," will increase. The amount varies by service.

We found a number of promising practices in the maintenance area among nonmilitary entities, such as (1) using a single system for counting the number and type of facilities; (2) having a single, engineering-based system for assessing facility conditions, carried out by adequately trained personnel; and (3) prioritizing budget allocations based on common criteria across all facilities, including physical condition, relevance of facilities to the mission, and life-cycle costing and budgeting.

None of the military services has implemented all the promising practices. Adoption of these practices is hampered by several barriers, including (1) the use of real property maintenance funds for other operations and maintenance purposes; (2) differing standards among the services for the square footage allotted to the same types of facilities (e.g., the number of square feet per administrative worker), making it difficult to control maintenance costs; (3) the use of multiple budget accounts to pay for real property maintenance, which makes it difficult to determine the total cost of maintaining facilities; and (4) incomplete and non-comparable maintenance and repair data, and different criteria for prioritizing repairs, which prevent meaningful comparison by DOD and the Congress of the urgency of the services' requests for funding repairs.

Because the services do not have accurate or consistent data, the Congress does not know if it is funding maintenance and repairs that will provide the best return on its investment. To improve management of military real property maintenance, our September 1999 report recommended that the Secretary of Defense provide funding for a comprehensive strategic real property maintenance plan, and develop a cross-service integrated strategy, in close coordination and consultation with the heads of facilities infrastructure of each service, to comprehensively address real property maintenance issues.

Background

Congressional concerns about DOD's and the services' management of real property maintenance are long-standing, going back to the 1950s. In the past decade, these concerns have focused in part on the services' reported repair backlog, which increased 64 percent from 1992 through 1998, despite the Congress' net addition of more than $800 million to the services' maintenance accounts during this period to try to eliminate it. In addition, to address maintenance issues comprehensively, the Congress provided DOD $50 million in 1992 to pilot test a common facility condition assessment system. The system was to use common standards in order to provide DOD with a single set of measures by which to compare the maintenance needs of all service facilities, and to then allocate resources on the basis of those needs. It was tested at 10 military installations from July 1994 through April 1995. However, the services rejected the system, citing the estimated cost of implementing it. Currently, each service independently assesses facility conditions annually and estimates the costs of required maintenance repairs.

DOD Does Not Have a Comprehensive Maintenance Strategy

DOD does not have a comprehensive management strategy for maintaining the services' real property. The 1999 DOD planning guidance does not specify any funding level or goals for the maintenance of property, other than stating that the services are to fund maintenance at a level they consider adequate to execute missions. In contrast, in 1996, DOD had directed the services to provide sufficient funding to reverse the deterioration of facilities, and to improve their effectiveness. In 1997, DOD somewhat reduced that goal, by calling on the services to fund just three-fourths of their individually determined maintenance requirements by 2003. However, the 1999 guidance has none of the 1996 or 1997 language. DOD told us that this was a retreat from the earlier language, leaving it up to individual commanders to decide what is adequate.

Along these same lines, although DOD had funded development of a strategic maintenance plan in its fiscal year 1999 budget, it shifted the funding to other priorities in early 1999.

Services Use Different Rating Systems and Apply Them Inconsistently

DOD does not have common criteria by which the services are to rate the condition of their facilities, prioritize repair needs, or allocate resources. Instead, each service has its own criteria for assessing the condition of its properties and the urgency of repairs, prioritizing maintenance needs, and deciding how much to allocate for maintenance, thus making it difficult for DOD or the Congress to prioritize requests for maintenance funding among the services. As a result of the differences among the services' systems, a facility rated as "satisfactory" by one service could be rated as "unsatisfactory" by another. For example, the Air Force system rates urgency of repairs in terms of impact on mission; 73 percent of Air Force bases said that mission impact was the most important factor in assigning a worst rating. In contrast, the Army's system rates facility conditions and quantity, and only 29 percent of Army bases said mission impact was the most important factor in assigning a worst rating to a building. These different systems make it difficult for DOD or the Congress to compare the urgency of needed repairs among the services.

The services use the following contrasting systems:

- The Army rates facility condition and quantity at three levels, from worst (red), to fair (amber), to best (green).
- The Air Force rates facilities' deficiencies with regard to their estimated impact on four mission areas, at three levels (critical, degraded, and minimal).
- The Navy uses an engineering-based assessment to determine facilities' deficiencies; data are then used to rate the deficiencies' impact on eight mission areas at four levels, from C1 (has fully met demands) to C4 (has not met vital demands).
- The Marine Corps uses a system similar to the Navy's, but uses 26 rather than 28 mission areas.

