



Testimony before the  
Committee on Commerce, Science, and  
Transportation, United States Senate

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# MILITARY AIRCRAFT

## Observations on the Air Force's Plan to Lease Aerial Refueling Aircraft

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Highlights of [GAO-03-1143T](#), a testimony before the Senate Committee on Commerce, Science, and Transportation

### Why GAO Did This Study

At 543 aircraft, the KC-135 is the mainstay of U.S. aerial refueling capability. Recapitalizing this fleet is crucial to maintaining this capability and, ultimately, maintaining the mobility of U.S. forces. In the fiscal year 2002 defense appropriations act, the Congress authorized the Air Force to lease up to 100 aerial refueling aircraft after the Air Force reported its plans to the Senate and House Armed Services Committees and Defense Appropriations Subcommittees. The Air Force sent Congress on July 10 its report containing a business case analysis of its proposed lease. The Air Force plans to lease 100 KC-767A aircraft for 6 years each from a special purpose entity (SPE) that will order the aircraft from the Boeing Company.

GAO was asked to (1) summarize the Air Force's report for leasing KC-767A aircraft, (2) present its observations on the report and justification for the lease, and (3) identify related issues and costs to assist the Congress as it considers the Air Force's proposal.

[www.gao.gov/cgi-bin/getrpt?GAO-03-1143T](http://www.gao.gov/cgi-bin/getrpt?GAO-03-1143T).

To view the full product, including the scope and methodology, click on the link above. For more information, contact Neal P. Curtin, (202) 512-4914, [curtinn@gao.gov](mailto:curtinn@gao.gov).

## MILITARY AIRCRAFT

# Observations on the Air Force's Plan to Lease Aerial Refueling Aircraft

### What GAO Found

The Air Force report indicates the following:

- Leasing costs more than buying by \$150 million (net present value).
- Replacing the KC-135 is urgent because of aging and corrosion.
- The Air Force will pay 89.9 percent of aircraft's fair market value—\$138.4 million—complying with the Office of Management and Budget's (OMB's) requirement that the price not exceed 90 percent.
- The Air Force may return the planes or buy them for about \$44 million per aircraft (if authorized by the Congress) at the end of the lease.

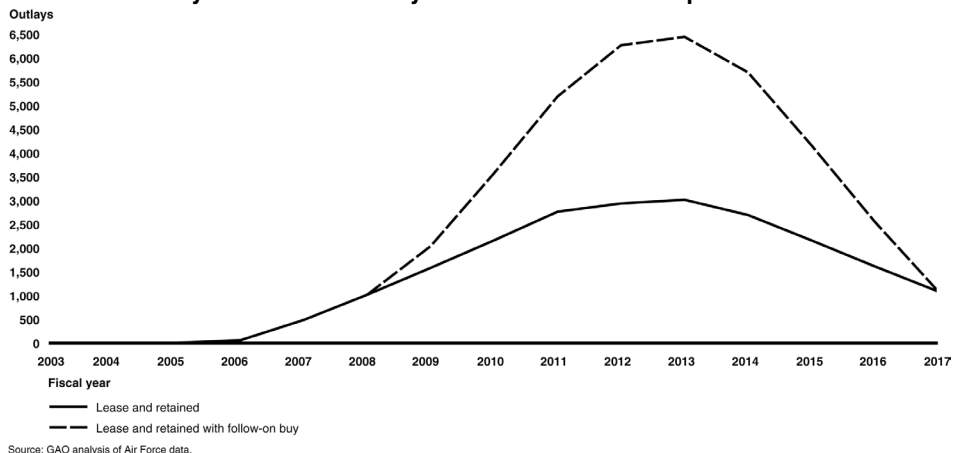
GAO has the following observations about the lease report:

- Purchasing could be up to \$1.9 billion cheaper (net present value), if multi-year procurement authority were granted.
- The Air Force believes that replacement is urgent because of decreased availability, increased maintenance costs, and the risk of fleet wide grounding for the KC-135, although until recently, recapitalization had not been a high enough priority to successfully compete for funding.
- The lease payments comply with OMB requirements only if \$7.4 million in construction financing is added to the \$131 million-per-aircraft purchase price, for a total of \$138.4 million per aircraft. Otherwise, the lease payments represent about 93 percent of the value of the aircraft.

Other issues the Congress may wish to examine include the following:

- Boeing will maintain the aircraft for between \$5 billion and \$5.7 billion during the lease period; KC-135 total operating and support costs were about \$4.3 million to \$4.5 million per year per aircraft in fiscal year 2002.
- Boeing's profit is limited to 15 percent on the KC-767As compared to about 6 percent on commercial 767s, according to one financial analysis.
- Leasing delays payments for the first 100 aircraft so acquiring 100 more tankers will significantly increase outlays in the 2012 -17 time frame.

**Estimated Outlays to Lease and Buy 100 Aircraft and to Acquire 100 More**



Mr. Chairman and Members of the Committee:

I appreciate the opportunity to appear before you today to discuss the Air Force's report on the planned lease of 100 Boeing 767 aircraft modified for aerial refueling. Aerial refueling is a key capability that is essential to the mobility of U.S. forces. Section 8159 of the Department of Defense Appropriations Act for fiscal year 2002 authorizes the Air Force to lease up to 100 Boeing 767 aircraft; the leased aircraft would be known by a new designation, KC-767A. The act also requires the Air Force to report to the Congress with a description of the proposed lease terms and conditions and any expected savings before proceeding. The Air Force sent its report to the Congress on July 10.

You asked for our analysis of the Air Force's business case and our views on the proposed lease arrangement. In my statement today, I will (1) summarize the proposed lease as presented in the Air Force's recent report to the Congress, (2) present our observations on the Air Force's lease report and its justification for the lease, and (3) identify related issues and costs that we believe the Congress will want to consider as it assesses the Air Force's proposal.

