

United States Government Accountability Office  
Washington, DC 20548

---

May 19, 2006

The Honorable Kay Bailey Hutchison  
Chair  
Subcommittee on Military Construction and  
Veterans' Affairs, and Related Agencies  
Committee on Appropriations  
United States Senate

Dear Senator Hutchison:

Subject: *Limitations in the Air Force's Proposed Housing Plan for Spangdahlem  
Air Base, Germany*

The Air Force plans to construct 233 military housing units on Spangdahlem Air Base,<sup>1</sup> Germany at a cost of \$131.3 million spread over fiscal years 2006-2008, and to fund 270 build-to-lease units nearby at an annual cost of \$32,888 per unit over 20 years. The Military Quality of Life and Veterans Affairs Appropriations Act for fiscal year 2006 directed the Secretary of the Air Force to submit to the Committees on Appropriations of both Houses of Congress a report containing a housing plan for Spangdahlem.<sup>2</sup> The House Conference Report accompanying H.R. 2528 stipulated that the report must include a complete cost-benefit analysis of available housing options to include build-to-lease housing,<sup>3</sup> and that none of the funds appropriated for family housing at Spangdahlem—nearly \$45.4 million—may be obligated until the Secretary of the Air Force certified to the Appropriations Committees that the report had been completed and received the Committees' response or a 30-day period has elapsed after the Committees receive such report.<sup>4</sup> In response to the mandate, the Air Force issued a report in January 2006 that compared its proposed plan with four

---

<sup>1</sup> Hereafter referred to simply as Spangdahlem.

<sup>2</sup> Pub. L. No. 109-114, § 130 (2005).

<sup>3</sup> According to Air Force officials, the primary benefits of using build to lease are that it provides housing quicker and requires less up-front appropriations from the United States than the traditional military construction method. Under a build-to-lease agreement, the United States contracts with a developer to construct housing for a specified number of units for use by military personnel under a fixed lease term, such as 10 years, with renewal options for additional periods of time. A developer builds the housing with no U.S. government funds and the only investment by the United States is a commitment to lease the housing from the developer once the housing is built.

<sup>4</sup> H.R. Conf. Rep. No. 109-305, at 34 (2005).

other housing options<sup>5</sup> that included a combination of traditional military construction, build-to-lease housing, and replacement of existing housing units to meet its housing requirements at Spangdahlem.<sup>6</sup> In the report, the Air Force recommended implementation of its proposed plan and release of the military construction appropriations for fiscal year 2006. The Air Force also concluded that, depending on the results of its efforts to explore cooperative ventures with the local German government and communities and the potential for a larger build-to-lease program, the scope of its military construction projects for future years may need to be adjusted. The Air Force also stated it would provide a status report regarding these adjustments to Congress within 365 days of the Appropriations Committees' release of the fiscal year 2006 military construction appropriation. Specifically, the Air Force proposed to report on the results of the cooperative ventures, number of housing units procured in the fiscal year 2006 military construction project, and proposed adjustments in the scope of the fiscal years 2007 and 2008 military construction projects. In February 2006, the Appropriations Committees released nearly \$45.4 million in fiscal year 2006 military construction budget authority for 79 housing units at Spangdahlem.

As you know, during our ongoing review of the Department of Defense's (DOD) comprehensive overseas master plans,<sup>7</sup> we met with Air Force officials and visited family housing units at Spangdahlem and the base's Bitburg Annex. We briefed your office on the results of our site visits on February 27, 2006. Subsequently, on March 1, 2006, you requested that we review the assumptions and methodologies used in the Air Force's report issued in January 2006. This report responds to your request.

To meet our objective, we made extensive use of information gleaned from our site visits of Spangdahlem and the Bitburg Annex in December 2005. We also interviewed officials of the Office of the Secretary of Defense; U.S. European Command; U.S. Air Force Europe; Air Force Headquarters Civil Engineer Directorate; and Parsons Corporation—the contractor that conducted analyses for the Air Force's report. We reviewed and evaluated the housing requirements and market analysis the Air Force used in preparing its housing report and interviewed Air Force officials regarding the data and assumptions they used in preparing their analysis. We analyzed the Air Force's efforts in considering build-to-lease opportunities by interviewing Air Force officials and reviewing correspondence to and from the German government involving limitations and possible cost sharing for these initiatives. We also compared the assumptions, methods, and economic cost analyses used to develop the Air Force's proposed plan and alternatives with the guidance contained in Office of Management and Budget (OMB), DOD, and Air Force instructions and manuals.

---

<sup>5</sup> The Air Force's proposed plan and four housing alternatives are described on pages 6 and 7 of this report.

<sup>6</sup> Air Force, *Report to the Committee on Appropriations of Both Houses of Congress on A Housing Plan for Spangdahlem Air Base, Germany* (Washington, D.C.: Jan. 25, 2006).

<sup>7</sup> Senate Report 108-82 on the Military Construction Appropriations Bill, 2004 directed GAO to monitor the infrastructure master plans developed and implemented for the overseas regional commands and to provide the congressional defense committees with annual assessment reports.

We also worked with Air Force officials to assess whether their economic cost analysis was based on this guidance. We determined that our data were sufficiently reliable for our purposes.

We conducted our review from March through May 2006 in accordance with generally accepted government auditing standards.

## **Results in Brief**

Although there is no basis to question whether the Air Force needs to upgrade its housing at Spangdahlem, key assumptions and methodology used in the Air Force report on housing plans for Spangdahlem, in some instances, were based on dated and incorrect information. As a result, there is uncertainty as to how many housing units are needed and which method—traditional military construction, build to lease, or other methods—is the most appropriate means to meet the housing requirement given costs and other considerations. The Air Force has recognized that there may be a need to adjust the scope of the military construction projects proposed for future years, and is in the process of updating its information and reassessing the mix of housing methods. Nevertheless, we identified the following weaknesses in its 2006 report that the Air Force should address before it issues a status report to the Appropriations Committees. Specifically:

- Air Force officials stated that they relied on a 2003 housing requirements and market analysis<sup>8</sup> as the foundation to determine the need for family housing in the Air Force's 2006 Spangdahlem housing report. Although the 2003 analysis concluded that no additional family housing construction was needed, according to Air Force officials the analysis did not take into consideration the inadequate condition of some existing housing units and was based on outdated information, such as demographic data almost 2 decades old. Officials said that they also used other sources of information to develop the housing requirements identified in their 2006 report. While we reviewed these sources, we made no assessment of their suitability in determining the housing requirements. At the same time, we are concerned that the Air Force report may have overestimated the number of new housing units needed because it did not take into account other information indicating that a new highway had recently opened up access to more villages, increasing opportunities for off-base housing. Air Force officials said that this information will be contained in a new housing requirements and market analysis to be issued in July 2006, but they did not expect it to significantly change their housing requirements. However, we believe that the Air Force may not fully know the amount or mix of housing needed until it recalculates its on-base housing requirements using this and other new information.

---

<sup>8</sup> Parsons Corporation, *Housing Requirements and Market Analysis 2003 – 2008: Spangdahlem Air Base Germany* (Oct. 6, 2003).

