CONGRESSIONAL BUDGET OFFICE
U.S. Congress
Washington, DC 20515

Dan L. Crippen, Director

July 23, 2002

Honorable Curt Weldon
Chairman
Subcommittee on Military Procurement
Committee on Armed Services
U.S. House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

As you requested in your letter of July 8, 2002, the Congressional Budget Office has reviewed the report on leasing four Boeing 737 aircraft submitted by the Secretary of the Air Force to the Congress on June 24, 2002. The Air Force found that it would save $3.9 million (expressed in net present value terms) from leasing these aircraft when compared to an outright purchase—a difference of about 1 percent.

In analyzing the key assumptions underlying the Air Force's analysis, CBO found that small adjustments in the assumed purchase price, residual value, or insurance cost would reduce the projected savings from leasing the aircraft or make the purchase alternative the less expensive option. We conclude that the critical assumption in the Air Force's analysis is the fair market value of the aircraft used to estimate the cost of the purchase alternative. Our analysis suggests that this figure may be too high because it does not appear to be consistent with the lease payments and residual value offered by Boeing. In contrast, using a higher discount rate, as some economists recommend, would reduce the cost of the lease alternative relative to the purchase option.

The Air Force's 737 Lease Plan

The Air Force plans to award a firm, fixed price, multiyear contract to Boeing for four leased C-40 aircraft. (The C-40 is the military variant of the commercial 737 Boeing Business Jet.) Because these aircraft take 18 to 24 months to build, the Air Force plans to lease two used 737 aircraft in the

Boeing Business Jet configuration beginning in September 2002 to provide an interim capability. The remaining two aircraft would be manufactured by Boeing in the C-40 configuration and delivered to the Air Force in December 2003. After the two manufactured C-40 aircraft are delivered, Boeing would reconfigure the two used aircraft to the C-40 configuration and return them to the Air Force in 2004. Under the terms of the contract, three of the aircraft would eventually be leased for six years and the fourth aircraft would be leased for five years.

At the end of the lease period, the Air Force would have the option to purchase the four aircraft for a specified price negotiated in the contract, provided the Congress authorizes the purchase and appropriates the necessary amounts. If the Air Force declines to exercise the purchase option, or if the Congress does not approve the purchase, the aircraft would be returned to Boeing.

In its analysis, the Air Force assumed that the four aircraft could be purchased for $269 million (or about $67 million a plane) or leased for the negotiated stream of lease payments, totaling $218 million over the lease period (an average of about $54 million per plane). It also assumed that the planes would have a combined residual value of $102 million at the end of the lease period. (All of these inputs were provided by Boeing.) The Air Force used a discount rate of 5 percent to calculate the net present value of both the lease and purchase options as required by the Office of Management and Budget (OMB) Circular No. A-94, *Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs*.

Results of CBO's Analysis

CBO analyzed the effect of varying key assumptions on the estimated savings associated with leasing the four aircraft and found that small adjustments in the assumed purchase price or residual value could reduce the savings associated with leasing the aircraft or favor the purchase alternative rather than the lease. A summary of our analysis follows.

Effect of Varying the Purchase Price. The estimated fair market value of the four aircraft is the key assumption in computing the cost of the purchase option. CBO notes that this amount is an estimated cost, not a negotiated price. Since the Air Force is not seriously seeking to purchase these aircraft at this time, the Air Force did not have a strong incentive to seek a lower purchase price after Boeing presented its initial estimate of the fair market value. Just as Boeing and the Air Force negotiated a lower lease price from Boeing's initial offer, CBO believes it might also be possible for the Air Force and Boeing to negotiate a lower purchase price for the aircraft, if the Air Force were a willing buyer. CBO estimates that the Air Force would only need to negotiate a purchase price about $1 million less per plane than Boeing's initial estimate in order for the cost of the purchase option to be equal to the cost of the lease option, in net present value terms. That price would be only 1.4 percent less than the one assumed in the Air Force's analysis.