To summarize and analyze the report of the proposed lease, we reviewed the report to the Congress, examined the draft lease (which is still in negotiation and is subject to change), and reviewed documents and briefings from the Office of the Assistant Secretary of the Air Force for Acquisitions, Air Mobility Programs, to identify issues and costs that are material to the contract. We also reviewed the Air Force's analysis and data used in its analysis of the lease versus buy comparison as required by Office of Management and Budget (OMB) Circular A-94. Finally, we used data gathered for our ongoing review of tanker requirements being conducted for the House Armed Services Committee's, Subcommittee on Readiness.

## **BACKGROUND**

Aerial refueling is critical to carrying out our national security strategy because it allows other aircraft to fly further, stay airborne longer, and carry more weapons, equipment,

and supplies. While numerous military aircraft provide refueling services, the bulk of U.S. refueling capability lies with the Air Force's fleet of 59 KC-10 and 543 KC-135 aircraft. These are large, long-range aircraft that have counterparts in the commercial airlines but have been modified to turn them into tankers. The KC-10 is based on the DC-10 aircraft, and the KC-135 is similar to the Boeing-707 airliner. Because of their large numbers, the KC-135 is the mainstay of the refueling fleet, and successfully carrying out the refueling mission depends on the continued performance of the KC-135. Thus, recapitalizing the fleet of KC-135s will be crucial to maintaining aerial-refueling capability, and it will be a very expensive undertaking.

There are two basic versions of the KC-135 aircraft, designated the KC-135E and KC-135R. The R model aircraft has been refitted with modern engines and other upgrades that give it an advantage over the E model. The E model aircraft on average is about 2 years older than the R model, and the R model provides more than 20 percent greater refueling capacity per aircraft. The E model is located in the Air National Guard and Air Force Reserve. Active forces have only the R model. Over half the KC-135 fleet is located in the reserve components.

The rest of the Department of Defense's (DOD) refueling fleet consists of Air Force HC-130 and MC-130 aircraft used by special operations forces, Marine Corps KC-130 aircraft, and Navy F-18 and S-3 aircraft. However, the bulk of refueling for Marine Corps and Navy aircraft comes from the Air Force KC-10 and KC-135. These aircraft are capable of refueling Air Force and Navy/Marine aircraft, as well as some allied aircraft, although there are differences in the way the KC-10 and KC-135 are equipped to do this.

### **The Air Force's Report on the KC-767A Aircraft Lease**

Section 8159 of the Department of Defense Appropriations Act for fiscal year 2002,<sup>1</sup> which authorized the Air Force to lease the KC-767A aircraft, specified that the Air Force could not commence lease arrangements until 30 calendar days after submitting a report

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<sup>1</sup> Department of Defense and Emergency Supplemental Appropriations for Recovery from and Response to Terrorist Attacks on the United States Act, 2002, Pub. L. No. 107-117, § 8159, 115 Stat. 2230, 2284-85 (2002).

to the House and Senate Armed Services and Appropriations Committees that would (1) outline implementation plans and (2) describe the terms and conditions of the lease and any expected savings. At about the same time that the Air Force submitted the required report (on July 10, 2003), it submitted a New Start Notification<sup>2</sup> and stated that it would not proceed with the lease until it received approval from all of the committees. The House and Senate Appropriations Committees and the House Armed Services Committee approved the new start in July. We previously testified before the House Armed Services Committee and its Subcommittee on Projection Forces, and we issued a briefing report in 2002 on the status of the proposed lease to date (see our Related GAO Products page for a complete list of products to date related to refueling requirements and the proposed lease).

The key elements of the Air Force's proposal, as presented in the report to the Congress, are summarized below:

- The Air Force proposes to lease 100 KC-767A aircraft for 6 years each; the first aircraft would be delivered in August 2006 and the final ones by the end of 2011. Leases on the final group of aircraft would terminate in 2017. The report indicates that the total program for the leased aircraft would cost about \$17.2 billion in net present value over the lease period.<sup>3</sup>
- The Air Force's report includes an analysis required by OMB Circular A-94 comparing the net present value of the lease approach against that of purchasing the aircraft. The Air Force acknowledges that its analysis indicated that purchase would be cheaper than leasing by about \$150 million in net present value terms. Nevertheless, it proposes to use the leasing approach because it allows the Air Force to take delivery of the aircraft more quickly than it could through purchase (and avoid creating major disruptions to other procurement programs for which

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<sup>2</sup> The New Start Notification, submitted to the Armed Services and Appropriations Committees on July 11, 2003, was required by section 133 of the Bob Stump National Defense Authorization Act for Fiscal Year 2003, and is being used by the Air Force as the trigger for executing the lease. Pub. L. No. 107-314, § 133, 116 Stat. 2458, 2477 (2002).

<sup>3</sup> When costs and benefits are evaluated over time, a net present value calculation is used to account for the time value of money through an interest rate called a "discount rate."

funding has already been identified in the Future Years Defense Program). Specifically, the Air Force said that if the aircraft were purchased at the same rate as planned under the lease, it would need \$5 billion more funding through fiscal year 2006 and more than \$14 billion more for the 6 years reflected in the Future Years Defense Program. Under the procurement budget plan that the lease would replace, the Air Force would not begin acquiring new tankers until fiscal year 2009 and would not have 100 new tankers until 2016, 5 years later than planned through the lease.

