

June 2003

MILITARY HOUSING

Opportunities That Should Be Explored to Improve Housing and Reduce Costs for Unmarried Junior Servicemembers



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Highlights

Highlights of [GAO-03-602](#), a report to the Secretary of Defense

Why GAO Did This Study

Each year, the Department of Defense (DOD) spends billions of dollars to house unmarried junior enlisted servicemembers, primarily in military barracks. Over the next several years, the Army, Navy, and Air Force plan to spend about \$6 billion to eliminate barracks with multi-person bathroom facilities and provide private sleeping rooms for all permanent party members. Given the cost of the program, GAO looked at (1) the status of efforts to examine the potential for private sector financing, ownership, operation, and maintenance of military barracks; (2) the opportunity to reduce the construction costs of barracks through widespread use of residential construction practices; and (3) whether opportunities exist to make better use of existing barracks.

What GAO Recommends

GAO recommends that the Secretary of Defense promote a coordinated, focused effort to determine the feasibility and cost effectiveness of barracks privatization. GAO also recommends that DOD undertake engineering studies to resolve questions about the use of residential construction practices, issue guidance to direct the maximum use of required existing barracks space, and identify and eliminate any barracks space determined to be excess.

In commenting on a draft of this report, DOD generally agreed with the recommendations.
www.gao.gov/cgi-bin/getrpt?GAO-03-602.

To view the full report, including the scope and methodology, click on the link above. For more information, contact Barry W. Holman at (202) 512-5581 or holmanb@gao.gov.

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What GAO Found

GAO found three areas where DOD could potentially reduce costs in its unmarried servicemember housing program:

- DOD and the services have not determined whether “privatization,” or private sector financing, ownership, operation, and maintenance of military barracks is feasible and cost-effective. Barracks privatization involves a number of unique challenges ranging from the funding of privatization contracts to the location of privatized barracks. Recently, each service has independently given increased attention to developing privatization proposals. A collaborative, rather than independent, approach could minimize duplication and optimize lessons learned.
- DOD could reduce the construction costs of government-owned barracks through the widespread use of residential construction practices rather than traditional steel frame, concrete, and cement block. The Army estimated that residential type construction could reduce barracks construction costs by 23 percent or more. However, concerns about barracks durability and unanswered engineering questions have prevented widespread use of these practices.
- DOD’s full use of required existing barracks space could reduce the cost of housing allowances paid to unmarried junior members to live off base in local communities. GAO found that the services have authorized housing allowances for unmarried members to live off base even when existing barracks space was available. This occurred because of lenient barracks utilization guidance, which in some cases does not require full use of existing barracks, and possible noncompliance with guidance. The Air Force could have potentially reduced annual housing allowances by about \$20 million in fiscal year 2002 by fully using available barracks space.

New Style Barracks at Fort Eustis



Source: GAO.

Newly constructed barracks at Ft. Eustis, Va., feature private sleeping rooms and semi-private bathrooms, improving the servicemember quality of life.

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Abbreviation

DOD	Department of Defense
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United States General Accounting Office
Washington, DC 20548

June 10, 2003

The Honorable Donald H. Rumsfeld
Secretary of Defense

Dear Mr. Secretary:

Each year the Department of Defense (DOD) spends billions of dollars to house unmarried servicemembers at their permanent duty locations in the United States. Unmarried junior enlisted members are normally required to live on base in furnished living quarters commonly referred to as barracks. If barracks space is unavailable, these members can be authorized a housing allowance and live off base in local civilian communities. Because DOD views housing as a key factor affecting quality of life, the services have initiated plans to improve barracks living conditions. Over the next several years, the services plan to spend about \$6 billion to eliminate barracks with multi-person bathroom facilities, or “gang latrines,” and provide private sleeping rooms for all permanently assigned members.¹ The Navy has an additional goal to provide barracks for approximately 20,000 sailors who currently live aboard ships even when in homeport. To improve military housing faster than could be achieved if only traditional military construction funds were used, legislation was enacted in 1996 at DOD’s request to authorize private sector financing, ownership, operation, and maintenance of military housing, including barracks.² Because of the cost of the program and the importance of housing on servicemembers’ quality of life, we examined, on the basis of the Comptroller General’s authority, DOD’s housing program for unmarried members and explored whether opportunities exist to reduce costs.

¹ For reasons of unit cohesion, the Marine Corps plans to provide barracks rooms shared by two junior enlisted members.

² The National Defense Authorization Act for Fiscal Year 1996 (P.L. 104-106), Feb. 10, 1996. The “alternative authority for construction and improvement” (i.e., the military housing privatization program) provided in this legislation was to expire 5 years after the date of enactment on February 10, 2001. However, authority for the program was first extended by the National Defense Authorization Act for Fiscal Year 2001 (P.L. 106-398), Oct. 30, 2000, from February 10, 2001, to December 31, 2004. Subsequently, the authority for the program was extended by the National Defense Authorization Act for Fiscal Year 2002 (P.L. 107-107), Dec. 20, 2001, from December 31, 2004, to December 31, 2012.

Since 1998, we have issued six reports on DOD's military housing program—three about the military housing privatization initiative, one about the services' barracks design standard, one about DOD's process for determining military housing requirements, and one about the opportunity for the services to reduce future barracks construction costs and improve quality of life by allowing more unmarried members to live off base. This report examines additional opportunities for reducing unmarried enlisted servicemember housing costs and discusses (1) the status of DOD and military service efforts to examine the potential for private sector financing, ownership, operation, and maintenance of military barracks; (2) the opportunity to reduce the construction costs of government-owned barracks through widespread use of residential construction practices; and (3) whether opportunities exist to make better use of existing barracks.

Our review included interviews with DOD and service housing officials; analysis of DOD and service data; and site visits to Fort Eustis, Virginia; Fort Meade, Maryland; Naval Station Norfolk, Virginia; Langley Air Force Base, Virginia; and Marine Corps Base Quantico, Virginia. A more detailed description of our scope and methodology is included in appendix I.

Results in Brief

Although the authority for private sector financing, ownership, operation, and maintenance of military housing was initially approved in 1996, DOD and the military services have not determined the concept's feasibility and cost-effectiveness as it relates to military barracks. In contrast, DOD has actively pursued this privatization concept for its military family housing program. Compared to family housing privatization, however, barracks privatization involves unique challenges, such as the potentially higher amount of appropriated funds needed to secure a privatization contract, differences in where private developers and the military prefer barracks to be located, impacts from unit deployments, and the availability of funds for housing allowances paid to members occupying privatized barracks. While each service has separately studied barracks privatization over the years, DOD has concentrated on family housing privatization and has provided little centralized direction and focus to help overcome these challenges. Recently, each service has independently given increased attention to developing project proposals, with the Navy hoping to do so by the end of 2003. Without more coordination of activities to address the challenges associated with barracks privatization, efforts might be duplicated and potential opportunities to optimize lessons learned might be lost.

Construction costs of government-owned barracks built and operated on military installations could be significantly reduced through widespread use of residential construction practices. Traditional barracks construction practices call for commercial-type construction that includes the use of steel frame, concrete, and cement block. Similar multi-unit housing in the private sector, such as apartments, college dormitories, and extended stay hotels, normally use residential-type construction practices that include the use of wood frame construction. Compared to steel frame, concrete, and cement block construction, the Army estimated that residential type construction could reduce typical barracks construction costs by 23 percent or more. For example, at its pilot barracks project under construction at Fort Meade, Maryland, the Army estimates that using residential construction practices will cost from \$12,600 to \$31,800 less per occupant. Army analyses also indicate that a barrack's total costs over its lifetime would be less if constructed with residential practices because of its lower initial construction costs and comparable operations and maintenance costs for many building components. Although the Army and Navy have undertaken three pilot projects, barriers—including concerns about durability and unanswered questions about the ability of wood-frame barracks to meet all antiterrorism force protection requirements—have prevented widespread adoption of these cost-saving practices.

Additional DOD efforts to fully use existing government-owned barracks space could reduce the cost of housing allowances paid to unmarried junior members to live off base in local civilian communities. Our review corroborated previous reviews from Army and Air Force audit groups, which found that these services have authorized housing allowances for unmarried junior members to live off base even when existing barracks space was available. This occurred because of lenient barracks utilization guidance, which in some cases does not require full use of existing barracks, and possible noncompliance with guidance. Simultaneously paying for unused barracks spaces and housing allowances obviously wastes available resources. We estimated that the Air Force alone could have potentially prevented about \$20 million in annual housing allowances in fiscal year 2002 by fully using available barracks space. At the same time, if the services were to change their barracks occupancy requirements and permit more junior members to live off base, then the services could reduce costs by identifying and eliminating excess barracks space.