CBO attempted to corroborate the assumed purchase price of the aircraft by calculating backwards from the stream of lease payments, the residual value, the term of the lease, and the interest rate used to compute the lease payments (7 percent) given to us by the Air Force. Using Air Force data and a model for calculating commercial lease payments, we estimate that a purchase price of $249 million (rather than the $269 million price used in the Air Force's analysis) would be consistent with the lease terms. Using other estimating methods for calculating the purchase price from this information generates purchase price values even lower than $249 million. Conversely, using the purchase price, residual value, and lease interest rate provided, we estimate that lease payments would need to be greater than the amounts reported by the Air Force. We estimate that, if a purchase price for the four aircraft could be negotiated for $249 million or $5 million less per aircraft, then the purchase alternative would save about $15 million compared to the lease (in net present value terms).

Effect of Varying the Residual Value and the Cost of Self-insurance. CBO also analyzed the effect of varying the assumptions regarding the residual value and the cost of self-insurance, and found that small adjustments in either assumption would reduce the savings associated with leasing the aircraft or favor the purchase alternative rather than the lease.

Boeing estimates that the four aircraft will have a combined residual value of $102 million (or almost $26 million a plane) at the end of the lease term. Since this value is subtracted from the cost of the purchase option to make the two alternatives directly comparable, smaller or larger residual values could make the purchase option more or less expensive relative to the cost of the lease. Boeing estimated the residual value of each plane by depreciating the value of the basic aircraft at approximately 6 percent annually, and by fully depreciating the value of the equipment customized for the Air Force over the life of the lease.

We question whether the customized equipment will truly have no value at the end of the lease. It is possible that a subsequent customer for the aircraft might be willing to reuse some of the interior equipment, or that the electronic equipment (especially the unique Air Force items) might have some salvage value. (This could be likely since the Air Force intends to reuse some of the interior fixtures from the two used 737 aircraft on its C-40 aircraft.) If the value of the unique equipment were depreciated to 25 percent of its original fair market value rather than assuming it has no residual value, CBO estimates that the residual value of all four aircraft would increase to about $130 million. After accounting for the fact that the lease payments are inversely related to the residual value of the aircraft, CBO estimates that a change in this assumption would reduce the projected net benefits of leasing by about $2 million.

The Air Force will pay Boeing $21.2 million under the negotiated lease for the cost of a commercial insurance policy to cover the risk of loss of the aircraft and liability from its use. In order to ensure comparability among the options in a cost-benefit analysis, OMB Circular No. A-94 requires that certain imputed costs, such as insurance, be included in the estimated cost of the purchase option. Thus, the $21.2 million in insurance costs are also included in the Air Force's estimate for the purchase option. Nevertheless, if the Air Force were to purchase the aircraft, it would not take out an insurance policy. Instead, it would "self-insure" the aircraft and would only fund the cost to repair or replace the aircraft if and when the aircraft were damaged or destroyed. CBO believes that the $21.2 million figure may overstate the imputed cost of government self-insurance because the cost of a commercial policy includes a margin for overhead and other costs which would not be borne by the government when it insures itself. According to industry sources, these costs can account for between 30 percent and 50 percent of the total cost of an insurance policy. CBO found that if the imputed cost of insurance under the purchase option were reduced by 30 percent to about $15 million, then the analysis would favor the purchase option by about $2 million in net present terms.

Other Considerations. OMB Circular No. A-94 states that, in a lease-purchase analysis, taxes should not be subtracted from the cost of the lease since tax payments are also included in the purchase price. However, CBO notes that Boeing may deduct depreciation from its annual income under the lease alternative, thereby reducing its tax payments to the federal government. At the end of the lease, if Boeing sells the aircraft, that depreciation would be recaptured and taxed at that time. Total tax payments under the lease should be the same in nominal dollars regardless of depreciation. But, since the tax payments would be deferred, the present value of those revenues would be reduced. While CBO does not have enough information to estimate the present value of the revenue losses, this effect on taxes would increase the cost of the lease alternative relative to the purchase alternative.

You also asked CBO to evaluate the sensitivity of the Air Force's findings to assumptions regarding the discount rate used in the net present value analysis. We found that the Air Force correctly applied the guidelines contained in OMB Circular No. A-94, in applying the specified discount rate. However, using a higher, private-sector discount rate, as some economists recommend, would reduce the cost of the lease option relative to the purchase option.

If you wish further details about the above estimates, we will be happy to provide them. The CBO staff contact is David Newman.

Sincerely,

Dan L. Crippen
Director

cc: Honorable Gene Taylor
Ranking Member