- In the House Conference Report to H.R. 2528, the conferees urged the Air Force to consider all options to address the housing needs, and stated specifically that build-to-lease housing has the potential to provide quality housing quickly to the families at Spangdahlem, while also providing a more cost-effective and flexible option to the United States. Although the Air Force plans to use off-base, build-to-lease housing to meet over half of its requirements for new family housing in Spangdahlem, it did not recommend a larger number of build-to-lease units because it assumed that local conditions existed that limited support for such projects. For example, Air Force officials assumed, based upon limited discussions with state and local German officials, that local developers considered the projects too financially risky to undertake, without officially testing the market. As a result of its assumption, the Air Force may have underestimated the number of build-to-lease opportunities and overestimated the need for military construction funding or vice versa. Information the Air Force received from German officials after publishing its report suggests that some limitations may no longer exist, that additional build-to-lease opportunities may exist, and that military construction needed under the Air Force proposed plan could differ from that previously planned. For example, a concern that large, U.S.-style developments were not in keeping with the culture of the region is being addressed by designating small residential zones for appropriately 50-60 units near the air base that can be planned, developed, and offered as the U.S. need increases.<sup>9</sup> Accordingly, to determine local interest in build-to-lease developments, the Air Force plans to provide a requirements document for 364 build-to-lease units to the German government by June 2006 and expects a final build-to-lease agreement to be complete in February 2007.<sup>10</sup> Until the Air Force tests its original assumptions about build-to-lease developments and completes all assessments of available housing off base, Congress will not be in a position to know whether the Air Force's planned allocation of new family housing units in Spangdahlem between build-to-lease and military construction units is fully justified or to what extent other amounts may be required depending on the availability of military construction funding.
- We found that the Air Force did not follow OMB, DOD, and Air Force guidance on performing life-cycle cost analysis in two instances—when it used an incorrect discount rate to calculate the present value of the costs and benefits of the Air Force's proposed plan and four housing alternatives, and when it incorrectly calculated the remaining worth of the housing units funded with military construction appropriations after 20 years. However, our recalculations based on OMB, DOD, and Air Force guidance did not result in a significant variance from the Air Force's analysis, in that the estimated life-cycle costs of both analyses fell between the other alternatives. As a result,

---

<sup>9</sup> According to DOD, the 50-60 unit limitation levied by the German government limits the ability for large-scale development and encourages multiple, small developers that will increase the complexity and risk of the build-to-lease projects.

<sup>10</sup> According to DOD, the German government real estate office (Bundesanstalt für Immobilienaufgaben) will conduct the acquisition process in this instance for the Air Force.

there is little, based on our recalculations of the life-cycle costs, to support a change in the Air Force's selected proposal, especially given the risk assessment criteria the Air Force assigned to compare the housing options. Nevertheless, the Air Force should use the correct discount rate and remaining worth of the housing in its analysis of the housing options presented in its upcoming status report to the Appropriations Committees.

We are making recommendations to the Secretary of the Air Force to ensure that the Air Force's upcoming status report to the Appropriations Committees includes an analysis of available housing options that is based upon the most currently available data and sound assumptions and methodology, including (1) the new housing requirements and market analysis scheduled to be completed in July 2006 and (2) calculations of life-cycle costs in accordance with government guidance on the use of discount rates and how to calculate the remaining worth of housing. In written comments on a draft of this report, DOD concurred with our recommendations. We discuss DOD's comments and our evaluation of them later in this report.

## **Background**

Spangdahlem is an enduring installation designed to ensure a strong presence in the European theater and to facilitate close cooperation with North Atlantic Treaty Organization allies and currently has a total population of 12,014 servicemembers, civilians, contractors, and dependents. Historically, the air base has hosted a fighter-aircraft mission; however, its mission was enhanced by the closure of Rhein-Main Air Base in December 2005 when a portion of its airlift mission was moved to Spangdahlem. Spangdahlem is currently comprised of a main base and four annexes, which are geographically separated from the main base by 7 to 15 miles.<sup>11</sup> The Air Force plans to consolidate all activities, such as base support and family housing, at Spangdahlem and close the four annexes. According to Air Force officials, the plan would provide operational efficiencies and reduce the exposure of U.S. service members and their families traveling on roads between the annexes and Spangdahlem. According to Air Force officials, they recorded a total of 196 accidents on the road between the Bitburg Annex and Spangdahlem in 2004 and 2005.

## **Legislative Reporting Requirement**

The Military Quality of Life and Veterans Affairs Appropriations Act for fiscal year 2006 directed the Secretary of the Air Force to submit to the Committees on Appropriations of both Houses of Congress a report containing a housing plan for Spangdahlem.<sup>12</sup> In the House Conference Report accompanying H.R. 2528,<sup>13</sup> the conferees noted the current need for housing at Spangdahlem and provided funding for such purpose. The conferees urged the Air Force to consider all options to

---

<sup>11</sup> The annexes are Bitburg, Oberweis, Zemmer, and Sulm.

<sup>12</sup> Pub. L. No. 109-114, § 130 (2005).

<sup>13</sup> H.R. Conf. Rep. No. 109-305, at 34 (2005).

address the housing need at Spangdahlem and stated that build-to-lease housing has the potential to provide quality housing quickly to the families at Spangdahlem, while also providing a more cost-effective and flexible option to the United States. In the Statement of Managers accompanying the Conference Report for H.R. 2528, the conferees directed the Air Force to report the results of a complete cost-benefit analysis of all available housing options at Spangdahlem, including build to lease, and that the analysis should include but not be limited to the cost per housing unit of each option and evidence of efforts made to lower such cost.

The Conference Report also stated that none of the funds appropriated for family housing at Spangdahlem—nearly \$45.4 million—may be obligated until the Secretary of the Air Force certified to the Committees on Appropriations that the report had been completed and received the Committees’ response or a 30-day period has elapsed after the Committees receive such report. These military construction funds were released to the Air Force in February 2006.

#### Air Force’s Proposed Plan and Alternatives

The Air Force’s January 2006 report to both Appropriations Committees includes a proposed housing plan and four alternatives for Spangdahlem representing a combination of traditional military construction, replacement of existing housing units, and build to lease. This report also provides an overview on Spangdahlem’s mission, the Air Force housing strategy, and coordination efforts involving cost sharing with the German government. The Air Force’s proposed plan calls for military construction of 233 family housing units at Spangdahlem at a total cost of \$131.3 million spread over fiscal years 2006-2008, using housing units at Bitburg Annex as temporary living quarters (but eventually closing them), and obtaining 270 build-to-lease units at an annual cost of \$32,888 per unit for 20 years in the communities surrounding Spangdahlem. The Air Force anticipates that it would take 5 to 6 years from the start of the fiscal year 2006 military construction to fully implement the proposed plan. The report also offers four other alternative ways to meet the projected housing needs of servicemembers stationed at Spangdahlem.

- Alternative 1 provides for military construction of 139 family housing units at Spangdahlem in fiscal years 2006-2007, using family housing units at Bitburg Annex as temporary living quarters (but eventually closing them), and obtaining 364 build-to-lease units.
- Alternative 2 provides for no military construction at Spangdahlem and obtaining 503 build-to-lease units.
- Alternative 3 provides for military construction of 164 family housing units at Spangdahlem over fiscal years 2006-2008, and replacing 339 housing units at Bitburg Annex.

- Alternative 4 provides for military construction of 503 family housing units at Spangdahlem and using family housing units at Bitburg Annex as temporary living quarters (but eventually closing them).

Table 1 shows the quantities and sources of proposed housing units as well as the life-cycle costs as projected and reported by the Air Force for its proposed plan and four alternatives. All of the housing options include continued use of 134 units the Air Force considers adequate on Spangdahlem and 200 units currently leased in German communities near Spangdahlem.