We are recommending that the Secretary of Defense promote a coordinated, focused effort to determine the feasibility and cost-effectiveness of barracks privatization by addressing the associated

challenges and facilitating the development of pilot project proposals. We also are recommending that DOD undertake engineering studies to resolve questions about the use of residential construction practices for barracks, issue guidance to direct the maximum use of required existing barracks, and identify and eliminate any barracks space determined to be in excess of needs. In comments on a draft of this report, DOD generally agreed with the report's recommendations.

Background

Under the overall direction of the Under Secretary of Defense for Acquisition, Technology and Logistics, the military services provide on-base furnished living quarters for over 200,000 unmarried enlisted servicemembers at their permanent duty locations in the United States. Commonly referred to as barracks, housing for unmarried members is often cited by DOD officials as a problem area because many military barracks are old, rundown, and otherwise do not meet contemporary DOD standards for size, privacy, and other amenities designed to enhance the quality of life of unmarried members. Junior unmarried members often share dilapidated barracks rooms with one or two other members and a gang latrine with occupants from several other rooms. Also, about 20,000 junior enlisted members assigned to Navy ships continue to live in cramped onboard quarters even when their ships are in homeport. The living conditions in barracks are far different from an apartment or townhouse with two bedrooms, living area, bath, and full kitchen that is the normal housing standard for junior enlisted married members.

The services have established specific goals and milestones for improving the housing provided to unmarried junior enlisted members. First, the services plan to eliminate permanent party barracks—i.e., barracks for servicemembers at their permanent duty locations—with common bath and shower facilities, or “gang latrines,” through barracks replacement or renovation. The Air Force already has achieved this goal and the Army, Navy, and Marine Corps plan to eliminate gang latrines by fiscal years 2008, 2007, and 2005, respectively. Second, the Army and the Navy plan to provide each junior enlisted member in the United States a private sleeping room with a kitchenette and bath shared by one other member—referred to as the 1+1 barracks design standard—by fiscal years 2010 and 2013, respectively. The Air Force, which already provides private sleeping rooms, plans to eliminate its barracks deficit and replace its worst barracks by fiscal year 2009. The Marine Corps, given a permanent waiver from the Secretary of the Navy to use a different barracks design standard, plans to provide barracks with sleeping rooms and baths shared by two junior members by fiscal year 2012. Third, the Navy plans to complete its

homeport ashore initiative by fiscal year 2008, which will provide barracks spaces for about 20,000 junior members who are currently required to live aboard their ships while in homeport. To improve barracks conditions and achieve these goals, the services plan to spend about \$6 billion over the next 6 years. Appendix II shows photographs of old and new style barracks as well as typical living conditions aboard Navy ships.

Service officials state that unmarried junior enlisted servicemembers should live in barracks to help instill service core values, provide for team building and mentoring, and meet operational requirements. However, significant differences exist among the services regarding personnel who are required to live in barracks. More specifically:

- the Army requires unmarried personnel in pay grades E1 through E6 to live in barracks,
- the Navy requires unmarried personnel in pay grades E1 through E4 with fewer than 4 years of service to live in barracks,
- the Air Force requires unmarried personnel in pay grades E1 through E4 to live in barracks, and
- the Marine Corps requires unmarried personnel in pay grades E1 through E5 to live in barracks.

The Military Housing Privatization Initiative, authorized by law on February 10, 1996, provided new authorities that, among other things, allows DOD to provide direct loans, loan guarantees, and other incentives to encourage private developers to construct and operate military family and unaccompanied housing (barracks) either on or off military installations.³ According to DOD, the initiative was aimed at solving its inadequate housing problem faster and more economically by taking advantage of the private sector's investment capital and housing construction expertise. With private-sector investment, DOD planned to obtain at least 3 dollars in military housing improvements for each dollar that the government invested, thereby reducing the amount of government funds initially required to revitalize housing and accelerating the elimination of inadequate housing. Although there can be exceptions, DOD's position is that the government's estimated total costs for a privatization project also should be equal to or less than the total costs for the same project financed by military construction funding. Servicemembers who live in privatized housing receive a housing

³ The National Defense Authorization Act for Fiscal Year 1996 (P.L. 104-106), Feb. 10, 1996.

allowance to pay for rent and utilities. In fiscal year 1997, the Congress appropriated \$5 million for the services to use to initiate privatized barracks projects. However, the Congress rescinded these funds in fiscal year 1999 because the services had developed no plans for privatized barracks.

In June 1997, DOD and the Office of Management and Budget agreed to a set of guidelines that would be used as a frame of reference for scoring privatization projects.⁴ The guidelines state that if a project provides an occupancy guarantee, then funds for the project must be available and obligated “up front” at the time the government makes the commitment of resources. In other words, if a project provides an occupancy guarantee, then the value of the guarantee—the cumulative value of the rents to be paid for the housing over the entire contract term—must be obligated at the beginning of the project. As a result, DOD officials stated that such a project might not be financially attractive because the amount of appropriated funds required would be approximately equivalent to the military construction funding that would be required to build the barracks. According to DOD officials, this issue has not been a problem for family housing privatization projects because DOD does not provide occupancy guarantees and does not mandatorily assign members to family housing. Military families can choose where to live and the project contracts

⁴ Each privatization contract that DOD enters into must be scored for budget purposes. Scoring seeks to determine the cost that should be recognized and recorded as an obligation of DOD at the time the contract is signed. The Office of Management and Budget’s Circular A-11 provides guidelines on how obligations should be recorded in the budget. The guidelines are designed to ensure that the budget records the full amount of the government’s commitments when a commitment is made.

include provisions for civilians to rent privatized housing if military families choose not to live there.⁵

Prior GAO Reports on the Military Housing Program

Since 1998, we have issued six reports on DOD's military housing program—three about the military housing privatization initiative, one about the services' barracks design standard, one about DOD's process for determining military housing requirements, and one about the differences among the services concerning who is required to live in barracks.

- In July 1998, we reported on several concerns related to the new military housing privatization program.⁶ These included (1) whether privatization would result in significant cost savings and whether the long contract terms of many projects might result in building housing that will not be needed in the future; (2) whether controls were adequate to protect the government's interests in the event developers might not operate and maintain the housing as expected; and (3) whether DOD would face certain problems if privatized housing units were not fully used by military members and were subsequently rented to civilians, as the contracts permit.
- In March 1999, we reported on the status of the services' implementation of the 1+1 barracks design standard.⁷ The report also

⁵ In February 2003, the Congressional Budget Office issued a report, *The Budgetary Treatment of Leases and Public/Private Ventures*, on budget scoring. The office concluded that (1) DOD's family housing privatization projects have been treated in the budget in a manner inconsistent with federal budgeting principles that require federal financial commitments to be recognized up front in the budget, and (2) military housing privatization projects that result in the construction of family housing on military bases should be reflected in the budget as if they were investments. This would require the up-front scoring including the value of the rental payments that will be made over the life of the project. The report also noted that the Office of Management and Budget disagrees with this view because DOD may have little, if any, equity ownership in privatized housing, DOD may not be legally liable for the projects' debts, and the rental payments are made by individual servicemembers. The report made no recommendations, stating that the report's purpose was to identify the challenges that financing federal projects through leases and public/private ventures, such as the military housing privatization program, pose for congressional control over spending as well as for the transparency of the budget and its ability to facilitate cost-effective investment decisions.

⁶ U.S. General Accounting Office, *Military Housing: Privatization Off to a Slow Start and Continued Management Attention Needed*, [GAO/NSIAD-98-178](#) (Washington, D.C.: July 17, 1998).

⁷ U.S. General Accounting Office, *Military Housing: Status of the Services' Implementation of the Current Barracks Design Standard*, [GAO/NSIAD-99-52](#) (Washington, D.C.: Mar. 24, 1999).

discussed DOD's rationale for adopting the standard, the costs of alternatives to the standard, and service views of the impact of the standard from a team-building, individual isolation, or similar perspective.

