

**INFLATION SAVINGS IN U.S. AIR FORCE PROGRAMS
RESULTING FROM ECONOMIC PRICE ADJUSTMENT:
AN UPDATE**

Staff Working Paper

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**The Congress of the United States
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PREFACE

This paper updates earlier estimates of savings associated with aircraft and engine procurement contracts resulting from economic price adjustment (EPA) clauses which link contract costs to the inflation rate. It was prepared at the request the Chairman of the Subcommittee on Defense, Committee on Appropriations, U.S. House of Representatives. In accordance with the Congressional Budget Office (CBO) mandate to provide objective analysis, this paper contains no recommendations.

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BACKGROUND AND SUMMARY

The U.S. Air Force is currently procuring a number of aircraft and engines under contracts that incorporate an economic price adjustment (EPA) clause. These clauses provide for upward or downward adjustments in the total contract costs based on the rates of inflation in labor and materials used in the production programs. In 1985 the Congressional Budget Office (CBO) prepared an analysis of Air Force contracts that used EPA clauses to determine the final contract costs and prices for many aircraft. 1/ This report updates that analysis.

Inclusion of an EPA clause transfers the risk associated with predicting inflation from the contractor to the government. During the 1970s, inflation at higher than expected rates led to large increases in certain Air Force contracts that used the EPA mechanism. More recently, the fact that inflation has been at lower rates than projected has led to substantial savings in contracts that include EPAs.

Inflation is measured using national price data compiled by the Bureau of Labor Statistics (BLS), which may not be the same as the prices paid by the contractors. Normally, EPAs adjust for "abnormal" escalation--that is, for deviations from the rates of inflation projected at the time the contract was negotiated. No adjustment is typically made for the first two years of the contract or if the deviations are small (less than 1 percent to 2 percent). The adjustment clauses are used only with firm fixed-price or fixed-price-incentive contracts. 2/

The EPA clauses are not often included in contracts, since according to Air Force policy, the use of an EPA must be of demonstrated potential benefit to the government. Only 42 contract actions in 1984 (out of more than 16,000) included an EPA clause. This represented 6 percent of the value of all contracts let by the Air Force that year. The Air Force often will propose using an EPA clause if the contractor will agree to reduce his

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1. Congressional Budget Office, "Inflation Savings in U.S. Air Force Aircraft Programs Generated by Economic Price Adjustment Clauses," Staff Working Paper (August 1985).
 2. In a fixed-price-incentive contract, the contractor's profit depends on his success in meeting a target cost. Increases in cost above this target are shared between the government and the contractor, up to a ceiling on the government's liability. Economic price adjustments change both the target cost and ceiling cost upward or downward, but do not affect the profit-sharing formula.

price. Actual benefits or costs of the EPA will, of course, depend on the rate of inflation.

The CBO projects that, for the four aircraft and three engine contracts analyzed in this update, total contract savings from the application of provisions of EPA clauses will be \$977 million (see Table 1). Of this amount, some \$211 million is associated with actual inflation rates through 1985, and thus may be considered firm. The remaining \$766 million is estimated, based on CBO's February 1986 projections for inflation from 1986 through 1989, and is, thus, subject to change as actual data become available. ^{3/} It is highly unlikely, however, that inflation could accelerate so quickly as to eliminate the majority of these savings.

Savings of \$567 million, or more than half of the \$977 million total, will come from the C-5B contract alone. This contract was rewritten in 1984 to lower the estimated rate of inflation, resulting in a decrease of some \$440 million in the baseline contract value. The current savings estimate includes \$105.5 million in fiscal year 1985 funds that became surplus as a result of this action.

The Air Force has adjusted funding in a number of programs in anticipation of future EPA savings. In considering the fiscal year 1986 Department of Defense (DoD) Appropriation Bill, the Congress also incorporated reductions for EPA savings from the 1986 request and prior-year appropriations for affected programs. Finally, the Balanced Budget and Emergency Deficit Control Act of 1985 required further cuts in funds available for fiscal year 1986 and from previous years' appropriations. ^{4/} The CBO calculates that these adjustments account for some \$654 million of the estimated total savings of \$977 million, leaving net savings of about \$324 million from prior-year funding and the fiscal year 1987 budget request (see Table 1).

