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Utilization of award fee contracts at Naval Regional Contracting Centers

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Use of cost-plus-award-fee and fixed-price-award-fee contracts has many applications at the Field Contracting Activity Level. The use of award fee contracts has many benefits and costs not associated with the other types of incentive contracts. To better facilitate its use, barriers need to be recognized that are preventing more applications at the field level and what can be done to overcome these barriers.

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Utilization of Award Fee
Contracts at
Navy Regional Contracting Centers

by

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ABSTRACT

The use of the award fee contract is an unique incentive structure that provides the Government a method of subjective, after the fact evaluation of contractor performance and affords the Government additional flexibility to reward and motivate the contractor for above average performance.

Use of cost-plus-award-fee and fixed-price-award-fee contracts has many applications at the Field Contracting Activity Level. The use of award fee contracts has many benefits and costs not associated with other types of incentive contracts. To better facilitate its use, barriers need to be recognized that are preventing more applications at the field level and what can be done to overcome these barriers.

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I. INTRODUCTION

A. GENERAL COMMENTS

In Federal Government procurement there is a wide variety of contract types available to provide flexibility to the Government and contractors in providing goods and services. Contract types vary according to the degree of risk assumed by the contractor and the amount of profit offered for achieving or exceeding specified goals or standards.

The Federal Acquisition Regulation (FAR) groups contract types into two broad categories: fixed price and cost-reimbursement contracts. On one end of the spectrum is the firm-fixed-price contract, in which the contractor has responsibility for the performance costs and resulting profit or loss. On the other end of the spectrum is the cost-plus-fixed-fee contract in which the contractor has minimal risk for cost and the negotiated fee or profit is fixed. In between are the various contracts in which the contractor's risk for cost and the profit or fee offered are tailored to the uncertainties involved in contract performance. [Ref. 1:p. 16.101]

The use of the award fee contract is an unique incentive structure that provides the Government a method of subjective, after the fact evaluation of contractor performance and affords the Government additional flexibility to reward and motivate the contractor for above average performance.

Cost-plus-award-fee and fixed-price-award-fee contracts have many applications at the Field Contracting Activity Level. Award fee contracts have many benefits and costs not associated with other types of incentive contracts. To better facilitate its use, barriers that are preventing more applications at the field level need to be recognized. Then it will be possible to identify what can be done to overcome these barriers.

B. RESEARCH OBJECTIVES

The objectives of the research are:

(1) Determine the uses of award fee contracts at the Navy Field Activity level (Navy Regional Contracting Centers).

(2) Identify the factors that the contracting officer considers when selecting contract type and what factors influence the use of award fee contracts.

(3) Develop a model that can aid a contracting officer in determining the optimal award fee pool amount.

C. RESEARCH QUESTIONS

Based on these objectives, the primary research question is: What are the key elements and barriers in using award fee contracts at the Navy Field Contracting Activity level and how can these barriers be overcome to facilitate the proper use of award fee contracts?

Secondary research questions include:

(1) What is the award fee contract concept?

(2) What are the uses of cost-plus-award-fee (CPAF) and fixed-price-award-fee (FPAF) contracts?

(3) When should an award fee contract be used?

(4) What are the barriers to using award fee contracts?

(5) How might the impediments or barriers be reduced or eliminated?

D. SCOPE

This thesis will focus on the identifying and resolving barriers to using award fee contracts at the field contracting level. The analysis will also explain when it is appropriate to use cost-plus-award-fee and fixed-price-award-fee contracts. A secondary goal is to determine if an economic model can be used to determine the optimal award fee pool for an award fee contract.

E. METHODOLOGY

To answer the primary and secondary research questions two techniques will be employed. First, the thesis will include a comprehensive search of available literature dealing with incentive and award fee contracting, cost-plus-award-fee and fixed-price-award-fee contracts, contractor motivation and field level contracting. Second, research data is collected in the form of personal and phone interviews and survey questionnaires with acquisition personnel from the Government.

F. LIMITATIONS

A potential limitation is the lack of specific data on using award fee contracts at the field contracting level. Cost-plus-award-fee contracts have been successfully used on major weapon systems. However, fixed-price-award-fee contracts have only been used only on a limited basis. The FPAF contract is not an officially recognized contract type in the Federal Acquisition Regulation.

G. ASSUMPTIONS

This study assumes that the reader commands a general knowledge or basic familiarity with Federal Government contracting language and the Federal acquisition process. It is further assumed that the reader is aware of the relationship that exists between industry and the Federal Government in contracting methodology.

H. ORGANIZATION OF REPORT

The research is organized in the following manner: Chapter I contains the introduction and research questions to be analyzed. Chapter II contains relevant background information on award fee contracting history, the award fee concept, and Department of Defense (DOD) contract types. Chapter III outlines the cost-plus-award-fee contract and its uses. Chapter IV outlines the fixed-price-award-fee contract and its uses. Chapter V contains the elements of an award fee plan. Chapter VI applies an economic model to determine an optimal award fee amount. Chapter VII provides conclusions derived from the research and recommendations on use of award fee contracts at Navy Regional Contracting Centers.