- In March 2000, we reported that initial implementation progress for the privatization program was slow, the services' life-cycle cost analyses provided inaccurate cost comparisons because DOD had not issued standardized guidance for preparing the analyses, and DOD lacked a plan for evaluating the effectiveness of the program.⁸ DOD subsequently quickened the pace of family housing privatization, issued standard guidance for privatization life-cycle cost analyses, and developed a program evaluation plan.
- In August 2001, we reported that despite earlier recommendations, DOD had not implemented a standard process for determining military housing requirements.⁹ In that report, we pointed out that the initiative to increase housing allowances heightened the urgency for a consistent process, because the initiative could lessen the demand for military housing by making housing in local communities more affordable. In January 2003, DOD approved a new standard family housing requirements determination process.
- In June 2002, we noted that by investing about \$185 million of military construction funds in the first 10 family housing privatization projects, DOD should obtain housing improvements that would have required about \$1.19 billion in military construction funds had only government funds been used.¹⁰ We also reported that privatization projects were not supported by reliable or consistent needs assessments, and the overall requirement for military housing was not well defined. Further, although DOD had included provisions in project contracts designed to protect the government's interests, our report identified several areas where DOD could further enhance protections to the government. DOD responded by outlining ongoing and planned management actions to address the concerns noted in the report.

⁸ U.S. General Accounting Office, *Military Housing: Continued Concerns in Implementing the Privatization Initiative*, [GAO/NSIAD-00-71](#) (Washington, D.C.: Mar. 30, 2000).

⁹ U.S. General Accounting Office, *Military Housing: DOD Needs to Address Long-Standing Requirements Determination Problems*, [GAO-01-889](#) (Washington, D.C.: Aug. 3, 2001).

¹⁰ U.S. General Accounting Office, *Military Housing: Management Improvements Needed As the Pace of Privatization Quickens*, [GAO-02-624](#) (Washington, D.C.: June 21, 2002).

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- In January 2003, we reported on the widely varying standards among the services regarding who should live in barracks and the effect this can have on program costs and quality of life.¹¹ We noted that requiring more personnel (more pay grades) to live in barracks than is justified results in increased barracks program and construction costs and has negative quality-of-life implications because most junior servicemembers would prefer to live off base. We noted that by allowing junior enlisted personnel already living off base with a housing allowance to continue to live off base, the Air Force could reduce planned barracks construction spending by \$420 million. Accordingly, we recommended that the rationale behind the services' barracks occupancy requirements be based, at least in part, on the results of objective, systematic analyses that consider the contemporary needs of junior servicemembers, quality-of-life issues, the services' mission requirements, and other relevant data that would help provide a basis for the services' barracks occupancy requirements. While DOD agreed in principle with our recommendation, it reiterated the importance of military judgment in such decisions and left unclear the extent to which it is likely to make changes.

DOD and the Military Services Have Not Determined the Feasibility of Barracks Privatization

While the services have considered barracks privatization over the past several years, they have not yet initiated pilot project proposals to determine the feasibility and cost-effectiveness of private sector financing, ownership, operation, and maintenance of military barracks. According to DOD officials, barracks privatization involves unique challenges compared to family housing privatization. These challenges range from the potentially higher amount of appropriated funds needed to secure a privatization contract (as a result of the services' requirement that unmarried junior members live in barracks) to the differences in where private developers and the military prefer barracks to be located. Deferring to the individual services, DOD has provided limited centralized direction and focus to help overcome the challenges associated with barracks privatization. Recently, each service has independently given increased attention to developing project proposals, with the Navy hoping to do so by the end of 2003. Still, there are unresolved issues associated with barracks privatization and, without more coordination of activities to address these issues, efforts might be duplicated and the benefits from collaboration might be lost.

¹¹ U.S. General Accounting Office, *Military Housing: Opportunity for Reducing Planned Military Construction Costs for Barracks*, [GAO-03-257R](#) (Washington, D.C.: Jan. 7, 2003).

Barracks Privatization Involves Unique Challenges Compared to Family Housing Privatization

Compared to family housing privatization, barracks privatization includes unique challenges that, thus far, have prevented the development of pilot project proposals. DOD has actively pursued privatization of military family housing and has awarded contracts to construct or improve about 26,000 family housing units by the end of fiscal year 2002 and has plans to privatize an additional 96,000 units by the beginning of fiscal year 2006. The primary problem with privatizing barracks lies in the services' mandatory assignment policy for unmarried junior enlisted servicemembers and whether this policy implies that DOD would provide private-sector housing developers with an occupancy guarantee. Mandatory assignment, if viewed as an occupancy guarantee, might make a proposed barracks privatization project financially unattractive because a higher amount of appropriated funds would be needed to secure the contract than would be needed for a similar military construction project. Other challenges are related to barracks locations, unit deployments, and funding for housing allowances.

The current policy in each service requires mandatory assignment of unmarried junior members to barracks located on base, provided that space is available. According to DOD officials, most military leaders support this policy because they believe that mandatory assignments provide for military discipline and unit integrity. Mandatory assignments, however, might result in the need for more appropriations—in comparison to military construction financing—to cover the obligations that the Office of Management and Budget determines should be recorded at contract award. This could make a proposed barracks privatization project financially unattractive. The amount of appropriations needed hinges on whether the mandatory assignment policy would provide private-sector housing developers with a DOD guarantee of occupancy.

Because there have been no barracks privatization project proposals to date, it is unclear whether the services' mandatory barracks assignment policies for junior members might be viewed as an occupancy guarantee. Office of Management and Budget officials stated that having a mandatory assignment policy alone would not necessarily guarantee that the rent paid to the developer over the life of the project would have to be scored up front. However, if the privatization contract specifically stated that mandatory assignment would occur, the officials stated that the office probably would view this as an occupancy guarantee and the project's projected rent would be scored up front.

As with family housing projects, Office of Management and Budget officials stated that the scoring of a barracks project depends on the

details and circumstances involved in a proposed project and the associated risk to the government. Key issues that might be considered include whether the project allows the private developer enough autonomy to manage the project without significant military control and whether the contract includes provisions for civilians to rent vacant barracks spaces in the event of reduced government demand. Obviously, such issues present problems for the services—specifically, the willingness of the services to relinquish their control of barracks and allow civilians to occupy vacant barracks spaces. With a specific barracks privatization proposal, the Office of Management and Budget officials stated they would work with DOD to address the associated scoring questions.

Although the potentially high amount of appropriated funds needed to secure a contract appears to be the most significant challenge to barracks privatization, there are other challenges as noted below.

- Barracks location. According to DOD officials, private developers have indicated that they would prefer that privatized barracks be located off base or along an installation's boundary and be severable from the installation. Developers would then have greater flexibility in renting the units to civilians in the event of reduced government demand. However, the services do not want barracks located off-base or near installations' perimeter fences largely for force protection reasons and, currently, most existing barracks are not located along installation boundaries.
- Deployments. In the event of unit deployments, many servicemembers would not be in the barracks and possibly entire buildings could be empty for months. As a result, the developer's normal rental income could be reduced or eliminated even though the developer would still need to pay for expenses such as mortgage payments and operations and maintenance costs. This is less of a problem in privatized family housing because family members normally continue to occupy the housing and pay rent if the servicemember deploys.
- Funding for housing allowances. Service officials stated that identifying and shifting funds to pay housing allowances to servicemembers living in privatized barracks could be an administrative problem. This is less of a problem with privatized family housing because military family housing has a separate operations and maintenance budget account. When a private developer takes over existing military family housing, funds from the family housing operations and maintenance account can be shifted to help pay for housing allowances used to pay rent for the families living in the housing. However, barracks operations and maintenance is not funded by a similar separate account. Instead,

barracks operations and maintenance funds are included in each installation's overall base operating budget. According to service officials, it is more difficult to identify, break out, and shift barracks funding to the personnel accounts to pay housing allowances for a privatized barracks project.

DOD Has Provided Limited Centralized Direction and Focus for Barracks Privatization

With its attention largely concentrated on initiating and managing privatization of military family housing, DOD has provided limited centralized direction and focus to help the services overcome the challenges associated with barracks privatization and proceed with pilot project proposals. Also, in August 1998, 2 years after the military housing privatization legislation was enacted, DOD shifted primary responsibility for implementing the privatization program to the individual services. Since that time, the services have independently studied the barracks privatization concept but have not developed actual project proposals. More recently, the services have given increased attention to exploring barracks privatization, but their efforts continue to be independent and non-coordinated. The status of barracks privatization in each service follows.

Navy and Marine Corps Efforts to Privatize Barracks

While no service has yet initiated a barracks privatization project, the Navy and the Marine Corps currently appear to be the most active among the services in examining its potential use. Navy officials stated that they believe barracks privatization offers an opportunity for the Navy to more quickly meet its barracks improvement goals, including the goal of providing barracks space for all junior sailors currently required to live on their ships even while in homeport.