In response to our survey, bases within the same service—and among the services—showed varying degrees of consensus in the ways they ranked reasons why facilities received a "worst" rating. For example, 29 percent of the Army bases reported "conditions severely impede mission" as a most important reason for assigning a "worst" rating while 62 percent ranked this factor as of moderate importance. Similarly, 39 percent of Air Force

bases rated "severe physical deficiency" as a most important factor, while 58 percent rated it as of "moderate importance."

In addition, bases lack procedures to ensure that assessments of facility conditions are valid and reliable, that is, that they actually reflect the facilities' physical conditions. Fifty-five percent indicated that they had no formal standardized procedures to determine the reliability of inspectors' ratings.

Service Funding Plans May Lead to Increase in Backlogged Repairs

The total reported backlog of needed repairs increased from $8.9 to $14.6 billion (64 percent in nominal terms) from 1992 through 1998.[2] However, the services rate the urgency of their backlogs differently and, in the absence of a single rating system, it is not possible to determine the validity of the services' assessment of the criticality of repairs, or to prioritize spending among them.[3] The Air Force has three levels of urgency for backlog (critical, degraded, minimal) and defines critical as indicating "a significant loss of installation mission capability and frequent mission interruptions." The Navy has two levels of urgency (critical and deferrable), reports only the critical amount officially, and defines critical as those repairs warranting fixing within 12 months. The Marine Corps reports all identified deficiencies as backlog, and does not divide them into categories. The Army no longer officially reports a backlog figure—reflecting its own doubts about the validity of the estimates. Rather, it calculates how much is required to sustain facilities at their existing levels plus the cost of renovations.

Further increases in the services' backlogs are projected to occur, given the services' plans to fund maintenance and repair below identified needs over the next several years, as follows:

- The Air Force plans to spend no money at all on repair projects until fiscal year 2003 (while providing an amount equal to 1 percent of total facility replacement value at each base for what it terms preventive

[2]A contributing cause may be, as we reported in 1997, that total real property maintenance spending decreased 38 percent during fiscal years 1987-96, while the services reduced the square footage they maintained only about 10 percent during the same period.

[3]The Air Force reported a total of $7.4 billion in needed repairs for fiscal year 1998, of which $355 million was rated critical. The Navy reported a total of $6.1 billion in backlog, of which $2.87 billion was rated critical.

maintenance, such as painting, and for emergency minor repairs). Although repair spending resumes in 2003, the Air Force estimates that under this plan only 40 percent of critical or degraded repairs will be addressed by 2005.

- The Navy reported that its critical backlog will increase about 10 percent (from about $2.5 billion to about $2.75 billion in fiscal year 2003) under its current funding plan. The Navy's plan will nearly eliminate the critical backlog in barracks but will reduce it less in some others, such as administrative offices and storage. The plan provides no funding to address the non-critical backlog.
- The Marine Corps estimates that from fiscal year 1999 through fiscal year 2005, its backlog will increase 60 percent in dollar value.
- The Army plans to increase maintenance spending from 64 percent of its minimum annual sustainment requirement to about 84 percent of the requirement by 2005. However, this latter goal was reduced from 91 percent in early 1999, and neither spending level provides enough to maintain all facilities at existing conditions.

The services' future maintenance spending plans reflect the services' long-standing practice of funding maintenance at levels below identified requirements. The major commands do not request the amount actually needed to accomplish required maintenance and repairs because they believe that their headquarters will not fund maintenance at that level. We found little relationship between the services' identified maintenance and repair needs and the funds requested to address those needs. Bases reported to us on the survey we sent them that they received 16.2 percent of known maintenance needs from their commands in fiscal year 1997 ($3.8 billion of $23.5 billion). Army bases reported that they received funding equal to 15.4 percent of their needs; Air Force bases received 18.3 percent; Navy bases, 14.2 percent; and Marine Corps, 28 percent.

According to headquarters facility management officials of each service, funding maintenance is not their service's first priority. The major commands and bases understand this and have acted accordingly—as reflected in the data reported to us by the commands and the bases. For example, base officials said that in their view service headquarters do not adequately consider maintenance and repair needs identified during the assessment process in making decisions about budget and allocation of resources. In light of the lack of connection between the assessments, requests, and actual subsequent funding allocations, some base officials questioned the wisdom of expending resources on annual assessments of maintenance and repair needs.