II. BACKGROUND

A. ORIGINS

The award fee contract dates back to the late 1950s and early 1960s. The National Aeronautical Space Administration (NASA) and the U.S. Navy incorporated subjective, award-like features into traditional fixed fee and incentive fee structures, mainly in the area of support services. This developed at that time into a new contract type: the cost-plus-award-fee contract.

Although commonly used by NASA in the 1960s, most people credit Frederic M. Scherer for some of the earliest and most important advocacy of the cost-plus-award-fee contract type. Scherer devoted a full chapter in his 1964 book, *The Weapons Acquisition Process: Economic Incentives*, to "After-the-fact Evaluation; A New Incentive Approach." The proposals he stated are very similar to modern award fee concepts. He envisioned retrospective evaluation of contractor performance by knowledgeable personnel, a central organization of six to ten such personnel, called a Performance Evaluation Board. This board would use a variety of evaluation factors for each assessment and the contractor would be rewarded by high profit or sales. [Ref. 2:p. 11]

Up until this time, NASA and DOD mainly used award fee contracting for support services. Scherer advocated it could best be applied in research and development applications. The award fee approach would be better suited to the uncertainty of these projects and eliminate the problems associated with fixed-price or predetermined incentive fee contracts. [Ref. 2:p. 14]

Interest in award fee contracting emerged and grew in the 1960's with enthusiasm for developing objective weighted formulas for determining contractor profit in incentive type contracts. The goal of award fee contracting was the same as other types of incentive contracts, a desire to motivate contractors by associating the fee or profit with actual contractor's performance. The award fee process recognized the uncertainty in setting firm incentive targets in advance before observing actual performance and the dynamic changes that can occur in these applications. The award-fee process better recognized the uncertainty for change. [Ref. 2:p. 14]

B. THE AWARD FEE CONCEPT

Incentive contracts emerged in DOD in the early 1960's to curb the size and frequency of cost overruns on cost-plus contracts. Ideally, firm-fixed price contracts would be used. However, given the complex nature emerging in research and development contracting, alternative contract types were

tried. The most common alternative was the cost-plus-fixed-fee (CPFF) approach, but this type of contract lacks any incentive for a contractor to control costs. Fixed-price incentive (FPI) and cost-plus-incentive-fee (CPIF) contracts were then used to relate the contractor's profit to his ability to reduce or control costs on a predetermined share formula.

Traditionally, the award fee contract has been grouped in the FAR in the section on incentive contracts. Similarities do exist because both are bonus type contracts. Unlike CPIF or FPI contracts, the CPAF arrangement does not include automatic fee adjustment or predetermined targets. The CPAF incentive motivates a contractor to strive for continuously excellent performance in areas of contracting effort or activity. "Success is rewarded because it is earned." [Ref. 3:p. 21A1]

Cost savings have been attributed to incentive contracts (FPI and CPIF) because cost overruns are much smaller and less frequent than under cost-plus contracts. However, the amount of fee or profit is based on a negotiated target cost. Thus, the contractor's real incentive may be to raise or inflate their estimated costs. [Ref. 4:p. 89]

In award fee contracting, profit or fee is based on actual contractor performance, between contract award and completion. A contractor will have less incentive to overestimate costs since no rigid profit formula is applied to actual costs.

Raymond B. Hunt [Ref. 5:pp. 589-590] best summarizes the award fee approach in what he describes as the *Twelve Award Fee Hallmarks*:

> (1) Award fee contracting recognizes that in a mixed sector, quasi-market with important technical uncertainties, a high degree of cooperation between contractor and contracting agency is essential to program success.
>
> (2) By making them ongoing, fee-relevant evaluators of contractor performance, it assures an influential role for government managers in the program.
>
> (3) It recognizes that, because of limitations on time, skill, and information, top managers can formulate plans but, except in unusual cases, rarely can exert detailed control over operations.
>
> (4) Therefore, it helps build strong lateral relationships by stimulating formal and informal communications across organizational levels and boundaries, especially as between contractor and government program managers.
>
> (5) It recognizes that the contractors' motivations (like the government) are varied.
>
> (6) It leaves to the contractors' own management the task of "motivating" their employees and helps needless "micromanagerial" meddling by government personnel.
>
> (7) Award fee contracting implicitly recognizes Sharkansky's well taken point that "the quality and efficiency of contracting are not attributes that come automatically." Management of it is essential. System acquisition is a dynamic affair. It presents a changing variety of problems that must be dealt with continuously by human mangers. No specifically contractual or management system panaceas exist for it, and "hands-off" ways of doing it do not work.
>
> (8) Unlike automatic incentive contracts, award fee contracts avoid rigid, mechanical, predetermined contractual formulas for fee and other decisions in favor of flexibility and active human judgement.
>
> (9) Award fee contracting is hospitable to a wide variety of *ad hoc* qualitative *or* quantitative operational-

managerial innovations for coping with ill-defined tasks, subject mainly to "workability" standards.