These findings are similar to those in CBO's 1985 report, which identified \$1.1 billion in savings over the lives of the contracts examined in that report. But three changed circumstances underlie the need for an updated report:

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3. See Congressional Budget Office, The Economic and Budget Outlook: Fiscal Years 1987-1991 (February 1986), p. 7.
 4. Sequestrations of budget authority reduce net program funds. The CBO assumed that all funds sequestered in 1986 from EPA contracts, or \$148.3 million, offset potential savings. The CBO recognizes that the reduction in costs mandated by the sequestration order may be met through other program adjustments.

- o Inflation in the second half of 1985 and the first half of 1986 was less than projected;
- o Several programs' funds were altered by the Congress, in part as a result of the former analysis; and
- o Other changes in funding for these programs were made by the Air Force in its 1987 budget, in anticipation of substantial EPA savings.

TABLE 1. SUMMARY OF ECONOMIC PRICE ADJUSTMENTS IN PROCUREMENT CONTRACTS (In millions of dollars)

| Weapon System | CBO Estimates of EPA Savings | | | Funds Released as of May 1986 | Remaining Anticipated Savings |
|-----------------------|------------------------------|---------------------|-----------------------|-------------------------------|-------------------------------|
| | Through 1985 <u>a/</u> | 1986-1989 <u>b/</u> | Total | | |
| C-5B | 64.8 | 502.0 | 566.8 <u>c/</u> | 395.2 | 171.6 <u>c/</u> |
| F-16A/B/C/D | 78.5 | 46.1 | 124.6 | 119.5 | 5.1 |
| KC-10A | 63.8 | 104.1 | 167.9 | 109.2 | 58.7 |
| T-46A | 4.3 | 9.0 | 13.3 | 2.2 | 11.1 |
| F101 (B1-B) Engine | 0.0 | 24.8 | 24.8 | 17.0 | 7.8 |
| F109 (T-46A) Engine | 0.0 | 12.5 | 12.5 | 10.5 | 2.0 |
| F110 (F-16C/D) Engine | <u>0.0</u> | <u>67.3</u> | <u>67.3</u> <u>d/</u> | <u>0.0</u> | <u>67.3</u> <u>d/</u> |
| Total | 211.4 | 765.8 | 977.2 | 653.5 | 323.6 |

SOURCE: Congressional Budget Office.

- a. Based on actual data for prices and outlays through calendar year 1985.
- b. Based on CBO projections of future inflation and projected outlays for calendar years 1986 through 1989.
- c. Includes \$105.5 million savings from fiscal year 1985 funds because of a change in projected escalation rates in 1984.
- d. Includes \$15.8 million saving associated with change in EPA contract terms and \$51.5 in estimated EPA savings from new contract base.

CBO METHODOLOGY

The method CBO used to estimate these savings was identical to that used in last year's report and will only be briefly summarized here. Updated data were obtained for the BLS wage and price indexes used in each contract. CBO inflation projections, as reported in the February 1986 economic outlook, were used to project values for these indexes through 1989 (see Table 2). In general, the rates of inflation projected by CBO are comparable to those projected by the Administration for 1986, but considerably higher than the Administration's projections in the 1987-1989 period. Thus, had CBO chosen to estimate EPA savings based on Administration assumptions rather than its own, the resultant savings totals would have been much greater than those actually reported here.

TABLE 2. PROJECTED RATES OF INFLATION, BY VARIOUS INDEXES
(By fiscal year, in percents)

| Inflation Indexes | 1985 | 1986 | 1987 | 1988 | 1989 |
|-------------------------------------|------|------|------|------|------|
| CBO Projections | | | | | |
| GNP Implicit Price Deflator | 3.6 | 3.4 | 4.0 | 4.1 | 4.1 |
| Consumer Price Index <u>a/</u> | 3.5 | 3.3 | 3.9 | 4.4 | 4.4 |
| Average Hourly Earnings <u>b/</u> | 3.2 | 3.8 | 5.8 | 5.9 | 6.0 |
| Aircraft Workers Earnings <u>c/</u> | 2.4 | 3.2 | 5.5 | 6.0 | 6.0 |
| Producer Price Index <u>d/</u> | 0.7 | -1.9 | 0.2 | 3.4 | 3.9 |
| Administration Projection | | | | | |
| DoD Purchases | 3.1 | 2.7 | 3.8 | 3.7 | 3.3 |

SOURCE: Congressional Budget Office; Administration projection reported in Department of Defense, National Defense Budget Estimates for Fiscal Year 1987 (May 1986).

- a. For urban wage earners and clerical workers.
- b. For nonfarm production workers.
- c. Including lump-sum bonus payments.
- d. For industrial commodities.