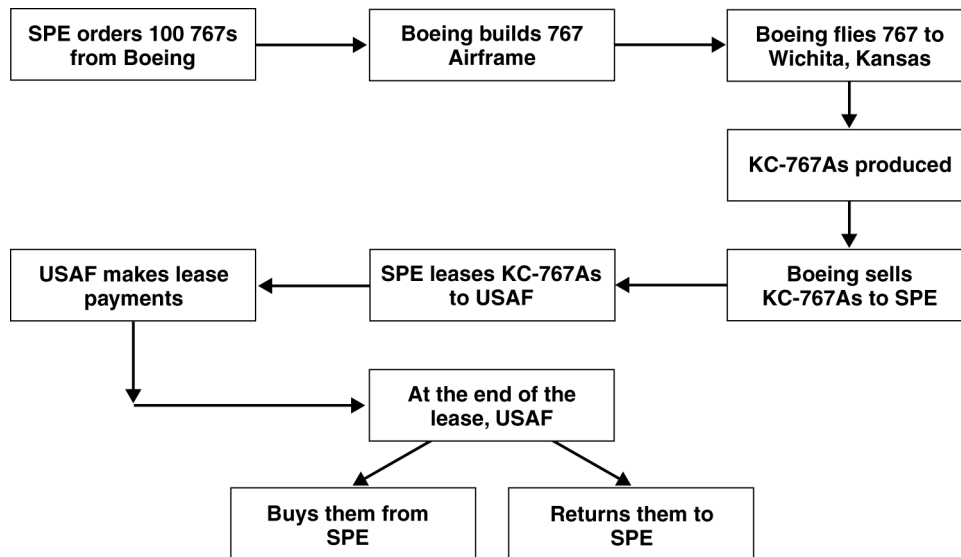
- The key justification for the lease, according to the Air Force, is an urgent need to replace the current fleet of KC-135 aircraft. The Air Force has stated that the KC-135 is aging and becoming increasingly costly to operate owing to corrosion, the need for major structural repair, and increasing rates of inspection to ensure air safety. Moreover, the report indicates that the Air Force believes it is incurring a significant risk by having 90 percent of its aerial-refueling capability in a single, aging airframe and that a “fleet grounding” event could jeopardize the tanker’s mission.<sup>4</sup>
- The Air Force plans to award a contract to a special purpose entity (SPE), a trust to be created under the laws of Delaware, that will issue bonds to raise sufficient capital to purchase the new aircraft from Boeing and lease them to the Air Force.<sup>5</sup> The entity is to issue bonds on the commercial market based on the strength of the lease and not the creditworthiness of Boeing. The lease is part of a three-party contract between the Air Force, Boeing, and the SPE. Figure 1 depicts the relationships of the three parties to the contract and the transactions that are to take place under the contract, once it is signed.

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<sup>4</sup> A fleet grounding event would involve some systemic problem or equipment failure affecting all aircraft of the same type and would be serious enough to require replacement before the aircraft could resume normal operations.

<sup>5</sup> The special purpose entity would pay the interest on the bonds using lease payments it receives from the Air Force and would pay off all the bonds at the conclusion of the lease term.

**Figure 1: Diagram of the Relationships of the Parties to the Contract and the Transactions That Are to Take Place Under the Contract**



Source: GAO.

- Office of Management and Budget Circular A-11 requires that an operating lease meet certain terms and conditions, including a criterion that the net present value of the lease payments not exceed 90 percent of the fair market value of the asset at the time that the lease is initiated. The report to the Congress states that DOD believes the proposed lease meets those criteria and that payments over the life of the lease will be equal to 89.9 percent of the fair market value of the aircraft. At the same time, the report points out that the percentage is based on the cost to buy the aircraft – \$131 million plus the cost of construction financing of \$7.4 million, for a total of \$138.4 million. If the fair market value is assumed to be the cost to buy the aircraft, then the lease payments represent about 93 percent of the fair market value and would not meet the requirement.
- If Boeing sells up to 100 comparable aircraft during the term of the contract to another customer for a lower price than that agreed to by the Air Force, the government would receive an “equitable adjustment.” The report also states that Boeing has agreed to a return-on-sales cap of 15 percent and that an audit of its

internal cost structure will be conducted in 2011, and that any return on sales exceeding 15 percent would be reimbursed to the government.

- According to the report, if the government were to terminate the lease, it must (1) do so for all of the delivered aircraft, and any aircraft for which construction has not begun, (2) give 12 months advance notification prior to termination, (3) return the aircraft, and (4) pay an amount equal to 1 year's lease payment for each aircraft terminated. If termination occurs before all aircraft have been delivered, the price for the remaining aircraft would be increased to include unamortized costs incurred by the contractor that would have been amortized over the terminated aircraft and a reasonable profit on those costs.
- The government will pay for and the contractor will obtain commercial insurance to cover aircraft loss and third-party liability as part of the lease agreement. Aircraft loss insurance is to be in the amount of \$138.4 million per aircraft in calendar year 2002 dollars. Liability insurance will be in the amount of \$1 billion per occurrence per aircraft. If any claim is not covered by insurance, the Air Force will indemnify the special purpose entity for any claims from third parties arising out of the use, operation, or maintenance of the aircraft under the contract.
- At the expiration of the lease, the Air Force can return the aircraft to the SPE after removing, at government expense, any Air Force-unique configurations added by the Air Force after delivery of the aircraft from the SPE. Alternatively, the Air Force also has the option to purchase the aircraft at residual value (the estimated value of the aircraft after the lease term ends). However, the purchase can take place only if it is authorized and funded by the Congress at or before the expiration of the lease.
- The contractor will warrant that each aircraft will be free from defects in materials and workmanship and that the warranty will be of 36 months' duration



and will commence after construction of the commercial Boeing 767 aircraft but before they have been converted into aerial-refueling aircraft. Upon delivery to the Air Force, each KC-767A aircraft will carry a 6-month design warranty, 12-month material and workmanship warranty on the tanker modification, and the remainder of the original warranty on the commercial components of the aircraft, estimated to be about 2 years.