(10) It can simplify contractual provisions as a means of decreasing administrative complexity and burdensome routines.

(11) It allows for easy periodic change of contracting targets and priorities and of (sic) means of evaluating their achievement.

(12) It helps assure that contractor profits are earned by providing for variable fees to be paid after-the-fact on the basis of performance.

C. DEPARTMENT OF DEFENSE CONTRACT TYPES

Contract types serve as a written agreement to the price the Government is to pay a contractor for delivering goods or performing services. The contract types vary according to the risk assumed by the contractor in achieving specified goals or standards. The contract types authorized by the FAR are categorized either as fixed-price or cost-reimbursement contracts.

1. Fixed-Price Contracts

Fixed-price arrangements provide for the contractor to perform services or deliver a product in accordance with the terms and conditions of the contract. It is an agreement by the Government to pay a firm price specified in the contract, or an adjustable price in appropriate cases. Fixed-price contracts that include provisions for adjusting tentative prices contain a specified ceiling price or target price (including target cost). [Ref. 1:p. 16.201]

a. Firm-Fixed-Price Contract

A firm-fixed-price (FFP) contract is an agreement by the Government to pay the contractor a price that is not subject to any adjustment. The contractor bears full responsibility for all costs and resulting profit or loss. This gives maximum incentive to control costs and perform effectively. This also imposes minimum administration by the contracting activity since auditing of costs is not required [Ref. 6:p. 281].

b. Fixed-Price Contract With Economic Price Adjustment

A fixed-price contract with economic price adjustment clauses is used to protect the Government or contractor against significant fluctuations in labor or material costs or changes in the contractor's established prices. The contract clauses provide for an upward or downward revision of the stated contract price if specified contingencies occur. The three general Economic price adjustments are:

(1) Adjustments based on established prices.

(2) Adjustments based on actual costs of labor or material.

(3) Adjustments based on cost indices of labor or material. [Ref 1:p. 16.203-1]

These clauses provide for either Government price increases or decreases. If provisions for price adjustment were not used, a contractor might quote excessive contingency allowances to minimize his (or her) risk due to economic uncertainties. [Ref. 7:p. 1-21]

c. Fixed-Price Contracts with Prospective Price Redetermination

A fixed-price contract with prospective price redetermination provides for:

> (a) a firm-fixed price for an initial period of contract deliveries or performance and (b) prospective redetermination, ..., of the price for subsequent periods of performance [Ref. 1:p. 16.205-1].

This contract is used when the amount of labor or material is unknown, but will become known with limited production experience. The buyer believes the initial fixed-price is too high and will be lowered after reviewing the incurred costs.

d. Fixed-Ceiling-Price Contract with Retroactive Price Redetermination

The fixed-ceiling-price contract with retroactive price redetermination provides for adjusting the contract price after performance. A fixed ceiling price is negotiated initially that reflects a reasonable risk sharing by the contractor. Actual audited contract costs are used as the starting point for the price revision [Ref. 7:p. 1-27]. This contract provides the contractor no cost control incentive

except for the ceiling price. The FAR limits the use of this arrangement to research and development contracts estimated at $100,000 or less and when a firm-fixed price can not be negotiated at the outset because of the low dollar value and short performance period [Ref. 1:p. 16.206-27].

e. Firm-Fixed-Price, Level-Of-Effort Term Contract

This type of contract is suitable for research and development when the work can not be clearly defined in advance, but the level of effort required to accomplish it can be agreed upon by the Government and the contractor. The Government will pay the contractor a specified amount and the contractor is obligated to provide a specified level of effort over a stated time. The payment is based on the effort expended rather than results achieved. [Ref. 1:p. 16.207.2]

f. Fixed-Price-Award-Fee Contract

A fixed-price-award-fee (FPAF) contract is a fixed-price contract that includes an award fee. The award fee represents an additional pool of funds available to the contractor after a unilateral subjective Government evaluation. The award fee pool should be sufficient to motivate the contractor to perform above a minimum acceptable level. [Ref. 8:p. 43]

g. Fixed-Price Incentive (Firm Target) Contract

This type of contract provides for a target price, a ceiling price and a variable profit formula. A firm pricing

arrangement is negotiated at the outset of the contract to provide a basis for negotiating the final price.

When the contract is completed, the contractor submits a statement of costs incurred in performing the contract. These are audited to determine allocability and allowability. They are used as a reference for negotiating the final cost with the contractor. The final price is established by applying the firm pricing arrangement negotiated at the commencement of the contract. A final cost greater than the target cost results in a final profit less than the target profit. If final cost is less than target cost, the final profit is greater than target profit. If final negotiated cost exceeds the price ceiling, the contractor absorbs the difference as a loss. [Ref. 1:p. 16.403-1]

h. Fixed-Price Incentive (Successive Targets) Contract

This contract specifies an initial target cost, initial target profit, initial profit adjustment formula, a ceiling price and a production point for negotiating the firm target cost and firm target profit. These elements are negotiated prior to the contract. After reaching the specified production point (usually before delivery of the first item), the Government and the contractor may:

(1) Negotiate a firm fixed price using the firm target cost plus the firm target profit as a guide or

(2) If negotiation of firm fixed price is inappropriate, they may negotiate a formula for establishing the final price using the firm target cost and firm target profit. The final cost is then negotiated at completion as under the fixed-price incentive (firm target) contract. [Ref 1:p. 16.403-2]

2. Cost-Reimbursement Contracts

In contrast, cost-reimbursement contracts differ from fixed-price contracts in that they provide for the Government to reimburse the contractor for allowable incurred costs, subject to certain restrictions. The Government and the contractor agree to an estimate of the total cost for the purpose of establishing a ceiling that the contractor may not exceed.