**Table 1: Quantities and Sources of Housing Units and the Air Force's Estimated Life-cycle Costs for Its Proposed Plan and Four Alternatives**

Sources	Proposed plan	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Fiscal year 2006 military construction	79	79		79	79
Fiscal year 2007 military construction	60	60		60	60
Fiscal year 2008 military construction	94			25	364
Build to lease	270	364	503		
Replace existing Bitburg Annex housing <sup>a</sup>				339	
Use existing Spangdahlem housing	134	134	134	134	134
Renew existing leases	200	200	200	200	200
Total housing units	837	837	837	837	837
<b>Total life-cycle costs<sup>b</sup></b>	<b>\$228,437</b>	<b>\$253,560</b>	<b>\$287,034</b>	<b>\$154,276</b>	<b>\$135,688</b>

Source: Air Force.

<sup>a</sup>This alternative also includes the costs to construct front gate improvements, a fire station, and demolition of 715 existing, inadequate housing units located at Bitburg.

<sup>b</sup>Total life-cycle costs are in fiscal year 2005 dollars in thousands using the Air Force's 3.5 percent nominal discount rate.

In its January 2006 report to both Appropriations Committees, the Air Force recommended implementation of the proposed plan. In addition, the Air Force committed to executing the fiscal year 2006 military construction project for 79 housing units and, since it considered traditional military construction appropriations as the most cost-effective solution, it also included military construction projects for fiscal years 2007 and 2008. Because more military construction over these proposed levels will require utilization of additional contiguous tracts of land from the German government, the Air Force also recommended pursuit of 270 build-to-lease units. In addition, the primary benefits of using build to lease, according to Air Force officials,

are that it provides service members housing faster and requires less up-front appropriations than traditional military construction. Given current budget limitations, these officials believe that housing options requiring less up-front funds may be more acceptable to DOD and Congress despite their greater life-cycle costs than options with lower life-cycle costs but greater up-front funding requirements, such as those that rely primarily on traditional military construction appropriations.

At the same time, Air Force also reported it will continue to explore cooperative ventures with the German State of Rheinland-Pfalz and local communities, and a larger build-to-lease program to meet its housing requirements. Depending on the results of these efforts, the Air Force concluded that the scope of future years' military construction projects may be adjusted. The Air Force also proposed to provide a status report and report these adjustments to Congress within 365 days of the Appropriations Committees' release of the fiscal year 2006 military construction funds appropriated for Spangdahlem family housing. Specifically, the Air Force proposed to report on the (1) realized savings from cooperation with the State of Rheinland-Pfalz or the success of its proposed build-to-lease program, (2) number of housing units procured in the fiscal year 2006 military construction project, and (3) proposed adjustments in the scope of the fiscal years 2007 and 2008 military construction projects to meet its housing requirements. The Air Force concluded by stating that it was committed to reassessing its housing requirements and adjusting its strategy to provide the most cost-efficient housing investment solution at Spangdahlem.

### **Air Force May Have Overestimated Requirements**

While the Air Force relied on a housing requirements and market analysis that concluded no additional family housing construction was needed at Spangdahlem to develop its 2006 housing report, it also used other sources of information for this analysis but overlooked other information that may also affect on-base housing requirements. We are concerned that the Air Force may have overestimated the number of new housing units needed on base in its 2006 report because it did not take into account information showing that a new highway had recently opened up, which has created access to more villages and subsequently more rental housing and potentially more build-to-lease locations. Air Force officials said that this information will be contained in a new housing requirements and market analysis to be issued in July 2006, but that they did not expect it to significantly change their housing requirements. However, we believe that the Air Force may not fully know the amount or mix of housing needed until it recalculates its on-base housing requirements using this new information.

### **Air Force Selectively Relied on Housing Requirements and Market Analysis**

Although Air Force officials say that they relied on its 2003 housing requirements and market analysis to estimate the total family housing requirement for Spangdahlem, they used other sources of information for their analysis. A key finding in the



housing requirements and market analysis, which concluded that no additional family housing construction was needed, does not support the Air Force's current request for military construction. However, Air Force officials said the 2003 housing requirements and market analysis did not take into consideration the inadequate condition of some existing housing units in the Spangdahlem area. Thus, they believe the number of surplus family housing units identified in the 2003 analysis did not represent an accurate depiction of the amount of family housing available for military personnel and their dependents. Air Force officials also used data provided in another document completed in June 2005 called the housing community profile, which provided an assessment of housing conditions and improvements required to meet Air Force standards, to support the Air Force's proposed housing plan and alternatives.

Air Force officials recognized that, in some instances, the 2003-2008 analysis reflected dated information, and the Air Force used additional sources of information to develop its housing requirement. Although Air Force officials said they used the most current information available when they prepared the 2003 housing requirements and market analysis, in some cases they used information that was almost 20 years old. Specifically, in its assessment of the ability of the private sector to potentially house military families, the 2003 analysis used data collected by the German national census of 1987 as a reference for the amount of suitable rental housing in the community around Spangdahlem. The Air Force also relied on more current housing data, on-site surveys, and interviews with local experts in the real estate market and base personnel. While we reviewed these added sources, we did not make an assessment of their suitability in determining the housing requirement.

#### Updated Analysis Could Change Overall Military Family Housing Requirement

The Air Force plans to complete another housing requirements and market analysis for Spangdahlem in July 2006 using more current data, which could change—increase or decrease—the overall military family housing requirement.<sup>14</sup> Our prior work, and that of the DOD inspector general, has emphasized the importance of determining the availability of off-base housing for military families in communities surrounding military installations to prevent overstated government housing requirements.<sup>15</sup> The Air Force may have overestimated the number of new housing units needed in its plan because it did not take into account areas near Spangdahlem that may be able to support build-to-lease opportunities. In a letter to the German government dated March 2006, an Air Force official said the results of the new housing requirements and market analysis this summer would incorporate factors such as a new highway that has created access to more villages and subsequently more rentals and potential

---

<sup>14</sup> Housing requirements and market analyses are routinely updated every 4 years to determine whether housing requirements in an area have changed. The upcoming analysis at Spangdahlem will cover the 2008-2013 time frame.

<sup>15</sup> GAO, *Military Housing: Management Improvements Needed As the Pace of Privatization Quickens*, GAO-02-624 (Washington, D.C.: June 21, 2002).

construction locations for build-to-lease units. Air Force officials acknowledge that this updated analysis may reduce the overall family housing requirements at Spangdahlem by taking into account these newly accessible areas that may provide additional rental units and be able to support build-to-lease housing. Air Force officials said, however, that they did not expect this information to significantly change their housing requirements. Until the Air Force reevaluates its housing requirements based upon more current information in its new housing requirements and market analysis, it may not fully know the amount or mix of housing needed at Spangdahlem.

### **Some Limitations in Build-to-Lease Housing May Have Been Overcome and Additional Opportunities May Now Exist**

Information the Air Force received after publishing its report suggests that some previous limitations in build-to-lease housing near Spangdahlem may have been overcome and, consequently, additional build-to-lease opportunities may exist. The Air Force considered build-to-lease housing as a significant source of off-base housing under its proposed plan and under two alternatives, but at the time the Air Force wrote its report, Air Force officials stated that they did not recommend pursuing larger numbers of build-to-lease housing units because of local conditions that limited support for such projects. The Air Force has received information since publishing its report suggesting that these limitations may no longer exist, that additional build-to-lease opportunities may exist, and that military construction needed under the Air Force proposed plan may be less than stated. To test its original assumptions about local interest in build-to-lease developments near Spangdahlem, the Air Force plans to provide a requirements document for 364 build-to-lease units to the German government by June 2006 and expects a final agreement to be complete in February 2007.