In order for barracks privatization to be feasible, Navy officials believed that the Navy needed additional authorities not contained in the Military Housing Privatization Initiative legislation. Specifically, Navy officials believed that existing housing allowance rates provided more money than would be needed to develop a privatized barracks project. The housing allowance rate for unmarried junior members is targeted to cover the costs of a one-bedroom apartment in the civilian community. Yet, the barracks occupancy standard is based on a lesser standard—the modern 1+1 barracks design standard where two members share a module consisting of two small bedrooms with a kitchenette and bath. As a result, Navy officials believe the current housing allowance could provide more money than would be needed to pay rent for a similar design standard in a privatized barracks, and the rental income received by the private-sector developer would be more than is needed to finance the construction and

management of the project. To address this situation, the Bob Stump National Defense Authorization Act for Fiscal Year 2003 provided the Navy with specific legislative authority to undertake three pilot projects to privatize barracks.¹² According to Navy officials, the legislation will allow the Navy to pay occupants' allowances in the amounts needed to provide the rental income to support the privatized barracks projects and will allow junior sailors on ships to be assigned to privatized barracks.

With this authority, Navy and Marine Corps officials stated that they plan to develop specific proposals for privatization. Candidate installations for barracks privatization include the Naval Station Norfolk, Virginia; the Naval Station San Diego, California; and the Marine Corps Base Camp Pendleton, California. Although remaining challenges, such as those noted above, must be addressed, Navy officials hope that specific proposals will be developed by the end of calendar year 2003.

Air Force Efforts to Privatize Barracks

In May 1997, the Air Force issued the results of a barracks privatization feasibility study. The study concluded that privatization was feasible and recommended that the Air Force pursue development of a barracks privatization project at one base to further define the concept. However, the study, which was performed prior to issuance of the budgetary scoring guidelines for privatization projects, stated that occupancy guarantees would be provided in order to facilitate private financing. According to Air Force officials, the study recommendation was not implemented because of the costs associated with occupancy guarantees and the other challenges associated with barracks privatization.

More recently, however, the Air Force has again begun to explore the issue. In August 2002, an Air Force team was formed to establish a baseline for an Air Force barracks privatization program including the development of policy and guidance. Air Force officials also stated that Air Force major commands have been asked to identify potential privatization candidates. One potential candidate identified was Elmendorf Air Force Base, Alaska, where a family housing privatization project is already underway. However, officials stated that they do not expect any privatized barracks proposals in the near future and that they planned to monitor the Navy's progress under its pilot program.

¹² The Bob Stump National Defense Authorization Act for Fiscal Year 2003 (P.L. 107-314), Dec. 2, 2002.

Army Efforts to Privatize Barracks

Army officials stated that they have explored the concept of barracks privatization but that they have made relatively little progress toward reaching a consensus that the concept should be pursued. They also stated that they were not optimistic that the many challenges facing barracks privatization could be overcome and did not expect any project proposals in the near future. Nevertheless, the Army is continuing to review the issue. For example, in an April 2002 memorandum, the Army Assistant Secretary for Installations and Environment stated that the time was right to pursue the issue and requested the support of the Army's Training and Doctrine Command and the Army's Forces Command in formal studies of barracks privatization. At the time of our review, no studies had been completed. In addition, Fort Lewis, Washington, has a barracks privatization study underway that is expected to be completed in 2003.

Residential Construction Practices Offer Opportunities to Reduce Costs of Government-Owned Barracks

To the extent the services continue to rely on government built and operated barracks on military installations, opportunities exist to reduce costs of constructing those barracks through adoption of residential construction practices. In the past, DOD policies generally required that traditional barracks construction practices use commercial-type construction including use of steel frame, concrete, and cement block. Similar multi-unit residential housing in the private sector, such as apartments, college dormitories, and extended stay hotels, normally use residential construction practices that include the use of wood frame construction. Compared to steel frame, concrete, and cement block construction, Army analyses show that residential construction practices could reduce typical barracks construction costs by 23 percent or more. DOD policies now generally allow use of residential construction practices. However, some barriers still exist to DOD's adoption of these cost-reducing practices as a normal way of doing business, including concern about durability and unanswered questions about the ability of wood-frame barracks to meet all antiterrorism force protection requirements.

Army Analyses Show That Residential Construction Practices Cost Less

Concerned with the high construction costs of barracks built to the 1+1 design standard, the Army began to search for savings opportunities and concluded that using residential construction practices to build barracks would cost less than using traditional construction practices. In June 2000, the Army revised its barracks construction guidance to permit Army construction projects to be of any construction type. Subsequently, the Army began a pilot barracks project using residential construction practices at Fort Meade, Maryland.

Army Concern Over Barracks Costs Resulted in Search for Savings Opportunities

As the Army began building new barracks in accordance with the 1+1 barracks design standard adopted in 1995, Army officials became concerned with the high construction costs of these barracks. To explore reasons for the high costs and opportunities for savings, the Army Corps of Engineers performed a study in 1996 that compared the construction costs of three typical Army 1+1 barracks with the construction costs of a similar private sector multi-unit project—specifically a national brand, all suites, extended stay hotel. After making adjustments to account for differences in geographic location and dates of construction, the Army Corps of Engineers found significant cost differences between the projects as shown in table 1.

Table 1: Cost Comparison of Army Barracks with a Private Sector Extended Stay Hotel

Factor	Average for Army barracks	Average for private extended stay hotel	Difference	
			Amount	Percent
Construction cost per occupant	\$48,700	\$34,600	\$14,100	29
Construction cost per square foot	\$131	\$56	\$75	57
Key amenities and square feet per occupant	- Two occupants share a bath and kitchenette. - Common area for socializing. 372 square feet per occupant.	- Private bath and full kitchen. - Private living room. 621 square feet per occupant.		

Source: Army Corps of Engineers.

The extended stay hotel provided each occupant with more amenities and space than the Army barracks at a construction cost per occupant of \$14,100, or 29 percent, less than the barracks’ average construction cost per occupant. The Army Corps of Engineers determined that although many factors accounted for the cost difference between the projects, the primary reason was the type of construction used to build the projects. The barracks were constructed in accordance with Uniform Building Code type I/II (commercial) standards that call for non-combustible construction built from concrete, masonry, and/or steel. The private extended stay hotel was constructed in accordance with Uniform Building Code type V (residential) standards that permit use of any building material allowed by the code, including wood. The Army Corps of Engineers’ data showed that if the barracks had been built using residential construction practices instead of traditional barracks construction practices, the Army’s average construction cost per occupant would have been about \$37,500, a reduction of about \$11,200, or 23 percent, per occupant. This study did not address differences in the barracks’ total costs—i.e., construction costs and operations and

maintenance costs—over their lifetimes. However, subsequent Army analyses indicate that a barrack’s total costs over its lifetime would be less if constructed with residential practices because of its lower initial construction costs and comparable operations and maintenance costs for many building components. (See app. III for additional details on the Army’s analyses.)

A subsequent Army study also concluded that the materials and methods traditionally used to construct government-owned barracks were more costly than the materials and methods normally used to construct similar multi-unit residential buildings in the private sector. In a joint February 2001 report, the Army’s Assistant Chief of Staff for Installation Management and the Army Corps of Engineers concluded that using residential construction practices, similar to the practices used to build apartment buildings, could achieve considerable cost reductions without adversely impacting barracks’ durability or maintainability.¹³ The report included an additional example comparing barracks built using traditional construction practices with a residential condominium built using residential construction practices. Specifically, the report cited an Army 1+1 barracks built in fiscal year 2000 at Fort Leavenworth, Kansas. Each two-bedroom, bath, and kitchenette module had 506 square feet and cost \$193,000. During this time frame, the construction cost of a 1,500 square foot residential unit with two bedrooms, two baths, full kitchen, living room, laundry room, and balcony in a new private condominium complex in Maryland was \$180,000. Although the condominium unit was almost three times larger than the barracks module, it cost \$13,000 less.

Army Revised Barracks Construction Guidance

The Army revised its barracks construction guidance in recent years to permit construction projects to be of any construction type, largely in response to its analyses. When building barracks, the Army had been following guidance in Military Handbook 1008C, which provides direction on the design and construction of DOD facilities.¹⁴ The handbook stated that construction of new buildings should be limited to use of traditional barracks construction practices. However, in June 2000, the Army Corps

¹³ U.S. Department of the Army, *Report on the Barracks Mid-Program Review* (Washington, D.C.: Feb. 2, 2001).