### **Our Analysis of the Air Force's Report and Lease Proposal**

I will now present our observations on the Air Force's lease report to the Congress and on some of the details of the lease proposal. We believe there are a number of aspects of the report and lease that the Congress needs to be aware of in considering the Air Force's proposal, including the following:

- The cost differential between leasing and purchasing was presented by the Air Force as about \$150 million favoring purchase in net present value terms, although the differential can rise to \$1.9 billion favoring purchase, depending upon the assumptions used. For example, according to the Air Force report to the Congress, had the Congress provided multiyear procurement authority and had DOD been able to accommodate that while preserving "program stability," the net present value could favor purchase by up to \$1.9 billion.
- The Air Force report states that there is an urgent need to begin tanker replacement 3 years earlier than previously planned, but until recently, recapitalization of the fleet has not been a high enough priority in the Air Force budget to successfully compete for funding.
- The Air Force proposal may not meet all the criteria specified by OMB to qualify as an operating lease since the Air Force would pay 93 percent of the fair market value of the aircraft if construction financing were not assumed to be included in the fair market value of the aircraft.

- As required by section 8159 of the fiscal year 2002 defense authorization act, the Air Force report to the Congress was limited to the costs of leasing the aircraft. However, the report does not present the total costs of this program, including the costs to acquire the aircraft at the expiration of the lease or to maintain the aircraft during the period of the lease.

### Net Present Value Analysis

OMB Circular A-94 specifies that whenever a federal agency needs to acquire the use of a capital asset, it should do so in the way that is least expensive to the government as a whole and further specifies how a lease versus purchase analysis should be conducted. Specifically, the circular directs a net present value comparison between the proposed lease and a hypothetical purchase on the basis of the same delivery and return profile. This approach permits an accounting for the time-value of money.

In its report to the Congress, the Air Force's net present value calculations between the proposed multiyear lease and a hypothetical purchase indicate that purchasing the aircraft would be cheaper than leasing by about \$150 million; however, the report contains a footnote indicating that the net present value could favor purchase by an additional \$1.7 billion (for a total of \$1.9 billion less in costs compared with leasing). The \$1.7 billion is based on four assumptions (all in net present value terms). First, the Air Force assumes that using a multiyear contract<sup>6</sup> for purchasing the aircraft would lead to \$900 million in savings. Second, the Air Force assumes that using a shorter span of time for the period when progress payments<sup>7</sup> are made would lead to another \$200 million in savings. Third, it assumes that if a shorter span of time for calculating inflation for progress payments is used, then savings of \$500 million will occur. Fourth, it assumes that if a 30 percent discount on the imputed cost of insurance is included (since the government self-insures), savings of \$100 million will occur.

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<sup>6</sup> In multiyear procurement, all items are bought under one contract as opposed to a series of annual contracts.

<sup>7</sup> Progress payments, which are made to contractors before they deliver items, reduce contractors' financing costs and in turn result in a lower purchase price for the government.

The net present value analysis is also sensitive to the appropriate discount rate and other expected inflation. The Air Force followed OMB guidance contained in Circular A-94 in doing its analysis, to include using the discount rate of 4.1 percent. Our analysis shows that a 1-percentage point change in the discount rate can cause a change of over \$660 million in the net present value results. Table 1 shows the sensitivity of the net present value analysis to different discount rates, including the discount rate of 4.2 percent that we would use on the basis of the July 10, 2003, date on which the report to the Congress was issued.<sup>8</sup>

**Table 1: Sensitivity Analysis of Discount Rates for the A-94 Analysis**

<b>Dollars in millions</b>	
<b>Discount rates in percentages</b>	<b>Net present value of leasing minus purchase</b>
3.5	\$567.6
4.1 (Air Force discount rate)	154.7
4.2 (GAO discount rate)	89.5
4.5	-100.4

Sources: Air Force (data); GAO (analysis).

The assumptions being used for the analysis regarding rates of expected inflation for construction of the aircraft, for military construction for facilities, and for operation and maintenance are reasonable; however, if the actual cost increases for the construction of the aircraft are higher than the assumed cost increases in the Air Force analysis, the cost of leasing will be higher than the cost presented in the report to the Congress. The reverse could also be true.

### Urgency of Tanker Replacement

In its report to the Congress, the Air Force stated that “our National Security Strategy is unexecutable without air refueling tankers” and that “the risks involved with indefinitely operating a fleet of aging aircraft are unacceptable.” These statements indicate that

<sup>8</sup> The Air Force used a 9-year discount rate from Appendix C of Circular A-94, which is revised annually. The date of the revision used by the Air Force was January 2003. GAO policy for determining a discount rate is that it should be the interest rate for marketable U. S. Treasury debt with maturity comparable to the term of the project being evaluated. On the basis of the date the report was issued, the discount rate that we would use would be 4.2 percent.

tankers are, or should be, a very high priority; however, the Air Force has for many years faced the issue of an aging KC-135 fleet and yet has not planned, until recently, to begin replacing them.

After reviewing a wide variety of Air Force reports and documents as well other documents, we have concluded that neither the Air Force nor DOD have been willing to make the difficult decision to reallocate procurement funds from other programs in the near term. For example, the Air Force put a replacement tanker program (known as the “KC-X”) in its submission for the President’s fiscal year 2004 budget. But in view of “affordability constraints” in the near term, the program would not begin to be funded until fiscal year 2006, and the first aircraft would be delivered in fiscal year 2009.