Although each service funds maintenance at levels well below estimated needs, the lack of consistency in rating repair needs across and within the services makes it difficult to determine how urgent these needs truly are. Therefore, simply providing additional funding will not ensure that the most important deficiencies are funded first, or that buildings with repair needs exceeding a large percentage of their replacement value should not be demolished instead (saving money in the long run). In the absence of a common rating system, neither the Office of the Secretary of Defense nor the services can meaningfully prioritize the services' maintenance and repair funding requests. Nor can they be assured that if more funds were provided that they would be targeted to those facilities that are both needed to carry out critical missions and in greatest need of repair.

Promising Practices in Facilities Management

In interviews with non-military entities and maintenance experts, we were told of a number of promising practices in the repair and maintenance area, including

- using a single system for counting the number and type of facilities;
- having a single, engineering-based system for assessing facility conditions by adequately trained personnel;
- prioritizing budget allocations based on physical condition, relevance of facilities to the mission, and life-cycle costing and budgeting;[4]
- using a single property maintenance budget that is controlled by a central office with the power to shift resources to facilities in the greatest need;
- creating incentives to demolish or vacate excess space;
- restricting the use of maintenance funds to maintenance purposes; and
- allowing maintenance management offices to charge tenant entities an annual maintenance fee, based on square feet used, to ensure adequate funding for facilities and to create an incentive for space conservation.

Two nonmilitary organizations—the Capital Needs Analysis Center of the Church of Latter-day Saints at Brigham Young University and Lawrence Livermore National Laboratory—have facility management systems that collectively use all of these practices. Both report these practices enable

[4]Life-cycle facility management is a methodology aimed at maximizing cost-effectiveness. As described by the National Research Council, building "service life can be optimized through adequate and timely maintenance and repairs." National Research Council, Stewardship of Federal Facilities (Washington D.C.: National Academy Press, Oct. 1998), p. 12.

them to: maintain needed facilities at agreed upon standard levels; stabilize repair backlogs (but requiring supplemental funding to fix existing backlog); and accurately predict future maintenance needs, satisfy customers that maintenance funds are allocated fairly and based on actual need, and prepare credible budget requests. Similarly, a military organization—the U.S. Army Health Facility Planning Agency—is implementing a life-cycle investment strategy that it expects to reduce major repair costs by 50 percent and cut programming time from years to months.

Obstacles to Effective Implementation by the Services of Promising Practices

None of the military services have implemented all the promising practices identified to us by the non-military organizations. Adoption of these practices is hampered by several barriers. First, DOD lacks basic data that would permit it to compare how much the services spend per square foot on barracks or other common buildings, such as administrative offices, classrooms, and warehouses. While the Army annually collects per square foot spending data for more than 100 types of structures, we did not find comparable data collected by the other services.

Second, repair and maintenance funds are frequently used for other purposes, such as unfunded emergency military overseas operations, reducing the amount available for maintenance, as well as creating budgeting and contracting instability. Third, multiple accounts are used to pay for maintenance and repair; the Army pays for maintenance from 27 different accounts; and the Center for Naval Analyses found that the Navy had 110 different accounts for maintenance use in 1995. As a result of these multiple accounts, funding for real property maintenance is fragmented, creating problems in determining how much is actually being spent.

Fourth, the services have different coding schemes to record the number and type of their facilities; as a result, this information is not comparable across the services. Without valid, reliable data, DOD and the services cannot adequately evaluate the cost-effectiveness of real property management or even know how much is being spent on maintenance and repair.

Fifth, there are no per square foot space standards among the services to determine whether a service is using much more space per worker than other services for similar functions. Common standards are useful in managing space utilization and controlling costs, since less space use

reduces maintenance needs. For example, the Army allocates 162 square feet per administrative worker; the Navy and the Marines allocate 110 to 150 square feet, depending on grade level. Although some facilities will always be service-unique (e.g., nuclear submarine repair facilities; intercontinental ballistic missile silos), many (such as barracks, standard classrooms, administrative space, and family housing) are common across the services. The Army uses its standards to determine whether more space than required per worker is being used at bases, to help set maintenance budgets.

In addition, we found the services management of repair and maintenance to be hindered by

- legal and administrative restrictions of the National Historic Preservation Act and the McKinney Act[5] that, while having distinct purposes, may hamper the services' ability to cost-effectively address maintenance issues and
- insufficient training of personnel involved in assessing facility conditions, potentially resulting in inconsistent and unreliable determinations of repair requirements.