¹⁴ U.S. Department of Defense, *Military Handbook: Fire Protection For Facilities Engineering, Design, And Construction*, Military Handbook 1008C (Washington, D.C.: June 10, 1997). Because the handbook provided an exception for Navy and Marine Corps barracks, the handbook’s requirements for barracks construction applied only to the Army and the Air Force.

of Engineers issued guidance that authorized Army construction projects to be of any construction type as long as they complied with the Uniform Building Code requirements for the construction type used. Further, in a July 2002 memorandum, the Army Vice Chief of Staff stated that use of less restrictive residential practices in barracks construction would improve soldier quality of life and provide better value to the Army. An enclosure to this memorandum stated that, although Army barracks traditionally have been designed in many cases to exceed industry codes and standards, such an approach is not in the Army's best economic interests.

Fort Meade Barracks Project Is Army's First to Use Residential Construction Practices

A 1+1 barracks design project currently under construction at Fort Meade, Maryland, is the Army's first barracks to be built using residential construction practices. According to Army officials, the project calls for eight new three-story barracks buildings with a total of 576 private sleeping rooms. The project's initial design assumed use of traditional construction practices. However, on the basis of this design, the Army Corps of Engineers estimated that the project would cost \$48 million—about \$11 million more than had been approved for the project. In an effort to reduce construction costs, the Army decided to redesign the project using multi-unit residential 1-hour fire resistive construction practices. After the redesign and solicitation process, the project was awarded for about \$31 million. With the project 83 percent complete in January 2003, the Army Corps of Engineers estimated that the final project cost—including supervision and overhead costs and costs of changes and enhancements to the contracted design—would be about \$39 million. In addition, the project's estimated completion date was about 8 months ahead of the contracted completion date of January 2004.

In January 2003, we visited the Fort Meade barracks construction site. Visually, we noted few differences in the appearance of these barracks compared to traditional barracks. Figure 1 shows photographs of the Fort Meade barracks project contrasted with a traditionally constructed barracks at Langley Air Force Base, Virginia.

Figure 1: Photographs of the Fort Meade, Maryland, Barracks Project and a Traditional Barracks at Langley Air Force Base, Virginia



Source: GAO.

Residential construction with interior corridors at Fort Meade, Maryland (left); and traditional construction with exterior corridors at Langley Air Force Base, Virginia (right).

For a comparison with the Fort Meade project, we asked the Army for cost data on two 1+1 barracks projects under construction at Fort Bragg, North Carolina. One project is building 960 rooms using traditional non-combustible construction practices and the other project is building 608 rooms using traditional 1-hour fire resistive construction practices. Compared to the Fort Bragg projects, it appears that use of the residential construction practices in the Fort Meade project will result in considerable cost reductions—from \$12,600 to \$31,800 per occupant (see table 2).

Table 2: Cost Comparison of the Different Construction Practices at Fort Meade, Maryland, and Fort Bragg, North Carolina

Project	Type of construction	Cost per square foot	Cost per occupant
Fort Meade	Residential: 1-Hour Fire Resistive	\$113	\$38,800
Fort Bragg 1	Traditional: 1-Hour Fire Resistive	136	51,400
Fort Bragg 2	Traditional: Non-Combustible	193	70,600
Range of cost reductions using residential construction practices		\$23 to \$80	\$12,600 to \$31,800

Source: Department of the Army.

Note: The Army provided costs directly related to the barracks portion of the projects and adjusted the costs to account for the differences in construction time frames and geographic locations of the projects. We estimated cost per occupant by multiplying the cost per square foot by the project's gross square feet per occupant. The Fort Meade, Fort Bragg 1, and Fort Bragg 2 projects provided 343, 378, and 366 gross square feet per occupant, respectively.

Barriers Exist to Greater Use of Residential Construction Practices

There are barriers to DOD's widespread adoption of residential construction practices as a normal way of doing business. Because Army studies and the pilot project at Fort Meade indicate the potential to reduce some costs by using residential construction practices, it would seem that the services would be eager to adopt these practices for all future barracks construction projects. However, this has not been the case due to concerns about barracks durability and concerns related to antiterrorism force protection issues.

According to Army officials, the services have been reluctant to change construction practices because of the concern that switching to residential construction practices would result in barracks that are less attractive and less durable. However, the officials noted that the exterior appearance of barracks constructed with residential and traditional practices normally would be the same. Also, Army analyses indicate that there is little difference in durability with each type of construction and a barrack's total costs over its lifetime would be less if constructed with residential practices because of its lower initial construction costs and comparable operations and maintenance costs for many building components. (See app. III for additional details.) Still, the officials stated that the idea of switching construction practices continues to face resistance. Because of this, even the Army had no definite plans, as of February 2003, for additional barracks construction using residential construction practices.

The Air Force also had no plans to use residential construction practices for its barracks projects. The Navy, which has completed two barracks projects using residential construction practices, has no additional barracks projects underway or planned using these practices.¹⁵

Another barrier to widespread adoption of residential construction practices for barracks relates to unresolved questions on whether use of these practices would result in barracks that fully complied with new antiterrorism guidance for force protection. In July 2002, DOD finalized guidance requiring military components to adhere to common criteria and minimum construction standards to mitigate antiterrorism vulnerabilities and terrorist threats.¹⁶ The standards seek to minimize the likelihood of mass casualties from terrorist attacks against DOD personnel in the buildings where they work and live.

As applied to barracks construction, two standards in the antiterrorism force protection guidance are particularly important—standoff distance and prevention of building collapse. Standoff distance refers to the minimum distance that buildings should be situated from roads, parking lots, trash containers, and an installation's perimeter. According to the guidance, the easiest and least costly way to achieve appropriate levels of protection against terrorist threats is to incorporate sufficient standoff distance into project designs. In situations where the standoff distance standards cannot be achieved because land is unavailable, the guidance calls for building hardening or other techniques to mitigate possible blast effects. According to Army officials, because most barracks projects in the United States could be situated to meet required standoff distances, use of residential construction practices and compliance with this standard would not be a problem in most instances. Navy officials, however, stated that enough land to meet required standoff distances was not available at many of its installations.

The DOD standard for preventing building collapse applies to buildings of three or more stories and requires that they be designed with provisions

¹⁵ The Navy used residential construction practices to build barracks projects at Naval Air Station Brunswick, Maine, and Naval Station Newport, Rhode Island. Compared to the use of traditional construction practices, Navy officials stated that the use of residential construction practices reduced the cost per occupant by about one-third.

¹⁶ U.S. Department of Defense, *Unified Facilities Criteria: DOD Minimum Antiterrorism Standards For Buildings*, UFC 4-010-01 (Washington, D.C.: July 31, 2002).

that permit the structure to sustain local damage without the entire building collapsing. According to Army officials, questions remain as to whether barracks built using residential practices would comply with the collapse standard. They stated that the primary issue is lack of engineering data. Most available building collapse information addresses structural systems typical of taller buildings that were not built using residential construction practices. Army officials also stated that complying with the collapse standard using residential barracks construction practices might not be a problem or might be solved with inexpensive adjustments to construction techniques. Designers do not have sufficient data on exactly what, if anything, needs to be done to ensure compliance with the standard when using residential construction practices.

At the same time, some Army officials also questioned whether the collapse standard should apply to low-rise three-story barracks buildings. They noted that industry design standards usually make a distinction in structural requirements at four stories and above—not at three stories and above as required by the collapse standard. They further noted that today's 1+1 barracks design standard provides relatively low occupancy densities that are more similar to family housing which is exempt from the force protection requirements as long as a family housing building contains no more than 12 family units.

Opportunities Exist to Make Better Use of Existing Barracks

The services could minimize housing costs by ensuring full use of existing barracks space. Having unused government-owned barracks spaces and paying housing allowances at the same time wastes available resources. Air Force and Army barracks instructions, however, do not require installations to use all vacant space before authorizing housing allowances for junior members to live off base.¹⁷ Our review, as well as previous reviews by military service audit groups, found that the lenient barracks utilization guidance, and in some cases noncompliance with the guidance, resulted in installations paying housing allowances when barracks vacancies existed. The services could also reduce costs by identifying and eliminating excess barracks infrastructure if they were to change their barracks occupancy requirements and permit more junior members to live off base.

¹⁷ Service instructions also permit installation commanders to authorize junior members to live off base with a housing allowance for certain reasons other than lack of barracks space, such as for personal hardship reasons or for members with extensive household goods.