Until the authority to lease tanker aircraft was established by section 8159 of the fiscal year 2002 Department of Defense Appropriations Act, we did not perceive that concern within the Air Force about the condition of its KC-135 fleet was serious enough to successfully compete with other programs for funding. Instead, the Air Force has expressed belief in the necessity of continuing to operate and sustain the 540-plus aircraft fleet for several more decades, and it has also expressed confidence in its ability to do so, as illustrated in the following:

- In our 1996 report on aging tanker aircraft,<sup>9</sup> we stated that procurement of a commercial-derivative aircraft could take as long as 4 to 6 years and that development of a new aircraft could take up to 12 years. Therefore, we stated, the Air Force will need to quickly initiate studies to develop a replacement strategy for mobility aircraft and should consider a multirole aircraft that could be used for air mobility as well as aerial refueling. In response, DOD stated that “while the KC-135 is an average of 35 years old, its airframe hours and cycles are relatively low. With proper maintenance and upgrades, we believe the aircraft may be sustainable for another 35 years.” Thus in 1996, the Air Force was planning to continue to rely on the KC-135 aircraft until about 2030. The Air Force’s

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<sup>9</sup> *U.S. Combat Air Power: Aging Refueling Aircraft Are Costly to Maintain and Operate*, [GAO/NSIAD-96-160](#) (Washington, D.C.: August 8, 1996).

comments notwithstanding, we pointed out at the time of our report that the long-term serviceability of the aircraft was questionable and we continue to believe it.

- *The KC-135 Aircraft Sustainment Master Plan (1997)*, an Air Force strategic guide for investment, repair, and modification decisions, concluded that “with continued aggressive maintenance, the KC-135 will fly safely well beyond the FY 97-02 time frame.” The report added that the aircraft can continue to be a safe and affordable weapon system that will meet the operational requirements well into the next century “if there is a consistent investment in maintenance and the aging aircraft programs.”
- The Air Mobility Command’s *Air Mobility Strategic Plan for 2002* (October 2001) established a time frame of fiscal year 2008-2013 to begin fielding an updated fleet of refueling aircraft. However, the report also identified additional problems hampering operations, including tanker aircraft and aircrew shortfalls, an increase in the number of KC-135 aircraft in the depot, and a decrease in mission capable rates. The strategic plan acknowledged that the KC-135 Programmed Depot Maintenance Improvement Plan had been developed to reduce the number of aircraft in the depot. In addition, the strategic plan indicated that an Analysis of Alternatives would be conducted over the next two years to determine the most effective solution set to meet the nation’s future air-refueling requirements, although, to our knowledge, the analysis has not been done yet.
- In the *Mission Need Statement: Future Air Refueling Aircraft* (AMC 004-01, November 2001), the commander of the Air Mobility Command (AMC) stated that the “Air Mobility Command’s priority is to continue with C-17 acquisition and C-5 modernization in the near term. As the airlift priority is met, AMC will begin to shift resources to address the next air refueling platform in the mid-to-long-term. Air Mobility Strategic Plan 2000 envisions KC-135 aircraft retirement beginning in 2013 with the concurrent fielding of a replacement air refueling platform.” The mission need statement also stated that “definition of future air refueling mission

needs and examination of opportunities for technology enhancement must begin in the near-term.”

- In a May 2002 response to our briefing on our preliminary analysis to the Senate Armed Services Committee of the planned tanker lease, the Air Force stated that while it had programmed funds for a traditional replacement tanker since 2001, the first new aircraft would not enter the fleet until fiscal year 2009. The Air Force maintains an aggressive program of inspection and repair to keep the KC-135 fleet operational and to meet mission requirements. Consequently, while the KC-135 fleet was built from 1957 through 1965, significant portions of the aircraft have been upgraded or modified in the intervening years.
- From 1975 through 1988, the Air Force replaced about 1,500 square feet of the aluminum skin on the underside of the wings of most KC-135 aircraft with an improved aluminum alloy that was less susceptible to fatigue. In addition, engine strut fittings were replaced.
- Beginning in the mid-1980s, the Air Force began to replace the engines of the original KC-135A aircraft. Over 410 KC-135 aircraft have been converted to the R model by installation of fuel-efficient, quiet F108 (CFM-56) engines that enhanced the aircraft’s performance and capability. In addition to new engines, this modification includes 25 other changes per plane, including reinforced floors, new and strengthened landing gear, reinforced wing structures, new engine struts, and over 12 miles of wiring.
- The Air Force modernized the cockpits on all of its KC-135 tankers through a program called PACER CRAG (compass, radar, and Global Positioning System receiver) to enhance reliability, maintainability, and capability.
- In addition to specific large-scale, fleet wide upgrade programs such as those that I described above, most aircraft have had major structural components replaced

as necessary. Moreover, if--as KC-135 aircraft undergo their periodic programmed depot maintenance--trend analyses indicate the potential for fleet wide problems, some major components may be replaced on all aircraft. Examples of some of these major structural repairs include segments of fuselage skins, floor beams, fuselage bulkheads, and upper wing skins. As components such as these are replaced, the use of new and improved materials, fabrication, and corrosion prevention techniques are designed to solve problems and to last for the remaining life of the aircraft. In the case of the upper wing skins, for example, the Air Force reported, "as we work through the fleet, this level of replacement will decrease as most of the bad skins have been or shortly will be replaced. Replaced skins are installed with attention to corrosion prevention and should last more than 40 years."