Recommendations

On the basis of our review, we recommended in our September 1999 report that the Secretary of Defense improve DOD's management of repair and maintenance activities. Specifically, we recommended that DOD fund development of a DOD strategic maintenance plan, as had been originally provided in 1999. We also recommended that DOD develop a cross-service integrated strategy, in close coordination and consultation with the heads of facilities of each service, to comprehensively address repair and maintenance issues. The strategy should provide, at a minimum, for

- uniform standards that set the minimum condition in which military facilities are to be maintained and standardized condition assessment criteria;

[5]The National Historic Preservation Act (16 U.S.C. §470h-2) governs the preservation of historic buildings and can prevent the services from demolishing a historic building. The McKinney Act (16 U.S.C. §1141) requires DOD to work with the Department of Housing and Urban Development to determine whether unused or underused facilities scheduled to be demolished are suitable for use by the homeless.

- standard criteria by which the services are to allocate space for different types of facilities (e.g., barracks, classrooms, administrative buildings) and against which maintenance funding allocations will be measured;
- standard criteria for counting the number and type of facilities;
- computerized, on-line inventory and cost databases that permit meaningful comparisons, across and within the services, of repair and maintenance spending by type, size, and location of facility and repair and maintenance activity, including direct data access by DOD headquarters;
- standard cost accounting methods by which the services will record and track their maintenance expenditures so that they and DOD know how much is being spent, where it is being spent, and on what type of facility or repair activity it is being spent on, by common metric;
- the identification of priorities for the services to use to explicitly link needs assessments with resource allocations and tracking systems that show whether or not identified high priority needs are allocated the funds intended for them by the Congress;
- mandated training standards (curriculum and hours) for all those involved in condition assessment and ratings of repair urgency; and
- a comprehensive, valid, engineering-based assessment system that incorporates life-cycle planning into facilities maintenance based on the well-developed methods already used by nonmilitary entities.

In addition, we noted that the Department's repair and maintenance strategy needs to deal with the issue of funding instability, particularly the migration of maintenance funds to non-maintenance uses. In this regard, we suggested that the Department consider the feasibility of adopting the promising practices used by some non-military organizations. To the extent that adoption of any of these practices would require changes to existing law, we recommended that the Department develop a legislative proposal for submission to the Congress.

DOD stated that overall, our report provides a good review of the Department's real property maintenance program. DOD agreed with most of our recommendations but stated we did not give adequate credit to the services for their work in better defining real property maintenance requirements and allocating funding. DOD disagreed with the need to establish standard cost accounting methods because it would impose too great a level of detail and to develop mandated training standards for personnel involved in real property maintenance assessments because DOD is not certain such training is needed. Finally, DOD disagreed with our recommendation to restrict the use of maintenance funds to maintenance

purposes, stating that it would excessively curtail the flexibility of commanders. We continue to believe these measures are needed to provide DOD with adequate oversight and consistency in identifying and prioritizing real property maintenance and repairs, as well as to assure that funds allocated for maintenance are used as intended by the Congress.

Mr. Chairman, this concludes my statement. I will be happy to answer any questions you may have.

Contacts and Acknowledgments

For future contacts regarding this testimony, please contact Kwai-Cheung Chan at (202) 512-3092. Individuals making key contributions to this testimony included Dr. Jonathan R. Tumin and Dr. Sushil K. Sharma.

Ordering Information

The first copy of each GAO report and testimony is free. Additional copies are $2 each. Orders should be sent to the following address, accompanied by a check or money order made out to the Superintendent of Documents, when necessary, VISA and MasterCard credit cards are accepted, also.

Orders for 100 or more copies to be mailed to a single address are discounted 25 percent.

Orders by mail:

U.S. General Accounting Office
P.O. Box 37050
Washington, DC 20013

or visit:

Room 1100
700 4th St. NW (corner of 4th and G Sts. NW)
U.S. General Accounting Office
Washington, DC

Orders may also be placed by calling (202) 512-6000
or by using fax number (202) 512-6061, or TDD (202) 512-2537.

Each day, GAO issues a list of newly available reports and testimony. To receive facsimile copies of the daily list or any list from the past 30 days, please call (202) 512-6000 using a touchtone phone. A recorded menu will provide information on how to obtain these lists.

For information on how to access GAO reports on the INTERNET, send an e-mail message with "info" in the body to:

info@www.gao.gov

or visit GAO's World Wide Web Home Page at:

http://www.gao.gov

PRINTED ON RECYCLED PAPER

United States
General Accounting Office
Washington, D.C. 20548-0001

Official Business
Penalty for Private Use $300

Address Correction Requested

Bulk Mail
Postage & Fees Paid
GAO
Permit No. GI00