Army and Air Force Instructions Do Not Require Full Utilization of Barracks Space

Army instructions allow its installations to authorize junior members to live off base with a housing allowance when barracks occupancy reaches 95 percent. Air Force instructions only require that 90 percent of an installation's available barracks spaces be used before authorizing junior members to live off base with a housing allowance. Prior to June 1998, the Air Force required 95-percent occupancy. Air Force officials stated that the change was made to facilitate flexibility and to help maintain unit integrity in barracks assignments. To put these instructions in perspective, such policies, if practiced in the private sector, would be the equivalent of the owner of a private apartment complex turning away prospective tenants even though 5 to 10 percent of the apartments were vacant—an action not likely to happen if the owner is concerned about costs and revenues. Further, allowing 5 to 10 percent of barracks spaces to go unused appears contrary to the services' policies requiring that all unmarried junior members live in the barracks as long as space is available.

In contrast to Army and Air Force instructions, Navy and Marine Corps instructions state that maximum practical occupancy should be achieved before junior members are authorized to live off base with a housing allowance. The Navy instruction specifically states that barracks utilization should routinely approach 100 percent.

Actual Barracks Utilization Varied

In view of the differences in the services' barracks utilization guidance, we attempted to review barracks utilization and payment of housing allowances for unmarried junior members in each of the services. However, our analysis was limited to the Air Force and the Marine Corps because only those services require their installations to collect and centrally report barracks utilization data and the number of members authorized to live off base. The Navy requires barracks utilization reports, but the reports do not include the number of members authorized to live off base. Army officials stated that although utilization data is maintained by each installation, they had eliminated central reporting requirements years ago in order to reduce paperwork costs. With centralized data only available from the Air Force and the Marine Corps, we focused our review on an analysis of that information.

Many Air Force Barracks Rooms Were Vacant

The Air Force reported an inventory of about 43,400 adequate permanent party barracks rooms in the United States as of September 30, 2002. Table 3 shows that on September 30, 2002, about 4,700 of these rooms were diverted from normal use for maintenance and other reasons. Of the remaining rooms, about 35,300, or 91 percent, were occupied and about

3,400 rooms, or 9 percent, were vacant. Among major Air Force installations, the occupancy rates for the available barracks rooms ranged from 100 percent at Minot Air Force Base, North Dakota, to 82 percent at Tinker Air Force Base, Oklahoma.

Table 3: Utilization of Air Force Permanent Party Barracks in the United States as of September 30, 2002

	Number of rooms ^a	Percentage of total rooms	Percentage of net available rooms
Total	43,400	100	
Diverted for maintenance	1,900	4	
Diverted for other reasons	2,800	6	
Net available	38,700	89	100
Occupied	35,300	81	91
Vacant	3,400	8	9

Source: Department of the Air Force.

^a Numbers rounded. Rooms diverted for reasons other than maintenance include 1,219 rooms set aside for temporary and student lodging, 527 rooms set aside to temporarily house members arriving at an installation until they are assigned to a permanent room, 275 rooms set aside for offices, 218 rooms set aside for storage, 60 rooms set aside for training, and 507 rooms set aside for other miscellaneous reasons.

The Air Force also reported that as of September 30, 2002, it had authorized about 24,100 unmarried junior servicemembers in pay grades E1 through E4 to live off base with a housing allowance. We analyzed this data to estimate the housing allowance funds that the Air Force could potentially have prevented if members living off base had been assigned to the vacant barracks rooms. To do this, we compared—on an installation-by-installation basis—the number of junior servicemembers living off base with a housing allowance to the number of barracks vacancies on September 30, 2002. Our analysis showed that the vacant barracks spaces could have accommodated about 2,900 of the junior members who were living off base—suggesting a practice at variance with the Air Force’s stated policy of requiring E1 through E4 to live on base in barracks. Had these members been assigned to the barracks, the Air Force potentially could have reduced its annual housing allowance costs by about \$20 million. Because the data used in this analysis reflected barracks use on a single date, September 30, 2002, our analysis reflects results as of this single date. Also, because barracks occupancy can change daily, results would have differed if utilization data on another date had been used or if data had been available to show daily utilization over a period of time.

Although Air Force instructions require that 90 percent of an installation's available barracks spaces be used before authorizing junior members to live off base, some Air Force installations apparently were not in compliance with this guidance. For example, data for Kirtland Air Force Base, New Mexico, indicated an 85-percent occupancy rate with 105 vacancies and 392 junior members living off base with a housing allowance. Similarly, data for McChord Air Force Base, Washington, indicated an 86-percent occupancy rate with 101 vacancies, and 118 junior members living off base with a housing allowance. Air Force officials noted that installation occupancy rates are reported only twice a year and represent a snapshot in time. Thus, to determine whether installations reporting less than 90-percent occupancy were not complying with policy would require a detailed installation level review of occupancy rates over a period of time and the reasons why members living off base were allowed to do so. Air Force officials also noted that Air Force commands are reminded on a regular basis of the importance of complying with utilization policy and making full use of their barracks.

Nearly All Marine Corps Barracks Were Occupied

The Marine Corps data as of September 30, 2002, showed that barracks at most Marine Corps installations were fully used. Of the few major installations that reported less than 100-percent utilization, only one also reported unmarried junior enlisted members living off base with a housing allowance. In this instance, however, the installation reported only three junior members with a housing allowance.

Audit Groups Have Reported Noncompliance with Utilization Guidance

Previous reports from service audit groups also have noted that noncompliance with existing guidance has resulted in installations paying housing allowances when barracks vacancies existed. For example, in a February 1999 report on barracks management at Langley Air Force Base, Virginia, the Air Force Audit Agency stated that housing managers did not require individual barracks to meet the occupancy goal before authorizing members to live off base.¹⁸ The report also stated that maintaining barracks occupancy rates above the Air Force goal would provide direct savings to the Air Force budget. The Army Audit Agency reported in January 1997 that Fort Benning, Georgia, had authorized members to live off base even though barracks utilization was below the Army goal of

¹⁸ U.S. Air Force Audit Agency, *Installation Report of Audit: Dormitory Management 1st Fighter Wing, Langley Air Force Base, Virginia*, EL099036 (Langley Air Force Base, Va.: Feb. 3, 1999).

95 percent.¹⁹ The report stated that the unnecessary authorizations were issued because Fort Benning decentralized barracks management to the unit level and did not make sure that each unit fully used its barracks before authorizing members to live off base with a housing allowance.

Changing Occupancy Requirements Could Reduce the Need for Barracks Spaces

While it is important to make full use of existing barracks space, it is also important that the services maintain an inventory of barracks spaces only in the numbers actually required. In our January 2003 report, we discussed the widely varying standards among the services regarding who should live in barracks and the effect this can have on program costs and quality of life and recommended that the services review the rationale behind their barracks occupancy requirements.²⁰ DOD has left unclear the extent to which it is likely to make changes in its barracks occupancy requirements. However, if the services were to change their barracks occupancy requirements and permit more junior members to live off base with a housing allowance, then the services could reduce housing costs by identifying and eliminating excess barracks infrastructure. To use the Air Force case as an illustration, instead of bringing junior members back on base to fill up barracks vacancies, the Air Force could officially decide that many of these members should be allowed to continue to live off base. This decision would reduce barracks needs and the Air Force could then consider vacant barracks spaces as excess infrastructure that could be eliminated to reduce costs.

Conclusions

DOD and the services have not fully explored barracks privatization to determine whether the concept could provide a better economic value to the government than the use of military construction financing. Although the services have separately studied the issues and unique challenges associated with barracks privatization, DOD has largely concentrated on family housing privatization and not on promoting a coordinated, focused effort to address the challenges and develop pilot project proposals to determine the overall feasibility and merits of barracks privatization. Without more coordination of activities to address the challenges associated with barracks privatization, efforts might be duplicated and potential opportunities to optimize lessons learned might be lost.

¹⁹ U.S. Army Audit Agency, *Space Utilization: U.S. Army Infantry Center and Fort Benning, Georgia*, AA 97-97, (Alexandria, Va.: Jan. 6, 1997).

²⁰ See [GAO-03-257R](#).

For several reasons, DOD and the military services have not taken advantage of opportunities to potentially reduce their housing costs for unmarried servicemembers through use of residential construction practices in government-owned barracks construction and better utilization of existing government-owned barracks. First, widespread adoption of residential construction practices in building government-owned barracks has been hampered because of concerns about barracks durability and unanswered questions about the ability of wood-frame barracks to meet all antiterrorism force protection requirements. Without engineering studies to resolve these questions and, if appropriate, adoption of residential construction practices, the services could be spending more than is needed on barracks construction. Second, lenient barracks utilization guidance—which in some cases does not require full use of existing government-owned barracks before authorizing housing allowances for junior members to live off base—and limited enforcement of existing guidance have led in some cases to the routine acceptance of less than maximum use of barracks and the payment of housing allowances when vacancies exist. The establishment of and compliance with guidance that requires maximum use of required existing barracks—specifically, utilization that routinely approaches 100 percent before unmarried junior members are authorized housing allowances—could result in reducing the services’ housing costs for junior members. It is also important that the services maintain an inventory of barracks spaces only in the numbers actually required. If the services were to change their barracks occupancy requirements based on their review of the requirements’ rationale and permit more junior members to live off base, then they could also reduce costs by identifying and eliminating barracks space that is no longer needed.

