



UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

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NATIONAL SECURITY AND
INTERNATIONAL AFFAIRS DIVISION

30 SEP 1983

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The Honorable Joseph P. Addabbo
Chairman, Subcommittee on Defense
Committee on Appropriations
House of Representatives



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The Honorable Ted Stevens
Chairman, Subcommittee on Defense
Committee on Appropriations
United States Senate

Subject: Analysis of Multiyear Procurement Candidates
Included in Defense's Fiscal Year 1984 Budget
Request (GAO/NSIAD-83-70)

In response to your request we have analyzed fiscal years 1983 and 1984 multiyear procurement candidates included in the Department of Defense fiscal year 1984 budget request. We presented our preliminary views in testimony before the Subcommittee on Defense, House Committee on Appropriations, on June 9, 1983.

We have, for many years, supported the concept of multiyear contracting but believe that savings must be substantial and sufficient to offset any added risks to the government. During our review we focused on the estimated savings to be achieved from each of the 22 candidates, the degree of confidence in the cost estimates, and possible risks of multiyear contracting--instability in the program, funding, and design. In our opinion, only one of the proposed candidates fully met all of the legislated criteria for multiyear contracting as of June 1983.

Defense's estimated savings for its proposed multiyear candidates are disappointing when compared to its 10-20 percent savings projections when P.L. 97-86 was under consideration. On the average, discounted savings for the 22 candidates is about 7.3 percent. We found many instances of inadequate and tentative cost estimates, instability in requirements and equipment design, and insufficient assurance that funding would be stable. Also, Defense did not rank the candidate programs against all other programs in terms of military need. Accordingly, we believe many of the candidates were submitted prematurely.

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Defense estimated that the 22 candidates would require about \$26.1 billion (then year dollars^{1/}) to contract completion and that the fiscal year 1984 funding requirements would be about \$1 billion higher to initiate multiyear contracts as compared with annual contracts.

OBJECTIVES, SCOPE AND METHODOLOGY

We evaluated each of the justifications for the 22 multiyear candidates Defense submitted in its fiscal year 1984 budget request. We evaluated the degree to which each candidate system or subsystem met the criteria for multiyear contracting established in Public Law 97-86, with particular emphasis on the savings to the government, the degree of confidence in cost estimates, and the stability of system or subsystem design. To measure the savings of each candidate, we compared Defense's calculation of discounted dollars using the method required by OMB Circular A-94, with our calculation using the method preferred by GAO. (See enc. I.)

As you requested, we did not obtain formal comments from Defense officials on this report. We did, however, discuss our audit results of each weapon system or subsystem with applicable program office or procurement officials of the services.

MULTIYEAR CONTRACTING CRITERIA

Criteria used in selecting procurements for multiyear contracting were established in Public Law 97-86 and expanded by the Secretary of Defense. The criteria have been further refined by statements from congressional committees. Our interpretations of the criteria--benefit to the Government, degree of cost confidence, and stability of requirement, funding, and design--are included below.

Benefit to the Government

The savings to be achieved by multiyear contracting should be significant since it reduces future budget flexibility and can entail some added risks, particularly if the requirement, configuration, and funding prove not to be stable or if cost estimates ultimately prove to have been inaccurate. If a multiyear contract were awarded and later changed significantly or terminated, the ultimate cost of the effort could be higher

^{1/} Then year dollars is the value of the dollars in the years they are to be expended.

than under annual contracting. Further, cost savings must offset costs associated with accelerated expenditures under multiyear contracting.

We do not believe that a particular amount or percentage of savings must be projected before using multiyear contracting, but that each case must be judged on its own merits, considering the margin of savings, the added risks, and any uncertainties.

Discounting

We believe the comparison of alternate contracting methods for decision purposes should consider price level changes (inflation) and the cost of financing. We believe discounting of then year outlays of both alternatives, using an appropriate discount rate, should be the generally accepted method of comparing the contracting alternatives. Selecting the appropriate rate will account for both price level changes and the financing cost of the alternatives.