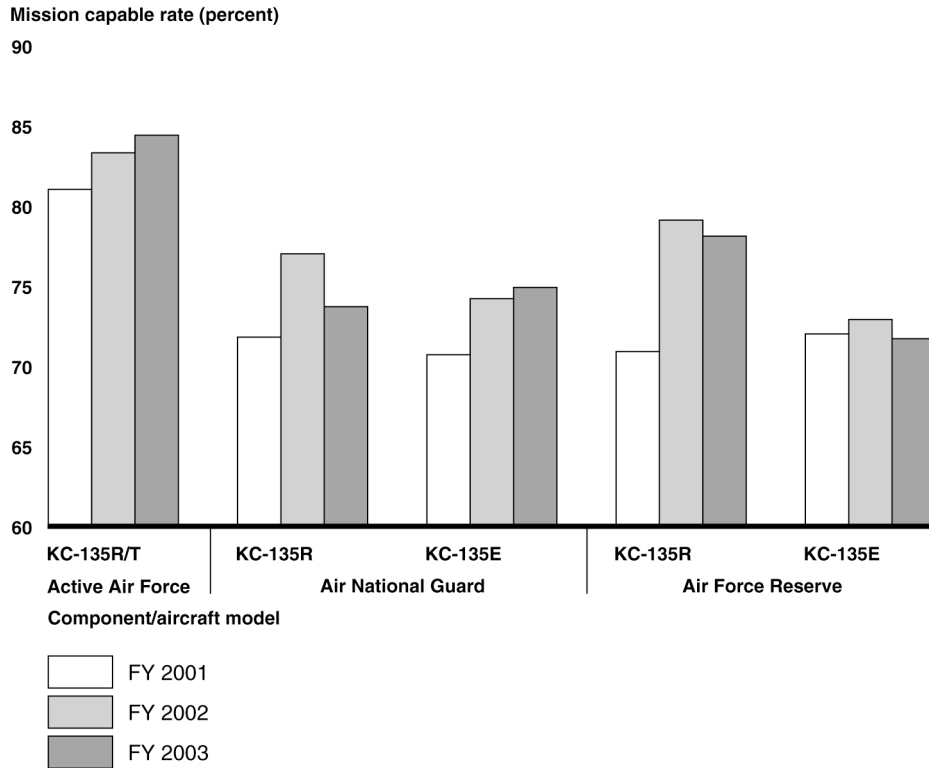
Despite the Air Force's aggressive maintenance and upgrade programs to keep the KC-135 mission capable, since 2001, the Air Force has come to believe that the condition of the fleet has deteriorated to the point where replacement has become more urgent. For example, Air Force officials have cited the Air Force's *Economic Service Life Study*, which showed that program depot maintenance has become increasingly costly on the KC-135. Air Force officials told us that the E-model of the KC-135 is currently operating under flight restrictions owing to corrosion.

The KC-135 fleet averages over 40 years in age, but the aircraft have relatively low levels of flying hours. Flying hours for the KC-135 averaged about 300 hours per year from 1995 through September 2001. Since then, utilization is averaging about 435 hours per year. The Air Force projects that E and R models have lifetime flying hour limits of 36,000 and 39,000 hours, respectively--according to the Air Force, only a few KC-135 aircraft would reach these limits before 2040, at which time some of the aircraft would be about 80 years old.

The KC-135 fleet has not been meeting its mission capable rate goal. Mission capable rates measure the percentage of time on average that the aircraft are available to

perform their assigned mission. The Air Force has a goal of an 85 percent mission capable rate for the KC-135 fleet. As shown in figure 2, KC-135 aircraft have not met the 85 percent mission capable rate in any of the last 3 fiscal years, although aircraft in the active component have consistently reached a mission capable rate of over 80 percent.

**Figure 2: Average Annual Mission Capable Rates for KC-135 Aircraft by Service Component and Aircraft Type, Fiscal Year 2001 – Fiscal Year 2003 (July)**



Source: Air Force.

Note: Fiscal year 2003 includes data through July 2003.

By most indications, the fleet has performed very well during the past few years of high operational tempo. Operations in Kosovo, Afghanistan, Iraq, and here in the United States in support of Operation Noble Eagle were demanding, but the current fleet was able to meet the mission requirements. Approximately 150 KC-135 aircraft were deployed to the combat theater for Operation Allied Force in Kosovo, about 60 for Operation Enduring Freedom in Afghanistan, and about 150 for Operation Iraqi Freedom.<sup>10</sup> Additional KC-135 aircraft provided “air bridge” support for the movement

<sup>10</sup> Air Force officials told us that combat commanders refused to permit the E-model of the KC-135 to be deployed to recent combat theaters.



of fighter and transport aircraft to the combat theater, for some long-range bomber operations from the United States, and to help maintain combat air patrols over major U.S. cities since September 11, 2001.

According to Air Force projections, the KC-135 operating and support costs will increase substantially in the coming years. The costs for the current fleet totaled about \$2.4 billion in fiscal year 2002 (2002 dollars). The Air Force projects that the cost will total about \$3.5 billion (2002 dollars) in fiscal year 2012 for a fleet of 510 aircraft. According to Air Force officials, increased programmed depot maintenance costs were a significant cause of the increase. The officials said that, based on historical experience, programmed depot maintenance costs are expected to increase about 18 percent per aircraft per year. By the same projections, the operating and support costs for the fleet of 100 KC-767A aircraft will total about \$808 million.<sup>11</sup>

The concept of an aging KC-135 fleet, and the problems and costs associated with operating and sustaining old aircraft, is not a sudden manifestation, but rather a fact of life that the KC-135 support infrastructure has had to deal with for years. Many of the problems currently being reported as reasons to begin tanker recapitalization immediately—including corrosion, increasing operating and support costs, and reduced aircraft availability—are not new and were issues that the Air Force was addressing in the mid-1990s, when we last examined aerial-refueling matters and when the Air Force concluded that recapitalization was not urgent.

### Operating Lease Requirements

OMB Circular A-11 provides certain criteria that must be met for an operating lease:

- Ownership must remain with the lessor throughout the term of the lease and is not to transfer at or shortly after the end of the lease period.
- No bargain price purchase option is allowed.
- The lease term may not exceed 75 percent of the asset's economic lifetime.

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<sup>11</sup> The projections assume that the KC-135Es and KC-135Rs will fly 308 and 368 hours per year while the KC-767A will fly 750 hours per year.

- The present value of the minimum lease payments cannot exceed 90 percent of the fair market value of the asset at the beginning of the lease term.
- The asset must be a general-purpose asset and not government-unique.
- The asset must have a private-sector market.

The Air Force report says that the proposal complies with all of the criteria.