The contractor agrees to use best efforts to complete the contract requirements within the estimate. The contractor notifies the Government if they expect to exceed the estimate and submit a revised estimate to complete the stated contract performance. The contractor is not required to continue performance beyond the established estimate unless approved by the contracting officer and the estimate has been increased. [Ref. 7:p. 1-11]

a. Cost Contract

A cost contract is a cost-reimbursement contract in which the Government reimburses the contractor for all

allowable incurred costs but pays no fee or profit. Because of this no-fee provision its use is appropriate for research and development contracts with non-profit or educational institutions. [Ref. 1:p. 16.303]

b. Cost-Sharing Contract

In a cost-sharing (CS) contract, the Government reimburses the contractor only for an agreed upon portion of its allowable costs. In addition, the contractor receives no fee. Most cost sharing arrangements are used for procuring basic and applied research when the contractor agrees to absorb a portion of the cost in the expectation of substantial compensating benefits. Such benefits might include improving its competitive position in the commercial marketplace or enhancing of the contractor's capability and expertise [Ref. 7:p. 1-29].

c. Cost-Plus-Incentive-Fee Contract

A cost-plus-incentive-fee (CPIF) contract is a cost-reimbursement contract that negotiates an initial fee. The fee is adjusted later by a variable profit formula that compares total allowable costs to total target costs. The CPIF contract functions the same as a FPIF contract except that there is no ceiling price and the contractor is reimbursed for all allowable costs, vice negotiated final costs. [Ref. 1:p. 16.302]

d. Cost-Plus-Award-Fee Contract

A cost-plus-award-fee (CPAF) contract reimburses the contractor for all allowable costs and provides a fee consisting of (a) a base amount (which may be zero) fixed at inception of the contract and (b) an award amount, based on the judgmental evaluation by the Government, sufficient to motivate excellence in contract performance [Ref. 1:p. 16.305].

e. Cost-Plus-Fixed-Fee (CPFF) Contract

The cost-plus-fixed-fee contract is similar to other cost-reimbursement contracts. The contractor is reimbursed for all allowable costs. In addition, the Government agrees to pay the contractor a fixed fee negotiated at the inception of the contract. This fixed fee does not vary with actual costs. This contract type presents minimum risk to the contractor and minimum incentive to the contractor to control costs. [Ref. 1:p. 16.306]

f. Cost-Plus-Percentage of Cost Contract

This contract reimburses the seller for all incurred costs plus a fee based upon a predetermined percentage of incurred costs. In this contract "the higher the cost the greater the profit." [Ref. 6:p. 285] Therefore, it is the most undesirable of all types of contracts. Currently under FAR section 16.102.C, the cost-plus-a-

percentage-of-cost system of contracting is prohibited for both prime and subcontracts.

III. COST-PLUS-AWARD-FEE CONTRACTS

The cost-plus-award-fee contract can be primarily described as a cost reimbursement contract that includes a fee consisting of (a) a base amount (which may be zero) fixed at inception of the contract and (b) an award amount, based on the Government's judgmental evaluation, sufficient to motivate excellence in contract performance [Ref. 1:p. 16.305].

The Federal Acquisition Regulation part 16.404-2 states that the cost-plus-award-fee contract is suitable for use when:

> (1) The work to be performed is such that it is neither feasible nor effective to devise predetermined objective incentive targets applicable to cost, technical performance, or schedule;
>
> (2) The likelihood of meeting acquisition objectives will be enhanced by using a contract that effectively motivates the contractor toward exceptional performance and provides the Government with the flexibility to evaluate both actual performance and the conditions under which it was achieved; and
>
> (3) Any additional administrative effort and cost required to monitor and evaluate performance are justified by the expected benefits. [Ref. 1:p. 16.404-(2)(b)(1)]

The Department of Defense Supplement to the Federal Acquisition Regulation adds:

> Level of effort contracts for performance of services where mission feasibility is established but measurement of achievement must be by subjective evaluation rather than objective measurement [Ref. 9:p. 216.404-(2)(b)(1)].

These criteria define unique circumstances where a cost-plus-award-fee contract is applicable.

(1). Objective incentives unfeasible - A cost-plus-award-fee contract should not be substituted for a cost-plus-fixed-fee when the cost-plus-fixed-fee criteria apply, or to avoid establishing objective targets that make the use cost-plus-incentive-fee type contract feasible [Ref. 9:p. 216.404-2(b)(2)].