Although discounting and present value analysis are generally accepted practices, selecting an appropriate interest rate has been the subject of much controversy. The rate applied has a direct effect on the results of an analysis. For Federal Government investment analyses and decisionmaking, arguments have been presented for interest rates ranging from the cost of borrowing by the Treasury to rates of return that can be earned in the private sector of the economy. Since most Government funding requirements are met by the Treasury, its estimated cost to borrow, in our opinion, is a reasonable basis for establishing the interest rate to be used in present value analyses. Accordingly, for our analyses, we used the average yield on outstanding marketable Treasury obligations that have remaining maturities similar to the period involved in the analysis.

Degree of cost confidence

This criterion requires that the contract cost and the anticipated cost savings be realistic. Cost savings is the difference in cost estimates for the multiyear contract and successive annual contracts for the same timeframe.

Initially, the services produce budgetary estimates of the potential savings available from multiyear contracting. Those estimates are usually based on prior history, information received informally from contractors, and in-house estimates. While having varying degrees of validity, they are usually the basis for the original multiyear justification submitted to the Congress.

The House Committee on Appropriations, in its report on the fiscal year 1983 Defense appropriation bill, directed that the services obtain firm contractor proposals on a multiyear basis and on an annual basis with options to cover the comparable quantities and schedule prior to obtaining congressional approval to award a multiyear contract for major weapon systems. This is intended to provide the Congress with a more realistic view of the cost of the procurement and the savings available from use of multiyear versus annual procurement. In essence the Committee suggested the use of a two-step process which requires a justification to support approval of appropriations and a confirmation of savings and congressional approval before contract award.

Stability of requirement

The need for the system or subsystem must be stable and remain relatively stable throughout the multiyear procurement period. We believe a stable requirement means the quantity needed will not vary significantly over the term of the multiyear contract.

Stability of funding

There must be a commitment within Defense and the Congress to ensure sufficient funds to complete a multiyear contract at planned production rates. A turbulent funding history for a weapon system may suggest an unstable requirement or wavering support, making it inappropriate for multiyear contracting.

The current and anticipated budget deficits and pressure to reduce defense spending have created concern whether continued availability of funds can be guaranteed. Consequently, although Defense may have provided amounts in its Five-Year Defense Plan for proposed multiyear efforts, it cannot ensure the stability of funding required to sustain the contractual production schedule over the life of the contract. These pressures increase the risks of using multiyear contracts for major weapons systems.

Stability of design

The design of a system or subsystem should be stable before initiating multiyear procurement. Tests and evaluations should demonstrate that the item is operationally effective. We still hold the view made during our June 15, 1981, testimony before the Committee, that a program should be judged mature and stable only after research and development and one or two production runs

have been successfully completed. The Senate Committee on Appropriations, in its fiscal year 1983 report on the Defense appropriations bill, indicated a similar view that the multiyear approach must be reserved for established production operations and low risk, state-of-the-art technology.

PROJECTED SAVINGS--SUFFICIENCY
AND REALISM OF ESTIMATES

Estimates of savings for the 22 candidates using GAO's method of discounting range from 2.7 to 21.3 percent, a wide range. Estimates of savings using Defense's method range from 0.5 to 21.3 percent. Depending on the other risks involved for each particular candidate, the savings may or may not be sufficient to balance the risks. Since Defense projected savings of 10 to 20 percent during legislative hearings which led to the enhanced multiyear contracting authority, we believe the Congress should give particular attention to proposed systems which have projected discounted savings of less than 10 percent.

The realism of the budgetary estimates are also important. We found that the estimates and the comparisons for many of the systems were based on inadequate methodologies or included unrealistic assumptions. Therefore, even when the estimated savings exceed 10 percent, there may be little certainty that the savings are achievable.