#### **Air Force Information Indicated Limitations on Numbers of Build-to-Lease**

At the time of the Air Force's 2006 report, Air Force officials said that information indicated there were limitations to pursuing greater numbers of build-to-lease units than those proposed in the Air Force plan. Air Force officials cited meetings with representatives of the State of Rheinland-Pfalz and local communities where these representatives expressed various concerns. Air Force officials considered the primary challenge for a build-to-lease proposal at Spangdahlem to be the ability of local developers to acquire loans from banks to pay for construction of the housing units, because the projects were considered too financially risky to undertake. According to Air Force officials, the military services, by statute,<sup>16</sup> are limited to leasing family housing units for a maximum of 10 years, which may not provide

---

<sup>16</sup> Section 2828 (d) (1) of Title 10, United States Code provides that "Leases of housing units in foreign countries under subsection (c) for assignment as family housing may be for any period not in excess of 10 years, or 15 years in the case of leases in Korea, and the costs of such leases for any year may be paid out of annual appropriations for that year."

sufficient time for developers to recoup their investment. Further, the State of Rheinland-Pfalz was reluctant to guarantee lease payments beyond 10 years because of concerns that the Air Force might close Spangdahlem at some time in the near future. Air Force officials stated that, at the Army's Grafenwoehr Garrison in Germany, the Army addressed this limitation by obtaining local German government commitment to guarantee an additional 10-year lease period, thus providing a 20-year leasing agreement for the developers of build-to-lease housing projects. At Spangdahlem, the State of Rheinland-Pfalz has been reluctant to provide the same type of commitment for build-to-lease housing because Rheinland-Pfalz officials believe there is not a secondary market of German citizens in the area who could lease the large number of build-to-lease units that could be available at the end of the 10-year lease period.

Discussions in December 2005 between Air Force officials and representatives of the State of Rheinland-Pfalz and local communities also yielded concerns regarding a lack of public infrastructure to create more than 270 private units in a short period of time. In addition, local officials expressed concerns that large, U.S.-style developments were not in keeping with the culture of the region. In its report to Congress, the Air Force acknowledged the difficulty of this situation and stated that it does not want to pursue a large amount of build-to-lease units, because the result could be little or no family housing if the limitations they identified cause build-to-lease plans to fail due to low investor confidence in the long-term future of the air base coupled with a questionable secondary market if the base was closed or its mission significantly reduced. This could force military families to live in inadequate existing housing and consequently require additional military construction funds at a later date.

Some Build-to-Lease Limitations May  
No Longer Exist and Some Military  
Construction Funds May Not Be Necessary

Some limitations to build-to-lease developments may no longer exist or may have been mitigated by recent events. Air Force officials have stated that the release of fiscal year 2006 military construction funds for family housing units at Spangdahlem provided assurance to the German private market that the U.S. government was committed to maintaining a presence in the area and that the State of Rheinland-Pfalz is now more likely to provide lease guarantees. As a result, the Air Force has accelerated its efforts to pursue cooperative ventures with the State of Rheinland-Pfalz and local villages for a build-to-lease program.

Recent correspondence between the Air Force and the German government suggests that additional build-to-lease opportunities may exist and that some military construction funds requested under the Air Force proposed plan may not be necessary. From January through March 2006, the Air Force and the German government discussed progress toward attaining additional built-to-lease units in the Spangdahlem area. A January 2006 letter to the Air Force from an official of the State of Rheinland-Pfalz discussed overcoming their concern that U.S.-style developments were not in keeping with the culture of the region by designating small residential

zones for appropriately 50-60 units near the air base that can be planned, developed, and offered as the U.S. need increases. The letter also discussed overcoming the concerns of local developers that the projects were too financially risky by providing financial grants to assist developers by reducing their total cost liability. Another letter from the Air Force to the State of Rheinland-Phalz predicted that the results of a new housing requirement and market analysis will recognize access to more villages, rental units, and potential housing construction locations. This should reduce the overall military family housing requirement, which may reduce local concerns about the size and obtrusiveness of off-base build-to-lease efforts.

The Air Force plans to test the local market interest in build-to-lease developments through the German government starting with the Air Force's requirements document for 364 build-to-lease units in June 2006 and expects a final build-to-lease agreement to be complete in February 2007—an action that could provide a more complete picture of the potential use of build-to-lease units. Air Force officials said that if this effort is successful, the fiscal year 2008 military construction requirement for 94 family housing units may no longer be required. However, the Air Force is not in a sound position to fully know the amount or mix of housing needed until it has received the results of the build-to-lease proposal and other new information. The Air Force proposes to report any adjustments in its upcoming status report to the Appropriations Committees. Until the Air Force tests its original assumptions about local interest in build-to-lease developments and completes all assessments of available housing off base, Congress will not be in a sound position to know whether the Air Force's planned allocation of new family housing units in Spangdahlem between build-to-lease and military construction units is fully justified.

### **Air Force Did Not Always Follow Guidance in Its Life-cycle Cost Analysis of Housing Options**

The economic analysis the Air Force used in estimating the life-cycle costs of its proposed plan and four alternatives presented in its Spangdahlem housing report did not follow applicable guidance from OMB, DOD, and Air Force in two instances. The Air Force varied from the guidance in (1) using a discount rate of 3.5 percent to calculate the present value of expected costs, and (2) calculating the remaining worth of the housing units funded with military construction appropriations at an estimated replacement value. On the basis of the applicable guidance, we adjusted the Air Force's calculations by (1) using a discount rate of 5.2 percent to calculate the present value of expected costs, and (2) depreciating the housing units constructed with military construction appropriations to calculate the remaining worth of the housing at the end of the period of analysis. (We describe the details of the Air Force's and our calculations in enclosure I of this report.)

However, as shown in table 2, our recalculations did not result in a significant variance from the Air Force's analysis.<sup>17</sup> Like the Air Force's life-cycle cost estimate (\$228.4 million), our adjusted life-cycle cost (\$225.6 million) of the Air Force's proposed plan falls between the life-cycle costs of other four housing alternatives and the difference between the life-cycle cost estimates for the proposed plan was only -1.3 percent. As a result, there is little, based on our recalculations of the life-cycle costs for the current housing options, to support a change in the Air Force's selected proposal, especially given the risk assessment criteria the Air Force assigned to compare the housing options. Nevertheless, the Air Force should use the correct discount rate and remaining worth of the housing in its analysis of the housing options presented in its upcoming status report to the Appropriations Committees.

**Table 2: Comparison of Air Force Reported Life-cycle Costs with GAO Adjusted Life-cycle Costs for the Proposed Plan and Four Alternatives**

	Air Force life-cycle costs	Adjusted life-cycle costs	Difference	Percentage difference
Proposed plan	\$228,437	\$225,557	-\$2,880	-01.3%
Alternative 1	253,560	237,614	-15,946	-06.3%
Alternative 2	287,034	245,113	-41,921	-14.6%
Alternative 3	154,276	150,910	-3,366	-2.2%
Alternative 4	135,688	163,646	+27,958	+20.6%

Source: Air Force and GAO.

Notes: Fiscal year 2005 dollars in thousands.

The life-cycle costs to retain 134 housing units at Spangdahlem and to continue to lease 200 units in the local community are common to all five options and, consequently, are not included.