(2). Enhancing likelihood of meeting acquisition objectives by motivating contractor performance - if acquisition objectives are certain and very objective to measure, an alternate contract type may be more appropriate as contractor motivation is not important. This suggests the concept of judgmental performance evaluation. The cost-plus-award-fee contract requires analysis reflecting an evaluator's opinions and impressions as to the contractor's level of performance.

(3). Additional administrative effort and cost is justified - cost-plus-award-fee contract carries with it significant administrative burden in periodic monitoring, evaluation, contractor performance reporting and determining the award fee. These costs and burdens must be weighed

against expected benefits to ensure they are sufficient for a cost-plus-award-fee contract.

The number of evaluation criteria and the requirements they represent will differ widely among contracts. The criteria and rating plan should motivate the contractor to improve performance in the areas rated, but not at the expense of at least minimum acceptable performance in all other areas [Ref. 1:p. 16.404-(2)(b)(2)].

> Cost-plus-award-fee contracts shall provide for evaluation at stated intervals during performance, so that the contractor will be informed of the quality of its performance and the areas in which improvement is expected. Partial payment of fee shall generally correspond to the evaluation periods. This makes effective the incentive which the award fee can create by inducing the contractor to improve poor performance or to continue good performance [Ref. 1:p. 16.404-(2)(b)(3)].

As stated before the fee established in a cost-plus-award-fee contract consists of two parts: a base fee and an award fee. The base fee, is a fixed amount which does not vary with performance. The base fee may range from zero to three-percent (regulated by the FAR) of the estimated contract cost. The base fee compensates the contractor for factors such as risk, investment, and the nature of the work to be performed. The base fee is generally negotiated to reflect minimum acceptable contractor performance.

The award fee pool, in addition to the base fee, must be sufficient to motivate the contractor to obtain excellent performance. In accordance with the Federal Acquisition

Regulation, the maximum fee (award fee plus base fee) is limited to 15% of the estimated contract cost for experimental, developmental, or research work and to 10% for other work [Ref. 10:p 4]. For example if the base fee is established at 2% for a research and development contract, the award fee would be limited to 13%, for a total fee of 15% of the estimated contract cost.

IV. FIXED-PRICE-AWARD-FEE CONTRACTS

A. STRUCTURE OF FPAF CONTRACTS

The fixed-price-award-fee contract can be primarily described as a firm-fixed-price contract that provides an award fee amount of additional funds available to the contractor based on the Government's unilateral judgmental evaluation.

Presently, the FAR only mentions award fees in discussing cost-plus-award-fee contracts. Under the FAR, CPAF contracts provide for a base-amount plus

> an award amount that the contractor may earn in whole or part during the performance and that is sufficient to provide motivation for excellence in such areas as quality, timeliness, technical ingenuity and cost effective management [Ref. 1:p. 16.404-2(a)].

As discussed in Chapter III, CPAF contracts are restricted to a fee narrowly defined situations.

Although the FAR does not specifically mention the FPAF as a standard contract type, its use would seem to be sanctioned under FAR 16.102(b). This provision permits contracts of any type to promote the Government's interest. A FPAF contract combines the fixed-price part of a FFP contract with the award fee part of a CPAF contract. Using an award fee with a fixed price contract would foster those

attributes associated with CPAF contracts, including quality, timeliness, ingenuity, and cost effectiveness. A FPAF contract also avoids the usual risks associated with cost reimbursement contracts [Ref. 11:p. 3-9].

It should be noted that the FAR further specifies that any contract type not described shall not be used except as a deviation under subpart 1.4. This should not hamper using FPAF contracts. The policy is that deviations will be granted when necessary to meet the specific needs and requirements of each agency. Additionally, the "development and testing of new techniques and methods of acquisition should not be stifled simply because such action would require a FAR deviation" [Ref. 1:p. 1.402].

Another question that arises with respect to using award fees concerns the sealed bid contracting method. The FAR requires firm-fixed-price contracts or fixed price contracts with economic price adjustments when using sealed bid contracts [Ref. 1:p. 16.102(a)]. If this means that FPAF contracts can not be used in conjunction with sealed bidding, this would limit the expanded use of award fees [Ref. 12:p. 2-10].

It can be argued that the FAR's description of a firm-fixed-price contract also fits a FPAF contract. The FAR states that a FFP contract "provides for a price that is not subject to any adjustment on the basis of the contractor's cost experience in performing the contract." [Ref. 1:p.

16.202-1] This also holds for FPAF contracts. As with FFP contracts, FPAF contracts are awarded on a totally objective and quantitative basis of firm specifications and bid prices. The factors that make price redeterminable, fixed price incentive and cost reimbursement contracts unsuitable for sealed bidding are not present in FPAF contracts. The award fee has no effect on source selection. Nothing is incompatible between sealed bidding and FPAF contracts. [Ref 12:p. 2-10]

The DFARS 216.403-70 specifically allows for using award fee provisions in fixed price contracts. It provides for applying award fees to motivate and reward a contractor for management performance in areas which cannot be measured objectively and where normal incentives cannot be used. However, the base fee (fixed amount portion) is not used. The DFARS further stipulates that the chief of the contracting office must approve the use of the award fee. In addition, an award review board and evaluation procedures must be established. Finally, the evaluation costs shall not exceed the expected benefit. [Ref. 9:p. 216.470]

The Government benefits from using of an award fee when it can enhance a contractor's performance enough that overall benefits exceed the cost of administration and the award fee. These benefits can be nonmonetary, such as quality of workmanship, schedule, ideas, or contractor cooperation [Ref. 11:p. 3-9].