The savings estimated for the 22 candidates are shown in enclosure I using both the GAO method of discounting and the OMB method as prescribed in Circular A-94. The GAO method of discounting uses current Treasury borrowing rates applied against then-year dollars, whereas, the OMB method prescribes a 10 percent rate applied against constant dollars. While enclosure I includes an estimate of discounted savings by both methods, we have little confidence in the figures for several candidates because we believe the cost estimating methodology or assumptions were inadequate to make a reasonable projection of savings in most cases. Examples of the types of estimating problems found are discussed below.

Bradley Fighting Vehicle--power
control unit and TOW subsystem

The multiyear justification was based on contractor proposals for multiyear and annual procurement of these components. The program office officials lacked confidence in the proposals and severely adjusted the proposals in preparing the multiyear justification. They believed the contractor was confused in its statement of multiyear and annual prices,

therefore, they made significant adjustments particularly to the estimated annual prices. The program office officials were unable to explain their rationale for the adjustments, except to state they were based on management's judgment.

The program office, in April and May 1983, authorized the contractors to proceed on a multiyear basis. The annual proposals are not to be further analyzed or negotiated. Although proposals were received on both an annual and multiyear contract basis, we do not believe they were sufficiently analyzed to make a realistic assessment of achievable savings.

TOW II Missile

We have little confidence in the estimates concerning the TOW II submitted to the Congress in the justification package. The TOW II project office, without receiving contractor proposals, made a judgment that multiyear savings in then year dollars should be about 5 percent. The judgment was unsupported by documented computations. Army Headquarters increased the savings estimate by 3.3 percent. However, we found the added savings would likely occur whether the system was acquired on an annual or multiyear basis. Several other inconsistencies in methodology also reduced our confidence in the estimated savings.

Armored Combat Earthmover

Using some research studies concerning general multiyear procurement expectations, the Army estimated a 7-percent savings. Since the system is to be acquired by formal advertising, no proposals have yet been requested. The program office does not intend to request proposals on an annual basis because the procurement is to be advertised. Therefore, no comparison of annual versus multiyear proposals will be available. The Army intends to assure it has achieved the most reasonable price through an advertised competitive procurement.

We agree that the most reasonable price may be achieved by full competition, and that the Army can benefit from the leverage of a multiyear program. Accordingly, we do not take exception to the Army's obtaining proposals only on a multiyear contract basis under these circumstances. However, because there will not be proposals on both methods of contracting we have little confidence in the savings estimate.

F/A-18 Engine

The cost estimate for multiyear contract price was based on historical experience and some informal input from the

contractor. The contractor submitted a multiyear proposal after the justification materials had been submitted to the Congress.

Some Navy officials were skeptical about the contractor's proposed savings, which were higher than the savings included in the justification package. The Navy plans to have the contractor resubmit the proposals because the initial proposals included higher quantities than the Navy required and some tentative foreign sales. Further, Navy officials indicated that some of the savings attributed to multiyear would be available regardless of how the engines were acquired.

LSD-41 Ship

About \$25 million of the savings attributed to multiyear procurement relate to government administrative costs which are not funded through the weapons system budget. We believe most of the remaining savings, attributed to use of advanced outfitting, modular construction techniques, and associated escalation savings, would be available whether the system were acquired on an annual or multiyear basis. Accordingly, we have little confidence in the estimated savings included in the justification package.

MK-30 Target

Certain assumptions used by the project office appeared inappropriate. For example, the outlay patterns projected were not similar to historical outlay patterns. Use of historical patterns would have reduced savings considerably. We have little confidence that the estimates in the justification package are realistic.

B-1B Bomber

The justification for the B-1B was submitted in March 1983, with a request for fiscal year 1984 funding and a supplemental request for multiyear contracting authority to begin in April 1983. The original B-1B cost estimate assumed a fiscal year 1984 (October 1983) start for multiyear contracting to achieve a predetermined savings, but the Air Force, after analyzing contractor proposals, determined that the earlier start was needed.