Air Force officials stated that the Air Force would not change its conclusions and recommendation supporting the proposed housing plan based on our recalculations, because the Air Force also relied on its established criteria to measure the benefits and risk of each housing option. The benefits criteria considered whether each option supported construction of government-owned housing; provided flexible funding and execution; consolidated operations at Spangdahlem and returned land and facilities to the German government; leveraged cost sharing with the German government; or capitalized on build-to-lease housing. The risk criteria considered whether each option kept military construction investment below, over, or at the current program level;<sup>18</sup> included 270 or more units in a build-to-lease program; or

<sup>17</sup> More complete data on the potential for build-to-lease housing and the number of available rental units in the local communities near Spangdahlem, which will affect life-cycle costs, will not be available until the Air Force analyzes the results of its solicitation for proposals about build-to-lease housing and updates its housing requirements and market analysis later in 2006.

<sup>18</sup> The Air Force assigned a higher level of risk to options in which the U.S.-funded military construction exceeded the current program because an increase in up-front funding requirements was expected to be less acceptable to DOD and Congress than the current level.

provided no U.S. military construction investment resulting in a lack of private developer confidence in investing in build-to-lease housing for Spangdahlem. For example, as shown in table 3, the Air Force concluded that its proposed plan represented the best-case scenario in that the plan provides for a large number of benefits while the risks were low. On the other hand, according to the Air Force, alternative 4 provides for the worst-case scenario in that, while the alternative supports the goal of consolidating operations at Spangdahlem, the risk is considered high due to the overreliance on U.S. government funding for all housing construction. In addition, this alternative requires the German government to acquire land adjacent to Spangdahlem, which increases risks due to the potential difficulties and delays in acquiring the land from private owners.<sup>19</sup> Based on the results of the benefits and risk analysis, Air Force officials believe our recalculations by themselves would not have caused the Air Force to change the overall conclusions and recommendation in its report to Congress. We have no basis to challenge the Air Force’s position regarding its risk assessment.

**Table 3: Air Force Reported Benefit and Risk for the Proposed Plan and Four Alternatives**

	<b>Benefit</b>	<b>Risk</b>
Proposed plan	High	Low
Alternative 1	High	Moderate
Alternative 2	High	High
Alternative 3	Low	High
Alternative 4	Moderate	High

Source: Air Force.

## Conclusions

The Air Force 2006 report to the Appropriations Committees provided an assessment of housing options that was not always based on current information, and did not follow the government guidance on cost-benefit analysis methodology. Although we found no basis to question whether the Air Force needs to upgrade its housing at Spangdahlem, there is uncertainty over how many housing units are needed and which housing method—traditional military construction, build to lease, or other methods—is the most appropriate means to meet its housing requirements. Consequently, we believe, as the Air Force concluded in its 2006 report, that there may be a need to adjust the scope of the military construction projects proposed for the future. While the Air Force specified that the results of its efforts to explore cooperative ventures and develop a larger build-to-lease program are needed to make these adjustments in its upcoming status report to the Appropriations Committees, it did not identify other factors, such as its new Spangdahlem housing requirements and market analysis, it planned to consider in making these adjustments. Until the Air

<sup>19</sup> According to the Air Force, the acquisition of additional land will occur at no cost to the U.S. government and ownership will ultimately remain with the German government.

Force fully explores cooperative ventures and a larger build-to-lease program, as well as the results of its new housing requirements and market analysis—all of which the Air Force expects to be completed later in 2006 or early 2007—the Air Force and Congress will not be in a sound position to know the full potential for build-to-lease housing near Spangdahlem and the need for military construction in fiscal years 2007 and 2008. Until then, there is a possibility of overestimating or underestimating the number of housing units needed to be built on base with military construction appropriations.

While Air Force did not fully follow OMB, DOD, and Air Force guidance on performing life-cycle cost analysis, our recalculations based on the guidance did not result in a significant variance from the Air Force's analysis, in that the estimated life-cycle costs of both analyses fell between the other alternatives. As a result, there is little based on our recalculations of the existing life-cycle costs using current information to support a change in the Air Force's selected proposal in its 2006 report or the Air Force's reliance on its established criteria to measure the benefits and risk of each housing option. Nevertheless, since there may be a need to adjust the scope of the military construction projects proposed for fiscal years 2007 and 2008 and the other housing methods presented in its upcoming status report, the Air Force cannot accurately calculate and objectively assess the costs and benefits of different housing options unless it follows OMB guidance on the use of discount rates and with DOD and Air Force guidance on the use of depreciation to calculate the remaining worth of housing.

### **Recommendations for Executive Action**

We recommend that the Secretary of the Air Force take the following two actions and reflect the results of these actions in its upcoming status report to the Appropriations Committees.

- Because of the uncertainty associated with which factors the Air Force plans to consider when it adjusts the scope of the military construction projects proposed for fiscal years 2007-2008, the Secretary should include, at a minimum, the results of its new housing requirements and market analysis for Spangdahlem (scheduled to be completed in July 2006) in making the required adjustments.
- To ensure that the status report is based upon sound economic assumptions and methods, the Secretary should calculate life-cycle costs in accordance with OMB guidance on the use of discount rates and in accordance with DOD and Air Force guidance on the use of depreciation to calculate the remaining worth of housing.

### **Agency Comments and Our Evaluation**

In written comments on a draft of this report, the Assistant Deputy Under Secretary of Defense (Environmental, Safety, and Occupational Health) agreed with our

recommendations. However, the Assistant Deputy Under Secretary commented that DOD expects the implementation of our recommendations would have minimal effect on the outcome of the Air Force's analysis and would not significantly change the recommended course of action. We are reluctant to agree with this expectation since many of the key data needed to base such a conclusion will not be known until later this year. For example, the results of the new Spangdahlem housing requirements and market analysis due to be completed this summer would incorporate factors such as a new highway that has created access to more villages and subsequently more rentals and potential construction locations for build-to-lease units. This updated analysis has the potential to reduce the overall family housing requirements at Spangdahlem by taking into account these newly accessible areas that may provide additional rental units and be able to support build-to-lease housing. We believe that until the Air Force has sufficient time to assess the results of its efforts to further explore cooperative ventures and develop a larger build-to-lease program, as well as the results of its new housing requirements and market analysis, DOD will not be in a sound position to know the full potential for build-to-lease housing and more rental housing near Spangdahlem, and the need for military construction funding in fiscal years 2007 and 2008. As a result, we continue to believe, as the Air Force concluded in its 2006 report, that there may be a need to adjust the scope of the proposed military construction projects because of the uncertainty over how many housing units are needed and which housing method—traditional military construction, build to lease, or other methods—is the most appropriate means to meet its housing requirements.

In addition, the Assistant Deputy Under Secretary's comments outlined what DOD believed were three deficiencies of our draft report. However, in its comments DOD misquoted our draft report and made incorrect conclusions as discussed below:

First, DOD stated that our report "supports the Air Force's selected proposal, especially given the risk assessment criteria the Air Force assigned to compare the housing options." In addition, DOD concluded that this quote should have been the primary focus of our audit and reflected in the results and conclusions sections of our report. However, we actually reported that "As a result, there is little, based on our recalculations of the life-cycle costs for the current housing options, to support a change in the Air Force's selected proposal, especially given the risk assessment criteria the Air Force assigned to compare the housing options." By misquoting our report, DOD failed to recognize that our statement referred to our recalculations of the life-cycle costs using then currently available information for the housing options identified in the Air Force's January 2006 report. As discussed above, there may be a need for the Air Force to adjust the housing options in its upcoming status report based on the results of its efforts to further explore cooperative ventures and develop a larger build-to-lease program, as well as the results of its new Spangdahlem housing requirements and market analysis. While we appreciate DOD's view that our recalculations of the life-cycle costs should be the primary focus of our report, we believe that DOD should recognize that we completed this review in response to a request from the Chair of the Senate Subcommittee on Military Construction and Veterans' Affairs, and Related Agencies, who asked that we review all the key assumptions and methodologies the Air Force used to develop its January 2006



report, and that the life-cycle costs analysis was only one aspect of our review, not the primary focus. Accordingly, we have made no change to our report.