One problem faced by CBO in preparing last year's report was the suspension of publication in November 1983 of the index of earnings in the aircraft industry—a series used by almost all the aircraft contracts. The issue at the time was whether or not to include large year-end bonus payments by the manufacturers; BLS normally excludes bonuses from its measures. The BLS recently resumed publication of the index and released historical data for the missing months. To resolve the issue, BLS chose to provide the index in two forms—with and without the bonuses included. In calculating savings for 1984 and 1985, CBO chose the version that includes bonus payments. Had the other version of this series been chosen, savings would have been slightly higher.

RESULTS FOR INDIVIDUAL SYSTEMS

The estimates below identify EPA savings for individual weapons systems. In interpreting these results, the reader needs to keep several things in mind. First, EPA savings associated with 1986 and beyond depend on forecasts of inflation and are still uncertain. Cost savings are calculated based on actual and projected outlays. In aircraft procurement, outlays based on a given fiscal year's appropriation of budget authority may be spent up to four years later. (The Air Force has three years to obligate the funds.) Thus, EPA savings from prior years' appropriations of budget authority are still uncertain to the degree that outlays have not yet been made and inflation rates not yet recorded.

The CBO, however, reports EPA savings for "program" year, for example, the fiscal year 1987 program, in the tables below. Funds for a program year represent the gross cost of systems authorized in that year, including any advanced procurement funds provided in earlier years, but excluding funds for advanced procurement for future years' programs. References to the Administration's request for a fiscal year refer, as is customary, to the net funds requested, excluding advanced procurement funding previously provided. 5/

C-5B GALAXY Transport

The C-5B is a wide-bodied, intertheater airlift aircraft that is designed to carry large bulky combat and support equipment over long distances. It is

5. Whether funds were provided for long-lead periods or in the year of authorization is not especially relevant for prior-year authorizations, but does assume significance for the fiscal year 1986 and 1987 requests.

TABLE 3. CBO ESTIMATES OF C-5B ECONOMIC PRICE ADJUSTMENTS (By fiscal year, in millions of dollars)

| Fiscal Year | Contract EPA Savings | Savings Already Reflected in Budget | Remaining Anticipated Adjustments |
|--------------------------|----------------------|-------------------------------------|-----------------------------------|
| 1983 (including startup) | -11.7 | -0.9 | -10.8 |
| 1984 | -27.2 | -1.5 | -25.7 |
| 1985 | -175.3 | -49.0 | -126.3 |
| 1986 | -154.5 | -159.3 | +4.8 |
| 1987 | -198.1 | -184.5 | -13.6 |
| Total | -566.8 | -395.2 | -171.6 |

SOURCE: Congressional Budget Office, based on data supplied by the U.S. Air Force.

the only aircraft in the U.S. Air Force capable of handling outsized pieces of equipment, such as the M1 tank and 155 mm self-propelled howitzer. The B version is physically similar to the A model originally procured in the late 1960s and early 1970s, but incorporates changes to remedy defects and improve reliability and maintainability.

The Administration received \$1,750 million in fiscal year 1986 to purchase 16 aircraft and \$313.8 million in advance procurement for aircraft to be bought in fiscal year 1987. ^{6/} The fiscal year 1987 budget request is for \$1,937.4 million to fund 21 aircraft. CBO estimates that, because of EPA adjustments based on lower than anticipated rates of inflation, the 16 aircraft authorized in fiscal year 1986 will cost \$4.8 million more than the net funds remaining, while the funding requirement for the fiscal year 1987 program can be reduced by \$13.6 million (see Table 3).

6. Funding for fiscal year 1986 programs is reported before application of the sequestration order mandated by the Balanced Budget and Emergency Deficit Control Act of 1985 (P.L. 99-177). Amounts sequestered from fiscal year 1986 funds as well as from unobligated balances from prior years are included in savings already reflected in the budget.

In 1984, the C-5B contract was renegotiated to reduce the anticipated rates of inflation. This resulted in a total saving of \$439.6 million over the life of the contract (fiscal years 1983 through 1987). The savings discussed above for fiscal years 1986 and 1987 are based on the new contract escalation assumptions and are, therefore, over and above the \$439.6 million previously recorded.

CBO estimates that rates of inflation lower than the 5.6 percent rate now written into the contract will result in additional savings of \$162.8 million from the fiscal year 1983 through 1985 appropriations (see Table 3). Of this amount, \$105.5 million is left from funds made surplus by the 1984 contract revision.