The budgetary cost estimates included in the justification were based on an authorization in April 1983 to initiate multiyear procurement. Since the Air Force did not request that authority until March 1983, it was clearly impractical to assume

such an early start. Further, subsequent contractor proposals exceeded Air Force estimates. In addition, most of the savings are attributed to the proposed airframe contract, which is planned to be negotiated in fiscal year 1985. Therefore, we have little confidence in the savings estimated.

EVALUATION OF OTHER CRITERIA

The criteria for approval of multiyear contracting require that several other conditions be met in addition to significant cost savings. These criteria include:

- a high degree of confidence in cost estimates,
- a stable requirement,
- stable funding, and
- a stable design.

If a candidate does not meet these criteria, we believe this indicates that approval for multiyear contracting is premature based on the status of the system or subsystem at the time we reviewed it.

In our opinion only one of the proposed candidates--CH-47D--fully met all of the legislated criteria for multiyear contracting as of June 1983. An "X" under the criterion on the following chart indicates that we believe there are significant questions whether the system fully meets the criterion. The chart is followed by an explanation of the reasons we question whether each system/subsystem met the criteria.

Evaluation of Candidates

(X indicates a question whether criteria has been met)

System/subsystem	Degree of cost confidence	Requirement stability	Funding stability	Design stability	Type contract planned (note a)
<u>ARMY</u>					
Bradley Fighting Vehicle:					
Transmission	X		X	X	FFP
Turret drive	X				FFP
Power control unit	X		X		FFP
TOW subsystem	X			X	FFP
CH-47D Modification					FFP
M-60 Thermal Sight	X				
AH-64 Engine	X				FFP
TOW II Missile	X				FFP
Armored Combat Earthmover	X			X	FFP
<u>NAVY</u>					
F/A-18 Engine (note b)	X	X	X		FFP
TB-16 Towed Array					
Sonar	X				FFP
MK-45 Gun Mount/ MK-6 Ammo Hoist	X				FPI
AN/TSQ-111 CNCE	X	X	X	X	FFP
AN/SSQ-62B Sonobuoy (note b)	X				FFP
LSD-41 Ship	X				FPI
MK-30 Target	X			X	FPI
<u>AIR FORCE</u>					
<u>B-1B:</u>					
Airframe	X		X	X	FPI
Engine	X		X	X	FFP
Offensive avionics	X		X	X	FPI
Defensive avionics	X		X	X	FPI
F-15 Aircraft (note b)	X		X		UNKNOWN
KC-135 Re-engining (note b)	X		X	X	FFP

a/ FFP—Firm Fixed price

FPI—Fixed price incentive

b/ Multiyear authority denied by both the House and Senate Committees on Armed Services

Degree of cost confidence

We believe the budgetary data generally are insufficient to establish the reasonableness of claimed savings or contract cost estimates. Until proposals on a comparable annual and multiyear basis are received and fully analyzed, the confidence in the savings and cost estimates will not be sufficient to judge the appropriateness of multiyear procurement.

As of June 1983, only the CH-47D program cost proposal had been analysed and firm estimates of savings established.

Stability of requirement

We made only a cursory review of requirement stability. While production rates and total requirements have been or may be adjusted for several of the systems, we found the current or proposed requirements calculations may affect the proposed multiyear contracting for the F/A-18 engine and the AN/TSQ-111. The F/A-18 aircraft program requirement is currently unstable because of uncertainty on the force mix of aircraft to be procured for the Navy. The AN/TSQ-111 requirements are also being revised.