Second, DOD commented that our draft report stated the 2003 housing requirements and market analysis did not take into consideration the inadequate condition of some existing housing units and that we reported the Air Force substituted other sources of information for its 2003 housing requirements and market analysis. Actually, our draft report stated that “Although the 2003 analysis concluded that no additional family housing construction was needed, according to Air Force officials, the analysis did not take into consideration the inadequate condition of some existing housing units and was based on outdated information, such as demographic data almost 2 decades old. Therefore, officials say, they substituted other sources of information to develop the housing requirements used in their 2006 report.” By using the term “substituted” in this case and other instances in our draft report, we were attempting to reconcile the differences between the Air Force 2003 market analysis’ conclusion that no additional family housing construction was needed and its 2006 report’s conclusion that additional housing construction was needed at Spangdahlem. We were also trying to explain that the Air Force used other sources of information along with the 2003 market analysis to determine the housing requirements identified in its 2006 report. Because we continue to believe that it is important to reconcile the differences between the conclusions of the 2003 market analysis and 2006 report, we did not change our report in this respect. However, we revised our report to eliminate the use of “substituted” as DOD suggested. Further, our draft report did not state that the 2005 housing community profile was done to complete the Air Force’s January 2006 report as DOD stated in its written comments. Accordingly, we made no change to our report in that regard.

Third, DOD expressed concern that our draft report stated that the Air Force had “limited discussions with state and local German officials” and DOD noted instead that there had been numerous discussions. DOD also noted that the Air Force cannot issue a request for proposals to test the level of interest by local developers in build-to-lease projects and that German government will conduct the acquisition process in this instance for the Air Force. With respect to DOD’s first concern, we actually reported that “Air Force officials assumed, based upon limited discussions with state and local German officials, that local developers considered the projects too financially risky to undertake, without officially testing the market [through] a request for proposals.” Our use of “limited” in this instance was based primarily on both: (1) the Air Force 2006 report’s description of only one meeting with state government of Rheinland-Pfalz representatives where Air Force and German officials discussed options involving the German government cooperation including cost-sharing, road repair, and loan guarantees; and (2) that the Air Force had not yet tested the local market by having the German government issue a request for proposals. We continue to believe our use of limited in this instance is proper. In addition, the statement in our report that the Air Force planned to issue a request for proposal was based on the documentation Air Force officials provided to us, which states that the “USAFE [U.S. Air Force Europe] plans to test the market through a Request for Proposal (RFP) for 364 units.” This documentation did not state, nor did Air Force officials mention, that the German government would actually issue the

request for proposals. Nevertheless, as DOD suggested, we revised this report to reflect that the German government would conduct the acquisition process in this instance for the Air Force.

The Assistant Deputy Under Secretary's comments are reprinted in their entirety in enclosure II. DOD also provided technical clarifications, which we incorporated as appropriate.

-----

We are sending copies of this report to other interested congressional committees; the Secretaries of Defense and the Air Force; and the Director, OMB. We will also make copies available to others upon request. In addition, the report will be available at no charge on GAO's Web site at <http://www.gao.gov>. The GAO staff members who made key contributions to this report are listed in enclosure III.

If you or your staff have any questions about this report, please call me at (202) 512-5581 or email at [holmanb@gao.gov](mailto:holmanb@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report.

Sincerely yours,

A handwritten signature in black ink, reading "Barry W. Holman". The signature is fluid and cursive, with the first name "Barry" being more prominent and the last name "Holman" following in a similar style.

Barry W. Holman, Director  
Defense Capabilities and Management

### **Description of Both Air Force's and Our Calculations of Life-cycle Costs**

The economic analysis the Air Force used in estimating the life-cycle costs presented in its Spangdahlem housing report varied from applicable Office of Management and Budget (OMB), Department of Defense (DOD), and Air Force guidance in (1) using a discount rate of 3.5 percent to calculate the present value of expected costs, and (2) calculating the remaining worth of the housing units funded with military construction appropriations at an estimated replacement value at the end of the period of analysis—in this case 20 years. Using Air Force data, we recomputed the life-cycle costs based on the applicable guidance by (1) using the correct discount rate of 5.2 percent, and (2) depreciating the housing units constructed with military construction appropriations to calculate the remaining worth of the housing.

#### **Air Force's Economic Analysis and Key Assumptions**

The Air Force used a variety of data sources and analytical steps to estimate the life-cycle costs of its proposed plan and the four other housing alternatives for Spangdahlem.

- First, the construction costs of the family housing units were derived from the cost estimates contained on DD form 1391 for projects where they existed,<sup>1</sup> and from DOD's family housing cost model, which contains estimates of construction costs. To compute the present value of these construction costs in fiscal year 2005 dollars, the Air Force used a 3.5 percent nominal discount rate. Air Force officials said the 3.5 percent discount rate was selected automatically from a Web-based program model that is available for public use in making net present value calculations.
- Second, to follow DOD guidance on economic analysis,<sup>2</sup> the Air Force offset the costs of the military construction projects by their remaining worth, which the guidance and the Air Force's report call residual value, of the family housing units at the end of the period of analysis. The guidance specifically states that residual value should be calculated for alternatives that have assets (buildings, equipment, structures, etc.) that will still have a useful value at the end of the period of analysis. It is important to note here that the term "residual value" used in the Air Force's analysis should not be confused with the residual value terminology also commonly used overseas to describe an amount a host nation would pay the United States for improvements made to property when it is returned to the host nation. In no instances do Air Force officials believe the United States would receive the amount of residual value

---

<sup>1</sup> DD form 1391 is used by DOD to submit requirements and justifications in support of funding requests for military construction to Congress.

<sup>2</sup> DOD Instruction 7041.3, *Economic Analysis for Decision Making* (Washington, D.C.: Nov. 7, 1995).

used in its economic cost analysis if the housing were to be returned to Germany sometime in the future. Although Air Force guidance further states that residual value amounts are normally calculated using a straight line depreciation method<sup>3</sup> of the started value over the project's economic life,<sup>4</sup> the Air Force did not depreciate the value of housing in its economic cost analysis. Instead, Air Force officials assumed that the Air Force would fully fund the sustainment of the housing necessary to cover expenses of all recurring maintenance costs as well as major repairs (e.g., replacing the roof or repairing the air conditioning) and, consequently, they concluded these units would not depreciate in value. However, it is important to note that historically the Air Force has not fully funded sustainment of its facilities. For example, we have reported that hundreds of millions of dollars designated for sustainment continues to be redesignated by the services to pay for base operations support services and other programs and priorities, and that amounts spent on facilities sustainment have fallen short of what is needed to halt the deterioration of facilities.<sup>5</sup>

- Third, on the basis of historical data on actual operation and maintenance costs for family housing, the Air Force estimated that it would incur \$4,900 in annual operation and maintenance costs. To compute the present value of these construction costs in fiscal year 2005 dollars, the Air Force used the Web-based program model to inflate the \$4,900 estimate 2.5 percent per year and adjusted for the time value of money by 3.5 percent.
- Fourth, using historical cost data for build-to-lease agreements, the Air Force estimated that the annual cost of the build-to-lease housing was \$32,888 per unit. To compute the present value of these costs in fiscal year 2005 dollars, the Air Force used the Web-based program model to inflate the \$32,888 estimate 2.5 percent per year and adjusted this figure for the time value of money by 3.5 percent.