Recommendations for Executive Action

To capitalize on opportunities for reducing housing costs for unmarried servicemembers, we recommend that the Secretary of Defense direct the Under Secretary of Defense for Acquisition, Technology and Logistics to:

- Promote a coordinated, focused effort among the military services to determine the feasibility and cost-effectiveness of barracks privatization by addressing the associated challenges and facilitating the development of pilot project proposals. This effort should support the Navy’s use of the pilot housing privatization authority provided to the Navy in the Fiscal Year 2003 Bob Stump National Defense Authorization Act, with lessons learned applied to the other services’ efforts.

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- Direct the Army Corps of Engineers and the Naval Facilities Engineering Command to jointly undertake an engineering study to resolve questions about use of residential construction practices for barracks and compliance with antiterrorism force protection requirements.
 - Direct the military services to adopt residential construction practices for future barracks construction projects to the maximum extent practical, providing that the engineering studies show that barracks built with residential construction practices can economically meet all force protection requirements.
 - Issue guidance directing that the services maximize use of required existing barracks space—defined as utilization that routinely approaches 100 percent—before authorizing unmarried junior members to live off base with a housing allowance.
 - Direct the military services to identify and eliminate excess barracks infrastructure if, by reviewing the rationale behind their barracks occupancy requirements, they determine that more unmarried junior members should be permitted to live off base with a housing allowance.

Agency Comments and Our Evaluation

In commenting on a draft of this report, the Director, Competitive Sourcing and Privatization, fully agreed with four and partially agreed with one of our recommendations and indicated that actions were underway or planned to deal with most of them. DOD stated that it was supportive of initiatives to energize barracks privatization and planned to build on lessons learned from the Navy's pilot project to encourage barracks privatization. DOD also stated that it supports the study and use of commercial and residential construction standards and use of the privatization authorities to improve the living conditions for unaccompanied members as quickly as possible. In addition, it stated that the Army Corps of Engineers has already begun a study of residential construction methods and compliance with antiterrorism force protection requirements using the Fort Meade barracks project as a basis for the study. Further, as the first step to maximizing use of existing barracks, programming for new barracks, and divesting of excess infrastructure, DOD stated that the actual need for barracks space must be determined by establishing a common requirements process consistent with individual service missions.

DOD partially agreed with our recommendation to issue guidance directing the services to maximize use of required existing barracks space. DOD stated that barracks requirements must first be determined before

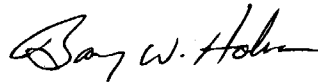
issuing such guidance. We agree that the services should maintain an inventory of barracks spaces only in the numbers actually required and that if the services were to reduce their barracks occupancy requirements and permit more junior members to live off base, then they could reduce costs by identifying and eliminating barracks space that is no longer needed, as DOD suggests in its comments. However, on the basis of their current barracks occupancy requirements and construction plans, the services have individually determined that most of their existing barracks spaces are needed. Unless stated barracks occupancy requirements are reduced, we believe that these spaces should be fully used before authorizing housing allowances for junior members to live off base and that additional DOD guidance is needed now to help achieve this. To do otherwise, results in having unused government-owned barracks spaces and paying housing allowances at the same time, which wastes available resources.

DOD's comments are included in appendix IV of this report.

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

We are sending copies of this report to the appropriate congressional committees, and it will be available at no charge on GAO's Web site at <http://www.gao.gov>. If you or your staff have any questions on the matters discussed in this letter, please contact me at (202) 512-8412, or my Assistant Director, Mark Little, at (202) 512-4673. Gary Phillips, Jim Ellis, Sharon Reid, Harry Knobler, and R.K. Wild were major contributors to this report.

Sincerely yours,

A handwritten signature in black ink, reading "Barry W. Holman". The signature is written in a cursive style with a large initial "B" and a stylized "H".

Barry W. Holman, Director
Defense Capabilities and Management

Appendix I: Scope and Methodology

Our review of DOD's housing program for unmarried servicemembers focused on enlisted members at their permanent assignment locations in the United States—after the members completed recruit and advanced individual training. We interviewed DOD and service headquarters housing officials; reviewed applicable DOD and military service policies and procedures; reviewed barracks improvement plans and milestones; and visited selected installations to view barracks conditions and discuss local management practices. Specifically, we visited the Naval Station Norfolk, Virginia; Langley Air Force Base, Virginia; Fort Eustis, Virginia; and Marine Corps Base Quantico, Virginia.

To examine opportunities for reducing costs through barracks privatization and the barriers to developing barracks privatization project proposals, we examined the laws authorizing and funding the program, reviewed DOD's experiences with family housing privatization, interviewed DOD and service officials, and reviewed available documentation to identify past efforts and current plans related to barracks privatization. We also discussed privatization plans and challenges with local officials at the installations visited and discussed budget scoring issues for barracks privatization with officials at the Office of Management and Budget.

To examine opportunities for reducing costs through adoption of residential construction practices for barracks construction, we reviewed Army studies and analyses in this area. We also obtained and compared selected cost information for barracks constructed using traditional practices and for barracks constructed using residential practices. We did not attempt to validate this cost information. Further, we interviewed service officials to discuss the services' use of residential construction practices for barracks and to determine the reasons why the concept has not been widely adopted. We also visited Fort Meade, Maryland, to observe construction progress on the Army's first barracks project that has incorporated residential construction practices.

To examine opportunities for reducing costs through better utilization of barracks, we reviewed the services' policies and instructions related to barracks use, occupancy goals, and justification for authorizing unmarried junior members to live off base with a housing allowance. To determine whether greater use of barracks could reduce housing allowance costs, we obtained and analyzed readily available data showing the number of barracks vacancies and the number of junior servicemembers living off base with a housing allowance on September 30, 2002. To estimate the potential cost reductions, we multiplied the number of members who

could have been assigned to the barracks vacancies by the national average basic allowance for housing rate. We also reviewed prior audit reports related to barracks utilization from military service audit organizations.

We conducted our review between May 2002 and April 2003 in accordance with generally accepted government auditing standards.

Appendix II: Photographs of Old and New Style Barracks and Quarters Aboard Navy Ships

The military services are replacing old barracks, where junior members often share a sleeping room with one or two others and share a gang latrine with occupants from several other rooms, with new barracks, where in most cases junior members have a private sleeping room and share a bath and kitchenette with one other member. The Navy's "homeport ashore" initiative intends to provide barracks spaces on base for junior members who are currently required to live in cramped quarters aboard their ships even when their ships are in homeport. During our visits to installations, we observed a variety of barracks in conditions ranging from outdated to newly constructed. Figure 2 shows photographs of typical old and new style barracks.

Figure 2: Old and New Style Barracks at Fort Eustis, Virginia



Source: GAO.

Old style barracks (left) and new style barracks (right) at Fort Eustis, Virginia.

At the older barracks, we saw cramped living quarters, peeling paint, damaged walls and ceilings, and poor heating, ventilation, and air conditioning systems. On board ship, the space was cramped. Some examples of the living quarters and gang latrines in old style barracks and aboard ship are shown in figure 3.

Appendix II: Photographs of Old and New
Style Barracks and Quarters Aboard Navy
Ships

Figure 3: Typical Living Quarters and Gang Latrines in Old Style Barracks and Aboard Ship



Source: GAO.

(Clockwise from top left) Living quarters in old style barracks at Fort Eustis, Virginia; living quarters aboard the U.S.S. Mount Whitney homeported at the Naval Station Norfolk, Virginia; gang latrines aboard the U.S.S. Mount Whitney; and gang latrines in old style barracks at Fort Eustis, Virginia.

In contrast, we observed several newly constructed barracks that provided living quarters using the 1+1 barracks design standard. Some examples of the bedrooms, shared baths, and shared kitchenettes are shown in figure 4.

**Appendix II: Photographs of Old and New
Style Barracks and Quarters Aboard Navy
Ships**

Figure 4: Typical Living Quarters in New Style Barracks



Source: GAO.

(Clockwise from top left) Bedroom in new style barracks at Langley Air Force Base, Virginia; living quarters in new style barracks at Langley Air Force Base, Virginia; a shared kitchenette in new style barracks at Langley Air Force Base, Virginia; and a shared bath in new style barracks at Fort Eustis, Virginia.