B. SUGGESTED CHANGES TO FEDERAL ACQUISITION REGULATION

Award fees have been successfully used in Federal and DOD contracting, but the lack of specific language concerning the use of FPAF contracts can create confusion. A study conducted by the Logistic Management Institute revealed a "widespread lack of awareness" concerning the availability of FPAF contracts. The use of award fees is generally avoided with fixed price contracts, in part because there is no specific authorization in the FAR [Ref. 12:p. 2-9].

A literature review in this area agreed that contracting personnel require more control and guidance than is presently available in the FAR. Changes were recommended to increase the development and use of FPAF contracting. The following changes were suggested by the Logistic Management Institute in their research report *Contracting for Quality Facilities*:

- 16.208 Fixed-price-award-fee contracts.

A fixed-price-award-fee contract is a fixed price contract that provides for an award fee based on judgmental evaluation by the Government, sufficient to provide motivation for excellence in contract performance. Fixed-price-award-fee contracts are covered in Subpart 16.4, Incentive Contracts. See 16.403 for a more complete description and discussion of application of these contracts.

- 16.403-3 Fixed-price-award-fee contracts.

(a) *Description.* A fixed-price-award-fee contract is a fixed-price contract that includes part of the award fee used in cost-plus-award-fee contracts. Only the "award amount" described in 16.404-2 is used in fixed-price-award-fee contract. The fee is one that (1) a contractor may earn in whole or in part during performance and (2) is

sufficient to provide motivation for excellence in such areas as quality, timeliness, customer relations, and technical ingenuity. The amount of the award fee to be paid is to be determined by the Government's judgmental evaluation of the contractor's performance in terms of the criteria stated in the award fee portion of the contract. This determination is made unilaterally by the Government and is not subject to the *Disputes* clause.

(b) *Application*. (1) The fixed-price-award-fee contract is suitable for use in circumstances similar to those for the cost-plus-award-fee contract. The following paragraphs also apply to fixed-price-award-fee contracts: 16.404-2(b)(1)(ii) and (iii) and 16.404-2(b)(2) & (3). This contract type may be used with sealed bidding or negotiated contracting.

(c) *Limitations*. No fixed-price-award-fee contract shall be awarded unless -

(1) The maximum award fee payable is not greater than 10 percent of the contract's estimated cost, excluding fee; and

(2) The expected benefits are sufficient to warrant the cost of the fee and any additional cost and administrative effort this contract type may involve.

- 36.207(d) Fixed-price-award-fee contracts may be used if the expected benefits are sufficient to warrant the cost of the fee and any additional cost and administrative effort the use of this contract type may involve.

C. APPLICATIONS OF FPAF CONTRACTS

As previously stated, the FAR suggests applying a CPAF contract when (1) predetermined objective targets are unfeasible or not effective to devise, (2) acquisition objectives will be enhanced by motivating the contractor and (3) the additional administrative effort is justified by the

expected benefits. These guidelines also apply to the FPAF contract.

FPAF contracts have been successfully used for Base support services, such as custodial work, lawn mowing, road and building maintenance, pest control, trash collection, food preparation and security [Ref. 13:p. 10]. For these types of contracts, a fixed-price contract is preferred for routine or predictable services. FPAF contracts can be utilized since the contract's statements of work can be written with performance-oriented work descriptions. Acceptable quality levels can be specified for measuring performance [Ref. 13:p. 2].

The FPAF should not be limited to service contracts. Its flexibility allows for a wide range of applications. FPAF hybrid contracts have been used in construction and hardware contracts and for Government-Owned-Contractor-Operated (GOCO) plants [Ref. 8:p. 37]. Another suggestion, the Naval Sea Systems Command (NAVSEA) could use FPAF for follow-ship contracts. Research conducted in the early 1980's suggested the possibility of using FPAF with economic adjustment clauses once a cost history was firmly established in a ship Class. The award fee would be used to encourage a contractor to deliver a good quality ship on schedule. [Ref. 14:p. 66]

This contract type, like other fixed price contracts, is best utilized in an competitive environment where the contract price is established by the product or service market. Some

proponents assume that all fixed-price contracts could be adapted to FPAF. This is not true. The FPAF contract is not warranted if adequate and detailed specifications are available, the item is available in the commercial market, or additional emphasis on factors such as performance, management and quality is not appropriate [Ref. 8:p. 48]. In these situations, the Government should not have to pay extra for services or quality that is already required or set by the marketplace.