As shown in table 4, the estimated life-cycle cost (\$228.4 million) of the Air Force's proposed plan falls between the life-cycle costs of other four housing alternatives, which range from \$135.7 million to \$287 million.

---

<sup>3</sup> Straight line depreciation is a method of calculating the depreciation of an asset which assumes the asset will lose an equal amount of value each year. The annual depreciation is calculated by subtracting the salvage value of the asset from the purchase price, and then dividing this number by the estimated useful life of the asset.

<sup>4</sup> Air Force Manual 32-1089, *Air Force Military Construction and Family Housing Economic Analysis Guide* (Washington, D.C.: Aug. 1, 1996).

<sup>5</sup> GAO, *Defense Infrastructure: Issues Need to Be Addressed in Managing and Funding Base Operations and Facilities Support*, GAO-05-556 (Washington, D.C.: June 15, 2005), and *Defense Infrastructure: Changes in Funding Priorities and Strategic Planning Needed to Improve the Condition of Military Facilities*, GAO-03-274 (Washington, D.C.: Feb. 19, 2003).

**Table 4: Air Force Life-cycle Costs for Its Proposed Plan and Four Alternatives**

Fiscal year 2005 dollars in thousands

	Proposed plan	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Military construction:					
New family housing at Spangdahlem	\$126,205 <sup>a</sup>	\$80,769		\$96,097	\$210,146
Demolition at Spangdahlem			\$2,755		
Replace Bitburg Annex housing <sup>b</sup>				128,140	
Subtotal (total military construction)	\$126,205	\$80,769	\$2,755	\$224,237	\$210,146
Less residual value	(69,982)	(44,634)		(112,316)	(116,813)
Subtotal (military construction less residual value)	\$56,223	\$36,135	\$2,755	\$111,921	\$93,333
Operation and maintenance	19,620	11,704		42,355	42,355
Build to lease	152,595	205,721	284,279		
<b>Total life-cycle costs</b>	<b>\$228,437</b>	<b>\$253,560</b>	<b>\$287,034</b>	<b>\$154,276</b>	<b>\$135,688</b>

Source: Air Force.

Notes: Totals may not add due to rounding.

The life-cycle costs to retain 134 housing units at Spangdahlem and to continue to rent 200 units in the local community are common to all five options and, consequently, are not included in this table.

<sup>a</sup>\$131.3 million in original military construction costs for fiscal years 2006-2008 presented in fiscal year 2005 dollars.

<sup>b</sup>This alternative also includes the costs to construct front gate improvements, a fire station, and demolition of 715 existing, inadequate housing units located at Bitburg.

Although military construction and build-to-lease programs are typically analyzed on a 40-year basis, the Air Force used a 20-year time frame to generate the life-cycle costs of each of the housing options shown in table 4. According to Air Force guidance, the time frame for the economic cost-analysis period used to compare various alternatives is normally the construction period plus the shortest of the known economic life of the different alternatives.<sup>6</sup> In this instance, according to Air Force officials, the initial lease period for housing units is not to exceed 10 years with a 10-year renewal option.<sup>7</sup> Air Force officials also said to go beyond 20 years in its analysis would create several challenges because of the lack of information on the costs of build-to-lease units since the lease would have to be renegotiated and housing built with military construction appropriations would have to be renovated,

<sup>6</sup> Air Force Manual 32-1089.

<sup>7</sup> 10 U.S.C. 2828 § (d) (1).

which would require adjustments in its cost estimates for the different housing options. Consequently, the Air Force chose to use a 20-year time frame in its economic costs analysis, as we did when we adjusted the Air Force's life-cycle costs analysis.

### Our Adjusted Life-cycle Cost Analysis

We recalculated the life-cycle costs of the Air Force's proposed plan and the four alternatives after making two adjustments to better follow OMB, DOD, and Air Force guidance. (See our adjusted life-cycle costs in table 5.) First, we used a 5.2 percent discount rate to calculate the present value of the expected military construction costs, annual operation and maintenance costs, and annual build-to-lease housing costs. OMB guidance on economic cost analysis, such as those performed by the Air Force, provides specific guidance on the discount rates to be used in evaluating federal programs whose benefits and costs are distributed over time.<sup>8</sup> DOD's instruction on economic analysis decision making states that the estimate of the discount rate for use in economic analysis shall be issued annually in accordance with OMB guidance and the data shall be based on estimates of real and nominal borrowing rates provided by OMB.<sup>9</sup> Air Force guidance on military construction and family housing economic analysis also requires an economic analysis to use discount rates provided by OMB.<sup>10</sup> For fiscal year 2005—the base year of the Air Force study—OMB guidance requires that 5.2 percent be used for a 20-year period by federal agencies as the nominal discount rate for their economic cost analyses.<sup>11</sup> Second, to follow Air Force guidance, we depreciated the housing units constructed with military construction appropriations using a straight line method to calculate the residual value of the housing at the end of the period of analysis. Air Force guidance states that residual value is normally calculated using a straight line depreciation method.

---

<sup>8</sup> OMB Circular A-94, *Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs*, (Washington, D.C.: Oct. 29, 1992). The circular states that the standard criterion for deciding whether a government program can be justified on economic principles is the net present value, which is calculated by assigning monetary values to benefits and costs, discounting future benefits and costs using an appropriate discount rate, and subtracting the sum total of discounted costs from the sum total of discounted benefits.

<sup>9</sup> DOD Instruction 7041.3.

<sup>10</sup> Air Force Manual 32-1089.

<sup>11</sup> OMB Circular No. A-94, App. C, *Discount Rates for Cost-Effectiveness, Lease Purchase, and Related Analyses* (Washington, D.C.: Jan. 5, 2006). The 5.2 percent rate is available in a table of past years discount rates from Appendix C of Circular No. A-94.

**Table 5: Adjusted Life-cycle Costs for the Air Force's Proposed Plan and Four Alternatives**

Fiscal year 2005 dollars in thousands

	Proposed plan	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Military construction:					
New family housing at Spangdahlem	\$118,620 <sup>a</sup>	\$77,124		\$91,123	\$195,280
Demolition at Spangdahlem			\$2,662		
Replace Bitburg Annex housing <sup>b</sup>				89,554	
Subtotal (total military construction)	\$118,620	\$77,124	\$2,662	\$180,677	\$195,280
Less residual value	(39,979)	(24,943)		(65,890)	(67,757)
Subtotal (military construction less residual value)	\$78,641	\$52,181	\$2,662	\$114,787	\$127,523
Operations and maintenance	16,773	9,982		36,123	36,123
Build to lease	130,143	175,451	242,451		
<b>Total life-cycle costs</b>	<b>\$225,557</b>	<b>\$237,614</b>	<b>\$245,113</b>	<b>\$150,910</b>	<b>\$163,646</b>

Source: Based on Air Force data.

Notes: The life-cycle costs to retain 134 housing units at Spangdahlem and to continue to rent 200 units in the local community are common to all five options and, consequently, are not included in this table.

<sup>a</sup>\$131.3 million in original military construction costs for fiscal years 2006-2008 presented in fiscal year 2005 dollars.

<sup>b</sup>This alternative also includes the costs to construct front gate improvements, a fire station, and demolition of 715 existing, inadequate housing units located at Bitburg.