Appendix III: Details on Cost Differences in Barracks Built with Residential and Traditional Construction Practices

Compared to traditional steel frame, concrete, and cement block construction, Army analyses show that use of residential construction can reduce typical barracks construction costs by 23 percent or more. Army analyses also indicate that a barrack's total costs over its lifetime—i.e., initial construction costs and annual operations and maintenance costs—would be less if constructed with residential practices. The lower “life-cycle costs” from use of residential construction practices results not only from the lower initial construction costs, but also from comparable operations and maintenance costs for many building components regardless of the type of construction practices used—traditional or residential. Use of residential construction practices to build barracks could also reduce renovation costs and result in additional cost reductions in labor construction costs.

Army officials noted that actual differences in barracks operations and maintenance costs are dependent on the particular building designs. In general, however, the officials stated that there should be no significant operations and maintenance cost differences with use of either traditional or residential construction practices in many architectural features, such as exterior and interior finishes, electrical and plumbing systems, doors and hardware, and windows. For other building components, such as roofs and heating, ventilation, and air conditioning systems, operations and maintenance costs could be lower with traditional construction. But, because of the lower initial construction costs, use of residential construction practices for such components could still result in lower costs over the life of the barracks. For example, the roof system for many traditionally constructed barracks consists of metal and concrete that would normally last for the entire life of the barracks. When using residential construction practices, the barracks roof system would normally consist of heavy-duty shingles that would require replacement during the life of the barracks. Yet, Army analyses show that a shingle roof system would have lower life-cycle costs than a metal and concrete roof system because of its lower initial construction costs.

Army officials also noted that use of residential construction practices for barracks would result in buildings that could be renovated at lower costs than traditionally constructed barracks. They stated that many military buildings, including barracks, become functionally obsolete in 25 years or less because of changed missions or design standards, such as the change in the barracks design standard in 1995 from multi-person to private sleeping rooms. The costs to renovate and reconfigure a traditionally constructed barracks with masonry interior walls would normally be

greater than the costs to renovate and reconfigure a barracks built with residential construction practices using wood frame and sheetrock walls.

According to Army officials, use of residential construction practices to build barracks could result in additional reductions in construction labor costs. Federal statutes, commonly referred to as the Davis-Bacon Act and related legislation, require that workers on most government construction projects be paid according to the prevailing local wage rates as determined by the Department of Labor. However, there are different prevailing local wage rate scales depending on the type of construction being performed. Traditionally, barracks construction has been considered commercial construction and the commercial wage rate scale has been used for these projects. In contrast, military family housing construction has been considered residential construction and the residential wage rate scale has been used for these projects. According to Army officials, the residential wage rate scale is normally 5 to 30 percent less than the commercial wage rate scale. Thus, using residential construction practices in a low-rise (three stories or less) barracks construction project and application of the residential, instead of commercial, wage rate scale, could result in additional reductions in barracks construction costs.

Appendix IV: Comments from the Department of Defense



ACQUISITION,
TECHNOLOGY
AND LOGISTICS

OFFICE OF THE UNDER SECRETARY OF DEFENSE

3000 DEFENSE PENTAGON
WASHINGTON, DC 20301-3000

MAY 27 2003

Mr. Barry W. Holman
Director,
Defense Capabilities and Management
United States General Accounting Office
Washington, DC 20548

Dear Mr. Holman:

This is the Department of Defense (DoD) response to the GAO draft report, GAO-03-602, "MILITARY HOUSING: Opportunities That Should Be Explored to Improve Housing and Reduce Costs for Unmarried Junior Servicemembers," dated April 17, 2003 (GAO Code 350215).

The Department has reviewed the draft report and concurs with recommendations 1, 2, 3, and 5. We believe the Military Services are aggressively and efficiently managing their housing infrastructure to eliminate all inadequate barracks. The Department supports their efforts to study and use commercial and residential construction standards and use barracks privatization authorities to improve the living conditions for unaccompanied members as quickly as possible.

The Department partially concurs with recommendation 4 - to issue guidance to direct maximum use of the required existing barracks spaces before allowing single junior members to live off base with a housing allowance. While DoD supports the optimal use of existing barracks spaces, the actual requirement for barracks space must first be established before issuing guidance mandating assignment of unaccompanied service members to on base housing. Otherwise, DoD could maintain and operate barracks spaces that may be in excess to our requirements. The more appropriate course of action would be to demolish excess barracks spaces.

Enclosed are the Department's specific responses to the recommendations. Thank you for the opportunity to provide comments on the draft report. My point of contact for this action is Ms. Phyllis Newton. She can be reached at (703) 614-5356.

Sincerely,

Joseph K. Sikes
Director, Competitive Sourcing
and Privatization

Attachment:
As stated



GAO-03-602/GAO CODE 350215

**“MILITARY HOUSING: OPPORTUNITIES THAT SHOULD BE
EXPLORED TO IMPROVE HOUSING AND REDUCE COSTS
FOR UNMARRIED JUNIOR SERVICEMEMBERS”**

**DEPARTMENT OF DEFENSE COMMENTS
TO THE RECOMMENDATIONS**

RECOMMENDATION 1: *The GAO recommended that the Secretary of Defense direct the Under Secretary of Defense for Acquisition, Technology, and Logistics to promote a coordinated, focused effort among the Military Services to determine the feasibility and cost-effectiveness of barracks privatization by addressing the associated challenges and facilitating the development of pilot project proposals. This effort should support the Navy’s use of the pilot housing privatization authority provided to the Navy in the Fiscal Year 2003 Bob Stump National Defense Authorization Act, with lessons learned applied to the other Services’ efforts. (Page 31/Draft Report)*

DoD RESPONSE: Concur. Like family housing, there are common issues that affect all Services with respect to barracks privatization. DoD has been very receptive and extremely supportive of a number of initiatives to energize barracks privatization efforts amongst the Services. We have worked with the Department of the Navy in their efforts in this regard and plan to build on the lessons learned from their pilot project to encourage barracks privatization in all the Military Services.

RECOMMENDATION 2: *The GAO recommended that the Secretary of Defense direct the Under Secretary of Defense for Acquisition, Technology, and Logistics to direct the Army Corps of Engineers and the Naval Facilities Engineering Command to jointly undertake an engineering study to resolve questions about use of residential construction practices for barracks and compliance with antiterrorism force protection requirements. (Page 31/Draft Report)*

DoD RESPONSE: Concur. The Army Corps of Engineer, Omaha District Protective Design Center, is currently conducting a study of the Fort Meade barracks to determine if they meet the progressive collapse requirements for antiterrorism/force protection. That study could possibly form the basis for a more comprehensive review of residential construction practices for barracks and associated cost and benefits.

RECOMMENDATION 3: *The GAO recommended that the Secretary of Defense direct the Under Secretary of Defense for Acquisition, Technology, and Logistics to direct the Military Services to adopt residential construction practices for future barracks construction projects to the maximum extent practical, providing that the engineering studies show that barracks built with residential construction practices can economically meet all force protection requirements. (Page 31/Draft Report)*

DoD RESPONSE: Concur. Consistent with our response to Recommendation 2, the study should be completed and results validated first before determining what direction should be taken.

RECOMMENDATION 4: *The GAO recommended that the Secretary of Defense direct the Under Secretary of Defense for Acquisition, Technology, and Logistics to issue guidance directing that the Services maximize use of required existing barracks space – defined as utilization that routinely approaches 100 percent – before authorizing unmarried junior members to live off base with a housing allowance. (Page 31/Draft Report)*

DoD RESPONSE: Partially concur. While DoD supports the optimal use of existing barracks spaces, the actual requirement for barracks space must first be established before issuing guidance mandating assignment of unaccompanied service members to on base housing. Otherwise, DoD could maintain and operate barracks spaces that may be in excess to our requirements. The more appropriate course of action would be to demolish or divest of excess barracks spaces as noted in response to Recommendation 5.

RECOMMENDATION 5: *The GAO recommended that the Secretary of Defense direct the Under Secretary of Defense for Acquisition, Technology, and Logistics to direct the Military Services to identify and eliminate excess barracks infrastructure if, by reviewing the rationale behind their barracks occupancy requirements, they determine that more unmarried junior members should be permitted to live off base with a housing allowance. (Page 32/Draft Report)*

DoD RESPONSE: Concur. As noted in the previous recommendation, establishing a common requirements process for barracks, consistent with individual Service missions, is the first step to maximizing use of existing assets, programming for new needs, and divesting of excess infrastructure.

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