One area that is common in all literature reviewed is using award fee contracts to insure or enhance quality. With the current emphasis on Total Quality Management (TQM) and other similar quality programs, the Government could use award fee contracting to embrace and reinforce these programs. The award fee facilitates communication and feedback to the contractor and can reward performance above a minimum acceptable standard [Ref. 15:p. 43]. This also works well in the fixed price environment since the amount of the award fee does not have to be large (the maximum is 10% as allowed under the FAR, but can be smaller). The contractor is not only motivated by profit but also by the grades received on periodic performance reports.

V. AWARD FEE PLAN

The award fee plan is designed to articulate in one document the plan and means for assessing and evaluating contractor performance to determine the award fee to be rewarded [Ref. 16:p. 5]. The U.S. Army Forces Command, *Handbook for CPAF Contracts*, contains the following typical award fee plan:

(1) Base fee amount.
(2) Total award fee pool.
(3) Functional areas to be evaluated.
(4) Criteria to be used in evaluation.
(5) How performance will be measured.
(6) How performance will be graded.
(7) Relative weights to be assigned to functional areas and the evaluation criteria.
(8) Evaluation period.
(9) Total amount of award fee pool available for each evaluation period.
(10) The identity of the Award Fee Determining Official.
(11) Organizational structure to support evaluation of performance.
(12) Specific methodology to be used in evaluating performance and determining the award fee to be paid.
(13) Contractor participation in the award fee determination process.
(14) Payment intervals.
(15) Reporting and record keeping procedures. [Ref. 16:p. 6]

The key areas that are important to the award fee plan are explained below:

A. BASE FEE AMOUNT

As stated before, the base fee can range from a minimum of 0% to a maximum of 3% of the estimated contract completion cost. There is no consensus whether it should be set at the minimum or maximum. However, the base fee should only cover the minimum acceptable performance level.

B. TOTAL AWARD FEE POOL

This is the difference between the total maximum fee and the base fee. This amount should be sufficient to motivate the contractor to excellent performance. This is the main mechanism for award fee contracts to motivate performance and distinguishes them from non-incentive and other incentive contracts. The anticipation of future award fee payments directs the contractors attention to the areas of poor performance.

C. FUNCTIONAL AREAS TO BE EVALUATED AND EVALUATION CRITERIA

Developing performance evaluation areas and criteria is usually one of the first steps in award fee plans. These two areas vary from contract to contract. In general, the evaluation areas and criteria should fairly measure a contractor's performance in key areas while motivating the contractor to improve his performance where delinquent [Ref. 17:p. 45]. The areas evaluated should be the ones that are most important to the contracting activity and not trivial in

nature. These elements should also be as flexible as possible to enable the award fee plan and evaluation criteria to adapt to changing program requirements. The Government is at an advantage because it can make unilateral changes to the functional areas and criteria during contract performance to redirect the contractor's efforts as necessary.

The evaluation criteria specify the elements of the contractor's performance that the contracting activity will evaluate in determining the award fee amount. Thus, it is one of the most important areas in award fee contracts; it is also one of the most difficult in developing a quality evaluation criteria structure.

The choice of functional areas will be tailored to each individual contract. As stated before, performance criteria in a award fee contract are subjective in nature. Thus, choice of performance measures will rely on a thorough knowledge of the managerial and technical areas of the program [Ref. 18:p. 28].

To establish the functional areas and evaluation criteria, the key elements of the program should first be chosen and grouped into performance categories. The key elements might include schedule, quality, technical performance, cost control, managerial performance, business management, and performance of work. These broad categories will be further divided or separated into criteria for evaluating the elements that make up each performance area. Appendix B summarizes the

award criteria provided in the Department of Defense Supplement to the Federal Acquisition Regulation, section 216.404-2.

Evaluation criteria chosen should focus on "results" rather than "process." The Government is interested in the results rather than the contractor's effort. They should also focus on those few elements of the contract that are fundamental to the success of the contract. Meaningless, confusing or numerous elements will dilute contractor's motivation. On the other hand, too few elements will fail to adequately measure total contractor performance. [Ref. 17:p. 46]

D. MEASURING PERFORMANCE, GRADING PERFORMANCE, AND ASSIGNING RELATIVE WEIGHTS TO FUNCTIONAL AREAS AND EVALUATION CRITERIA

After developing the functional areas and evaluation criteria, standards for measurement should be established and applied to each evaluation factor. The evaluation standard should allow two separate evaluators or monitors to subjectively recommend nearly the same performance score on any given set of performance reports. The example in Appendix B portrays some sample measurement standards.