## 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 12 2006

Mr. Barry Holman  
Director, Defense Capabilities and Management  
U.S. Government Accountability Office  
Washington, D.C. 20548

Dear Mr Holman,

This is the Department of Defense (DoD) response to the GAO draft report, GAO-06-736R, "Limitations in the Air Force's Proposed Housing Plan for Spangdahlem Air Base, Germany," dated May 9, 2006 (GAO Code 350835).

Thank you for allowing us to comment on your draft report. We concur with the GAO recommendations that the Air Force update the Housing Requirements and Market Analysis (HRMA) and correct assumptions in the life-cycle cost analysis (LCCA) prior to its next status report to the Appropriations Committees. However, we expect these revisions will have a minimal effect on the outcome of the Air Force's analysis and will not significantly change the recommended course of action. Our comments below outline what we believe are three specific deficiencies of the report. We will provide our technical comments under separate cover.

First, the report concludes that it "supports the Air Force's selected proposal, especially given the risk assessment criteria the Air Force assigned to compare the housing options." This should be the primary focus of the GAO audit, reflected in the results and conclusions sections of the report. The AF's proposal is based upon the fact that a MILCON solution is more cost-effective than the build-to-lease (BTL) solution. This was proven by the average MILCON cost per unit of \$338,357 in comparison to the average BTL cost per unit of \$565,167. The only finding from the GAO report was an incorrect discount rate and present value costs. Revising these assumptions will continue to support the AF's recommended solution.

Second, the report says that the "HRMA did not take into consideration the inadequate condition of some existing housing units." It further says that the AF "substituted other sources of information to develop the housing requirements used in their 2006 report." The "other sources" refers to the Housing Community Profile (HCP). The HCP was not completed as a "substitution for this information" as stated on page 12, but an integral part of the Housing programming process. Our process has four major steps. First, the HRMA determines the on-base housing requirement. Second, the HCP determines the condition of the existing housing, calculates the cost effectiveness of renovation vs. replacement, and develops a funding strategy for accomplishing the housing requirement. Third, the Family Housing Master Plan (FHMP) takes each individual base HCP and uses business rules to build the AF program. Finally, the





FHMP is developed into DD1391s and is submitted to the Congress through the POM process. The report's assertion that the HCP was done to complete the report is inaccurate.

Third, the report states that "limited discussions with state and local German officials" were conducted. To the contrary, there have been numerous discussions with the German officials before and during the Spangdahlem Report to Congress. For example, General Hobbins (COMUSAFE) personally met with Minister Bruch (State Secretary, German State of Rheinland-Pfalz) and has highlighted the recent Rheinland-Pfalz commitments to loan guarantees and stressed the importance of the FY07 project in continued progress of the BTL/private investment. This shows a high level of commitment and has personal involvement from the Secretary and Chief of Staff of the Air Force on Spangdahlem Housing. Also, the Air Force cannot issue a request for proposal; it must be issued by BIMA (Bundesanstalt für Immobilienaufgaben - German Government Real Estate). BIMA now has a draft of AF's requirements document and awaits the official accommodation request so they can begin the acquisition process.

Because of the importance of the FY07 project in signaling commitment to Spangdahlem housing, support for the FY07 project at Spangdahlem AB remains critical. Any deferral may directly impact the Air Force's ability to realize the maximum number of build to lease units and cause their Spangdahlem airmen to remain in inadequate quarters indefinitely.

If you have any questions regarding the attached report please contact me at (703) 602-3669.



Alex A. Beehler

Assistant Deputy Under Secretary of Defense  
(Environment, Safety, and Occupational Health)

GAO DRAFT REPORT – DATED May 9, 2006  
GAO CODE 350835/GAO-06-736R

"MILITARY HOUSING: Limitations in the Air Force's Proposed Housing Plan for Spangdahlem  
Air Base, Germany"

DEPARTMENT OF DEFENSE COMMENTS  
TO THE RECOMMENDATIONS

GAO RECOMMENDATION 1: The GAO recommended that the Secretary of the Air Force include, at a minimum, the results of its new housing requirements and market analysis (HRMA) for Spangdahlem in making the required adjustments. (Page 21/GAO Draft Report)

DOD RESPONSE TO GAO RECOMMENDATION 1:

We concur with adjusting the Spangdahlem housing program as a result of the 2006 HRMA and the success of BTL.

GAO RECOMMENDATION 2: The GAO recommended that the Secretary of the Air Force calculate life-cycle costs in accordance with Office of Management and Budget guidance on the use of discount rates and in accordance with DOD and Air Force guidance on the use of depreciation to calculate the remaining worth of housing. (Page 21/GAO Draft Report)

DOD RESPONSE TO GAO RECOMMENDATION 2:

We concur with updating the report with the correct discount rate and depreciation value with the understanding that the resulting report will not fundamentally change the ranking of the alternatives nor the Air Force's position on the proposed option being the most viable alternative.

## **GAO Contact and Staff Acknowledgements**

### **GAO Contact**

Barry W. Holman, (202) 512-5581 ([holmanb@gao.gov](mailto:holmanb@gao.gov))

### **Acknowledgements**

In addition to the person named above, Nelsie Alcoser, Susan Ditto, Mark Little, Charles Perdue, Gary Phillips, and Roger Tomlinson also made major contributions to this report.

(350835)

---

---

This is a work of the U.S. government and is not subject to copyright protection in the United States. It may be reproduced and distributed in its entirety without further permission from GAO. However, because this work may contain copyrighted images or other material, permission from the copyright holder may be necessary if you wish to reproduce this material separately.

---

## GAO's Mission

The Government Accountability Office, the audit, evaluation and investigative arm of Congress, exists to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the American people. GAO examines the use of public funds; evaluates federal programs and policies; and provides analyses, recommendations, and other assistance to help Congress make informed oversight, policy, and funding decisions. GAO's commitment to good government is reflected in its core values of accountability, integrity, and reliability.

---

## Obtaining Copies of GAO Reports and Testimony

The fastest and easiest way to obtain copies of GAO documents at no cost is through GAO's Web site ([www.gao.gov](http://www.gao.gov)). Each weekday, GAO posts newly released reports, testimony, and correspondence on its Web site. To have GAO e-mail you a list of newly posted products every afternoon, go to [www.gao.gov](http://www.gao.gov) and select "Subscribe to Updates."

---

## Order by Mail or Phone

The first copy of each printed report is free. Additional copies are \$2 each. A check or money order should be made out to the Superintendent of Documents. GAO also accepts VISA and Mastercard. Orders for 100 or more copies mailed to a single address are discounted 25 percent. Orders should be sent to:

U.S. Government Accountability Office  
441 G Street NW, Room LM  
Washington, D.C. 20548

To order by Phone: Voice: (202) 512-6000  
TDD: (202) 512-2537  
Fax: (202) 512-6061

---

## To Report Fraud, Waste, and Abuse in Federal Programs

Contact:

Web site: [www.gao.gov/fraudnet/fraudnet.htm](http://www.gao.gov/fraudnet/fraudnet.htm)

E-mail: [fraudnet@gao.gov](mailto:fraudnet@gao.gov)

Automated answering system: (800) 424-5454 or (202) 512-7470

---

## Congressional Relations

Gloria Jarmon, Managing Director, [JarmonG@gao.gov](mailto:JarmonG@gao.gov) (202) 512-4400  
U.S. Government Accountability Office, 441 G Street NW, Room 7125  
Washington, D.C. 20548

---

## Public Affairs

Paul Anderson, Managing Director, [AndersonP1@gao.gov](mailto:AndersonP1@gao.gov) (202) 512-4800  
U.S. Government Accountability Office, 441 G Street NW, Room 7149  
Washington, D.C. 20548