KC-10A Advanced Cargo-Tanker Aircraft

The KC-10 aircraft, a derivative of the commercial DC-10, is produced by Douglas Aircraft Company. It can be used as an aerial tanker to refuel other aircraft or as a transport for oversized cargo (although it cannot carry outsized loads as the C-5B can). The Administration received \$196.6 million to complete the acquisition of 12 aircraft in fiscal year 1986 and \$219.8 million in advanced procurement for 8 aircraft in fiscal year 1987. The Administration has requested \$104.4 million in fiscal year 1987 to complete the acquisition program for this system.

The CBO estimates total contract EPA savings of \$167.9 million from the multiyear contract (see Table 4). Of this amount, actual and anticipated savings of \$109.2 million have already been reported by the Air Force. Based on the CBO estimates of inflation, no additional savings are anticipated for aircraft requested in the fiscal year 1986 program, but savings of \$8.5 million are expected for aircraft to be ordered in fiscal year 1987. In addition, some \$50.2 million in excess funds were provided in fiscal years 1983 through 1985.

F-16 Fighter

The F-16 fighter is a single-seat, single-engine, lightweight fighter aircraft capable of performing a wide spectrum of tactical warfare tasks. For program years 1982 through 1985, F-16s were procured through a multiyear contract with General Dynamics Corporation.

The Administration received \$2,492 million in fiscal year 1986 for the purchase of 180 F-16C/D aircraft and \$514.1 million in long-lead money for the aircraft to be purchased in the fiscal year 1987 program. The status of

the 1986 tactical aircraft program is currently under review by the Air Force, and no contract or option currently applies to the fiscal year 1986 request. Consequently, CBO has no basis for estimating overall EPA savings for the fiscal year 1986 request. The engine procurement for fiscal year 1986, however, received advanced funding in fiscal year 1985. The CBO estimates that a savings of \$15.6 million will be achieved on the General Electric engine procurement for the 1986 tactical fighter program (see F110 engine below); this will appear as a reduction in the F-16 program and in the funding for initial spares.

Table 5 shows CBO estimates of EPA savings from the existing multi-year contract for fiscal years 1982 through 1985. Total contract EPA savings for the four years are estimated by CBO to be \$124.6 million. These savings estimates are consistent with those reported by General Dynamics as part of its overall cost analysis for the contract. To date, the F-16 program office has turned back \$53.2 million in EPA savings and the Congress has transferred \$66.3 million. The CBO estimates that additional EPA savings of \$5.1 million will eventually be recorded for this contract.

TABLE 4. CBO ESTIMATES OF KC-10 ECONOMIC PRICE ADJUSTMENTS (By fiscal year, in millions of dollars)

| Fiscal Year | Contract EPA Savings | Savings Already Reflected in Budget | Remaining Anticipated Adjustments |
|-------------|----------------------|-------------------------------------|-----------------------------------|
| 1983 | -7.3 | -5.2 | -2.1 |
| 1984 | -23.4 | -5.0 | -18.4 |
| 1985 | -49.4 | -19.7 | -29.7 |
| 1986 | -46.0 | a/ | a/ |
| 1987 | <u>-41.8</u> | <u>-33.3</u> | <u>-8.5</u> |
| Total | -167.9 | -109.2 | -58.7 |

SOURCE: Congressional Budget Office, based on data supplied by the U.S. Air Force.

a. Although CBO calculations show a funding deficit for fiscal year 1986, the Air Force reports no deficit exists for the KC-10 program.

F110 (F-16) Engine

The F110-GE-100 engine is one of two engines chosen to power the Air Force's tactical fighters (F-15s and F-16s). The engine is produced by the General Electric (GE) Corporation. In 1985, 126 engines were purchased (75 percent of the F-16 requirement), and in fiscal year 1986, 182 engines were ordered. The intended purchase for fiscal year 1987 is 198 engines.

EPA adjustment does not apply to the fiscal year 1985 purchase. EPA savings from the production order for fiscal year 1986 are estimated at \$19.7 million. Of this amount, \$15.6 million are applicable as a reduction to the fiscal year 1986 F-16 request (see F-16 aircraft above), and the remaining \$4.1 million would appear as a reduction in funding for spares and trainers. An additional \$31.8 million will be saved from the 1987 request. This would result in a \$27.9 million savings in F-16 procurement funding in fiscal year 1987 and a reduction in spares cost of \$3.9 million.