However, the report also points out that, depending on the fair market value used, the net present value of the lease payments in the case of the KC-767A may exceed the 90 percent of initial value threshold. On the one hand, if the fair market value is considered to include the cost of construction financing of \$7.4 million per aircraft (or \$740 million for all 100 aircraft),<sup>12</sup> then the lease payments are estimated to represent 89.9 percent. This is the formula that the Air Force used to document compliance with the circular and which the Air Force cited in its report to the Congress; it results in a cost of \$138.4 million per aircraft. On the other hand, if the fair market value excludes construction financing, it totals \$131 million per aircraft, and the lease payments represent 93 percent, thus exceeding the 90 percent threshold. According to the Air Force report, construction financing, however, must be included to meet the OMB Circular A-11 requirement.

However, it is not clear that including the construction financing represents the fair market value of the aircraft. The SPE will borrow money on the commercial market to raise funds to pay Boeing to finance construction of the aircraft and will repay the banks up to \$7.4 million in interest on the loans per aircraft. Once constructed, the aircraft will be delivered to the SPE, and the SPE will pay Boeing \$131 million less the amount of financing already paid to Boeing for the aircraft. The Air Force will then lease the aircraft for up to \$138.4 million per aircraft over the life of the lease. Consequently, the \$7.4 million (reported by the Air Force as construction financing) represents interest on the loans to the SPE, and it is not clear that interest should be included in the fair market value of the aircraft.

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<sup>12</sup> Construction financing will be raised by the special purpose entity through borrowing in order to make progress payments.

## Total Cost of the Program

While the Air Force report includes the cost of leasing and other government costs such as training, as well as operations and support, the report does not include the costs of buying the tankers at the end of the lease.<sup>13</sup> At the end of each 6-year lease, the aircraft are to be returned to the owner, the SPE, or they can be purchased by the Air Force for their residual value, estimated at about \$44 million each in then-year dollars. If the aircraft are returned, the Air Force tanker fleet will be reduced, and the Air Force will have to find some way to replace the lost capability. In other words, the lease payments will have paid almost the full cost of the aircraft, and then the capability would be lost. Thus, the total cost of this 100-aircraft program should include the eventual acquisition cost. In addition to the cost to lease and subsequently purchase the aircraft, Air Force operations and support costs range from \$4.6 billion to \$6.8 billion, depending on which dollar calculation is used. The Air Force also plans to construct new facilities and would incur other costs ranging from \$1.2 billion to \$1.5 billion. Table 2 summarizes total cost in three different dollar calculations—then-year (or current) dollars, constant fiscal year 2002 dollars, and net present value.<sup>14</sup>

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<sup>13</sup>The Department of Defense and Emergency Supplemental Appropriations for Recovery from and Response to Terrorist Attacks on the United States Act, 2002, Pub. L. No. 107-117, § 8159, 115 Stat. 2230, 2284-85 (2002) required that the Air Force report on the costs to purchase or lease the aircraft but did not require that other costs be reported.

<sup>14</sup> Current dollars or then year dollars are the dollar value of a good or service in terms of prices at the time the good or service is sold. These contrast with constant dollars, which measure the value of purchased goods or services at price levels that are the same as those for the base year. Constant dollars do not contain any adjustments for inflationary changes that have occurred or are forecasted to occur outside the base year. When costs and benefits are evaluated over time, a net present value calculation is used to account for the time value of money through an interest rate called a “discount rate.”

**Table 2: Estimated Cost of the Contract to Lease, Maintain, and Purchase 100 KC-767A Aircraft Under Three Different Types of Analysis**

Dollars in billions

<b>Category</b>	<b>Net present value</b>	<b>Constant fiscal year 2002 dollars</b>	<b>Then-year dollars</b>
Lease payments with aircraft return	\$11.4	\$12.3	\$16.3
Aircraft purchase and other costs	3.1	3.4	5.2
<b>Subtotal</b>	<b>14.5</b>	<b>15.7</b>	<b>21.5</b>
Operations and Support	4.6	5.7	6.8
Military construction and other costs	1.2	1.3	1.5
<b>Lease-buy Total</b>	<b>\$20.3</b>	<b>\$22.7</b>	<b>\$29.8</b>

Sources: Air Force (data). GAO (analysis).

In addition, the Air Force will have to pay an additional estimated \$778 million if the entire 100 aircraft are returned, to ensure that the aircraft are returned in the maintenance condition specified in the lease. For these reasons, returning the aircraft would probably make little sense, and the Congress will almost certainly be asked to fund the purchase of the aircraft at their residual value as the lease expires.

### Related Issues and Concerns

Our preliminary analysis indicates that certain other costs associated with the lease may deserve further examination by the Congress. Specifically, we have concerns related to contractor logistics support, the extent of Boeing’s profit margin, and the impact of the lease on follow-on tanker acquisitions.

### Contractor Logistics Support

The Air Force estimates that the maintenance agreement with Boeing will cost between \$5 billion and \$5.7 billion during the lease period. It has negotiated a non competitive agreement with Boeing as part of the lease negotiations, covering all maintenance except flight-line maintenance, which is to be done by Air Force mechanics. This represents an average of about \$6.4 million per aircraft per year in fiscal year 2002 dollars. We do not know how the Air Force determined that this was a reasonable price or whether competition might have yielded savings because the Air Force did not provide sufficient

documents on a timely basis for us to evaluate its price analysis. A number of commercial airlines and maintenance contractors already maintain the basic 767 commercial aircraft and could possibly do some of the required maintenance if given the opportunity to compete for the contract.