Stability of funding

The stability of funding is potentially a serious concern for many of the proposed multiyear candidates. Specifically, we believe the following systems or subsystems are especially susceptible to funding instability. They are the:

- Bradley Fighting Vehicle power control unit and transmission because fiscal year 1985 requirements are less than the quantities planned to be acquired on the multiyear contract and some quantities have had to be funded as spares.
- F/A-18 engine because of uncertainty on the mix of aircraft to be procured for the Navy.
- B-1B because initial proposals are significantly higher than budgeted amounts.
- F-15 because of historical fluctuation of production rates and annual funding and possible continuation of that pattern.
- KC-135 re-engining because of continuing dialogue about how many aircraft to re-engine with JT3D engines versus CMF56 engines.

Stability of design

To assess the stability of design, we reviewed prior production history, engineering changes in process, and where appropriate, test results.

We questioned design stability on 10 proposed multiyear contracts for the following reasons:

- The Bradley Fighting Vehicle transmission and TOW Subsystem have experienced both design and quality control problems in past procurements. Deliveries of transmissions were behind schedule in June 1983.
- AN/TSQ-111 and the armored Combat Earthmover because fiscal year 1984 represents its first meaningful production.
- MK-30 Target because hundreds of engineering change proposals are in process and only 1 of 12 targets produced since 1978 has been accepted.
- B-1B airframe, engine, and offensive and defensive avionics because testing is incomplete, the items have not been procured in the B-1B configuration previously, and over 5 years has elapsed since the last B-1A was delivered.
- KC-135 because tests are not complete and prior production items have yet to be delivered.

NEED FOR A TWO-STEP APPROVAL PROCESS

The timing of the appropriations and procurement cycles requires a two-step process if the Congress intends to oversee Defense's compliance with the criteria in Public Law 97-86. Typically, a high degree of confidence in cost estimates and savings projections cannot be achieved until proposals are received on a comparable annual and multiyear basis and analysed in detail by the service.

When the annual budget is submitted to the Congress in January, it would be unusual for the services to have already received and analyzed proposals in detail for a new multiyear candidate since the funding being requested would not be available until October, 9 months later, at the earliest. If other criteria are met, or are likely to be met before award of a

multiyear contract, and the Congress is convinced that savings based on preliminary estimates are sufficient to offset any other risks, these appropriations would be approved subject to certain conditions.

The Subcommittee on Defense, House Committee on Appropriations recognized ^{1/} the need to deal with savings estimates based upon "soft" budgetary data and directed Defense to solicit proposals on both a multiyear and annual contract basis with the ultimate decision reserved until the firm proposals are analysed. Further, while the Committee believed the resolution of the problem would require a two-step process, it was not adopted in the ensuing legislation.

Our review of multiyear candidates included in the fiscal year 1984 budget disclosed that justifications submitted to the Congress were based on tentative cost estimates. Further, other risks were associated with over half of the candidates, including questionable stability of the program requirement, funding, and item design.

CONCLUSIONS

Only one of the multiyear candidates in the fiscal year 1984 budget fully met the criteria established in Public Law 97-86 by June 1983. The savings estimated are disappointing for most candidates and may be insufficient to offset the added risks associated with multiyear procurement. Confidence in cost savings estimates may be achieved for many of the candidates when firm proposals are received and analyzed. However, questions concerning stability of requirement, funding, and design may not be easily answered. In our opinion, candidates exhibiting problems meeting the stability criteria (requirements, funding, and/or design) have been prematurely submitted for multiyear authority.

Until the Department of Defense begins submitting candidates, which fully meet the legislated criteria, we believe the applicable committees of Congress should continue their cautious approach in approving the multiyear contracts for major weapon systems. We also believe a two-step process, whereby authorizations and appropriations are tentative and contract approval reserved until prices are analyzed and proposed

^{1/} Department of Defense Appropriations Bill, 1983. Report on the Committee on Appropriations Report No. 97-943

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savings are validated may be one way to assure the integrity of projected savings.

Copies of this report are being sent to the Secretary of Defense; the Secretaries of the Army, Navy, and Air Force; and other interested parties.

Sincerely yours,

A handwritten signature in cursive script that reads "Frank C. Conahan".

Frank C. Conahan
Director

Enclosure