T-46A Trainer Aircraft

The T-46A trainer aircraft was designed to replace the T-37 in all Air Force training roles as the primary jet trainer. A two-engine subsonic plane with

TABLE 5. CBO ESTIMATES OF F-16 ECONOMIC PRICE ADJUSTMENTS (By fiscal year, in millions of dollars)

| Fiscal Year | Contract EPA Savings | Savings Already Reflected in Budget | Remaining Anticipated Adjustments |
|-------------|----------------------|-------------------------------------|-----------------------------------|
| 1982 | -3.2 | -7.9 | +4.7 |
| 1983 | -19.6 | -10.8 | -8.8 |
| 1984 | -40.8 | -49.0 | +8.2 |
| 1985 | <u>-61.0</u> | <u>-51.8</u> | <u>-9.2</u> |
| Total | -124.6 | -119.5 | -5.1 |

SOURCE: Congressional Budget Office, based on data supplied by the U.S. Air Force.

side-by-side seating, the trainer was intended to serve in the first state of Air Force pilot training. The T-46A is being developed by the Fairchild Republic Company under a fixed-price-incentive contract with initial production options. The Congress authorized initial procurement of 10 aircraft in fiscal year 1985. The Administration received \$120.5 million for 33 aircraft in fiscal year 1986 and \$58.4 million in advanced procurement funding for aircraft to be purchased in fiscal year 1987. The Air Force, however, cancelled the program in February, 1986, and has refused to issue any 1986 production order. No funds were requested for fiscal year 1987.

The CBO estimates that a total of \$6.8 million will be saved from the current aircraft contract cost because of EPA. Of this total, \$3.4 million is associated with the development program and \$3.4 million with the fiscal year 1985 procurement program. Additional savings of \$2.7 million in fiscal year 1985 and \$8.1 million in fiscal year 1986 may result from the engine contract (see F109 engine, below). The EPA actions reflected in the budget for the T-46 total \$2.2 million.

F109 (T-46A) Engine

The F109 engine, which will power the T-46A trainer, is produced by the Garrett Turbine Engine Company. The current contract is a development contract, with production options for 1985 and 1986. The Air Force has provided long-lead funding for the second production option in the fiscal year 1985 budget. Cancellation of the T-46 program has resulted in reduced engine requirements, and modifications to the contract are currently in negotiation. The calculations shown here are for 25 engines in production Option I (1985 program) and 74 engines in production Option II (1986 request).

The CBO estimates that for the entire contract (including development work) EPA savings will total \$28.8 million. Of this total, \$16.3 million are associated with savings from development and initial contract support funding. Savings from procurement funding include \$2.7 million from the fiscal year 1985 T-46A aircraft program element, \$0.7 million from the fiscal year 1985 spares program element, \$8.1 million from the fiscal year 1986 T-46A procurement request, and \$1.0 million from the fiscal year 1986 spares request.

These savings may, however, not be realized. The EPA adjustment for the production options represent over 30 percent of the cost base subject to adjustment. This is the highest percentage of any contract CBO examined. A provision of its contract permits Garrett to petition for relief from the EPA clause on the basis that the prices it actually pays have deviated from

the behavior of the Producer Price Index for Industrial Commodities (to which the EPA adjustment is tied and which CBO used to estimate EPA savings). Garrett has notified the Air force that it seeks such relief and has submitted data to support its request. The data is currently being audited by the Defense Contract Audit Agency.

F101 (B-1B) Engine

The F101-GE-102 engine that powers the B-1 bomber is produced by the General Electric Corporation. The current engine contract (for fiscal year 1984 with options for 1985 and 1986) will procure 428 engines, of which 368 are for installation in the aircraft, 59 are spares (funded separately in the budget), and one is for an engine to be used in the B-1B Component Improvement Program (also funded separately in the research and development budget).

The CBO estimates that a total of \$24.8 million dollars in EPA savings will accrue over the life of this contract. Of that total, \$8.6 million are associated with the fiscal year 1985 program and \$16.2 million with the fiscal year 1986 acquisition program (no EPA adjustment applies for the fiscal year 1984 program).

No EPA adjustments have yet been recorded on this contract, but interim adjustments in funding of \$5.9 million for fiscal year 1985 and \$11.1 million for fiscal year 1986 were made by the Congress, based on CBO's 1985 analysis. Thus, net excess funds are \$2.7 million in fiscal year 1985 and \$5.1 million in fiscal year 1986.