### Profit Margin

The Air Force report indicates that Boeing can earn no more than a 15 percent profit on the Boeing 767 aircraft and that an audit will be conducted after the final planes are delivered to ensure that the company's profit does not exceed that amount. However, since this aircraft is basically a commercial 767 with modifications to make it a military tanker, it is not clear why the 15 percent profit should apply to the full cost. One financial analysis published recently states that Boeing's profit on commercial 767 aircraft is in the range of 6 percent.<sup>15</sup> If the Air Force negotiated a lower profit margin on that portion of the cost, with the 15 percent profit applying only to the military-specific portion, this could lower the cost by several million dollars per aircraft. For example, assuming the commercial tanker portion of the cost is about \$80 million, the difference between profits of 6 percent and 15 percent would be about \$7 million per aircraft, or \$700 million for all 100 aircraft.

### Effect on Follow-on Tanker Acquisitions

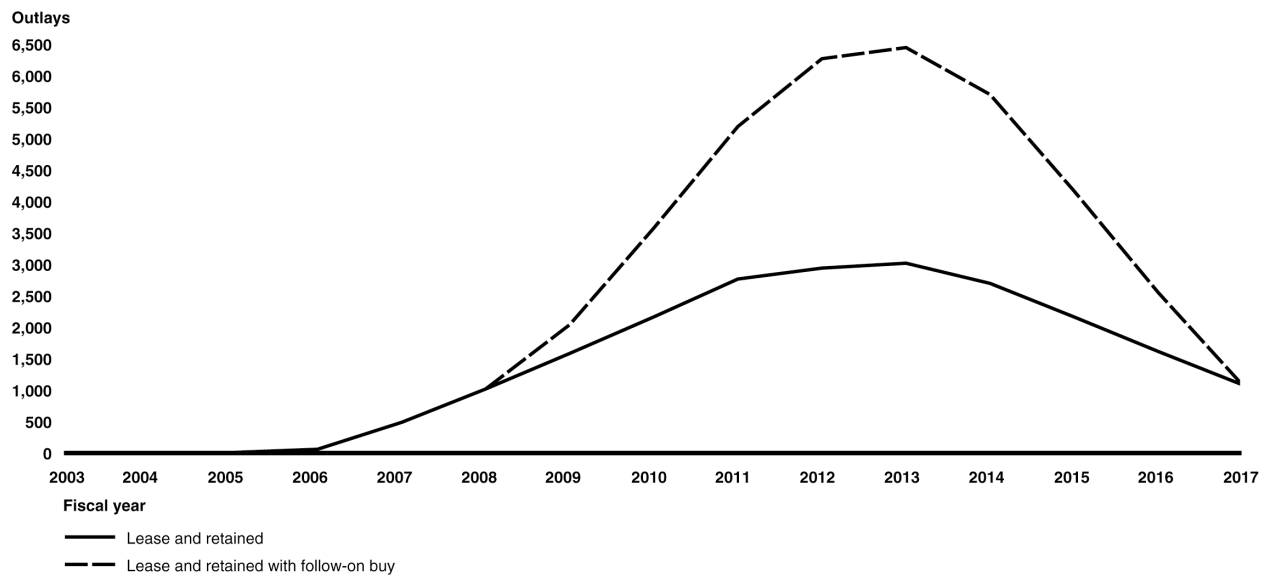
One of the key advantages of leasing is that it enables the Air Force to take delivery of aircraft without the large, up-front obligation of funds required for purchase; thus by the end of fiscal year 2011, the Air Force will have received 100 new tankers. The flip side of this, however, is that payments are spread out over many years and represent an obligation that must be met throughout the term of the lease. The Air Force will be making lease payments on the leased aircraft through fiscal year 2017, and will likely pay

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<sup>15</sup> See Morgan-Stanley, *Does 767 Tanker Equate to 700+ Comm'l Orders?*, (May 30, 2003).

about \$4.4 billion (in then-year dollars) in fiscal years 2012-17 to purchase the aircraft at the expiration of the lease. Funds spent during those years on these 100 aircraft are therefore funds that are not available for the procurement of additional tanker aircraft that will be needed to replace the remaining 400-plus aircraft in the KC-135 fleet. If the Air Force wants to procure additional tankers starting in this 2012-17 period, it will need an even larger budget during those years to accommodate both the continuing lease payments and new procurement. Figure 3 illustrates the annual outlays that would be required to lease the aircraft as proposed and the additional outlays needed to purchase an additional block of 100 aircraft. This assumes that delivery of the additional aircraft would begin after the first 100 had been delivered. If additional aircraft are to be obtained before the planned end of delivery of the first 100 leased aircraft in 2011, then the additional funds for the second block of aircraft would be needed even sooner.

**Figure 3: Outlays Required to Lease 100 Aircraft and to Subsequently Purchase an Additional 100 Aircraft**



Source: GAO analysis of Air Force data.

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Mr. Chairman, this concludes my prepared statement. I would be happy to answer any questions that you or Members of the committee may have.

## **Contacts and Staff Acknowledgments**

For future questions about this statement, please contact me at (757) 552-8111 or Brian J. Lepore at (202) 512-4523. Individuals making key contributions to this statement included Kenneth W. Newell, Tim F. Stone, Joseph J. Faley, Stephen Marrin, Kenneth Patton, Charles W. Perdue, and Susan K. Woodward.

## RELATED GAO PRODUCTS

*Military Aircraft: Considerations in Reviewing the Air Force Proposal to Lease Aerial Refueling Aircraft.* [GAO-03-1048T](#). Washington, D.C.: July 23, 2003.

*Military Aircraft: Information on Air Force Aerial Refueling Tankers.* [GAO-03-938T](#). Washington, D.C.: June 24, 2003.

*Air Force Aircraft: Preliminary Information on Air Force Tanker Leasing.* [GAO-02-724R](#). Washington, D.C.: May 15, 2002.

*U.S. Combat Air Power: Aging Refueling Aircraft Are Costly to Maintain and Operate.* [GAO/NSIAD-96-160](#). Washington, D.C.: August 8, 1996.



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