The most common system of standards is the numerical or adjectival rating system. This explains performance quality adjectives and indexes them to a numerical rating. The

following is an example of adjectival ratings, numerical ratings and their rating criteria from the *Handbook for CPAF Contracts*, written by the U.S. Army Forces Command. They are adapted to correspond with the sample in Appendix B:

ADJECTIVE RATING	NUMERICAL RATING	RATING DESCRIPTION
Excellent	91-100	Performance is excellent in all significant aspects. There are no areas of less than very good performance (100) or they are few and relatively unimportant in nature (91). Performance is significantly better than would be expected of an average qualified contractor. Contractor initiative is evident by quality and efficiency achieved. Areas in need of improvement are few and minor.
Very Good	81 - 90	Performance is better than that which would be expected of an average qualified contractor. There are no areas of less than good performance (90) or they are few and relatively unimportant (81).
Good	71 - 80	Performance is equivalent to that expected of an average qualified contractor. The minimum contract requirements are met (80) or areas of less than good performance are relatively offset by areas of very good performance (71).
Marginal	61 - 70	Performance is less than that expected of an average qualified contractor. There are significant areas where performance is marginal, but they are partially offset by areas of very good performance (70) or many deficiencies exist with few or no offsetting areas of good or very good performance (61).

ADJECTIVE RATING	NUMERICAL RATING	RATING DESCRIPTION
Submarginal	0 - 60	Performance is substantially less than expected of an average qualified contractor. Performance is characterized by major deficiencies with few or no offsetting areas of very good performance (60) or is totally unacceptable (0). [Ref. 16:p. 15]

E. EVALUATION PERIOD

The Federal Acquisition Regulation requires that cost-plus-award-fee contracts be evaluated at stated intervals during performance. Thus, the contractor will periodically be informed of the quality of the performance and the areas were improvement is expected [Ref. 1:p. 16-404.2(b)(3)]. There is no set requirement for the actual evaluation intervals. However, they should be timely to adequately incentivize contractors (e.g. monthly). Shorter evaluation periods increase the administrative burden. This cost should be weighed against more timely feedback. In any case , the evaluation period should not be excessive. An evaluation period of four to six months should be adequate. Some have suggested the most appropriate method may be one which can give instantaneous feedback to the contractor. The more timely the feedback, the more effective the contractor will be in adjusting his performance [Ref. 18:p. 38].

F. TOTAL AWARD FEE POOL AVAILABLE FOR EACH EVALUATION PERIOD

Contracting activities are required to have the total award fee pool budgeted each period. If the award fee is not available for payment, it can act as a strong disincentive. Raymond G. Hunt [Ref. 19], interviewing Air Force contractors, found that the contractors perceived that some commands use the award fee pool as a discretionary budget tool. They felt that the agency was giving them low award fees to save money or divert it to other uses. They did not feel the low awards were related to poor performance. These contractor's perception was "take what you can get." [Ref. 19:p. 88] The award fee was not an incentive.

G. ASSIGNING THE AWARD FEE DETERMINING OFFICIAL

The Award Fee Determining Official (ADO) or Fee Determination Official (FDO) will be an individual who is higher organizationally than the people directly involved in performing the evaluation [Ref. 16:p. 24]. The Fee Determining Official ideally maintains a neutral position by being removed from observing the daily performance. This helps ensure a fair fee determination based on the recommendation of the Performance Evaluation Board [Ref. 20:p. 5]. In a major contract, the FDO or ADO would be at the management level of the procuring activity, usually the project manager. In smaller contracts this function is performed by the contracting officer [Ref. 18:p. 32].

H. ORGANIZATIONAL STRUCTURE TO SUPPORT PERFORMANCE EVALUATION

The organizational structure consists of three main elements within the contracting agency: Government monitors or evaluators, Performance Evaluation Board (PEB) and the Award Fee Determining Official.

The first level in the structure is the Government monitors who evaluate contractor performance during the reporting period. The personnel who usually perform this task are technical and professional experts who are monitoring the contractor's performance on a regular basis. This may be performed by on-site representatives, such as Contracting Officer's Technical Representatives (COTR), Quality Assurance Evaluators (QAE), Administrative Contracting Officers, Defense Contract Management Command personnel and Defense Contract Audit Agency Auditors. They should know the contract requirements, evaluation criteria and technical criteria [Ref. 18:p. 31]. Because technical and professional knowledge are required, personnel with expertise are usually chosen to monitor those areas. Their findings and comments are consolidated into periodic reports submitted to the Award Fee Performance Evaluation Board.

The next level in the structure is the Performance Evaluation Board. The Department of Defense Supplement to the Federal Acquisition Regulation states that:

> consideration may be given to constituting a board to evaluate the contractor's performance and determine the

amount of the award fee or recommend an amount to the contracting officer [Ref. 9:p. 216.404(b)(S-72)(i)].

The Performance Evaluation Board subjectively evaluates all information presented to them in a manner that is fair and equitable to both the Government and the contractor [Ref. 20:p. 53]. After reviewing the monitors' and contractor's input, they will determine an overall performance grade based on the evaluation criteria. The recommendation is forwarded to the Award Fee Determining Official. In small less complex procurements, the Performance Evaluation Board may be excluded. [Ref. 18:p. 31]

The last level in the structure is the Award Fee Determining Official or Fee Determination Official. The Fee Determination Official, as the name states, makes the actual award fee determination. It is based on inputs from the monitors, the contractor and the Performance Evaluation Board. The Fee Determination Official is not bound by the recommendations of the Performance Evaluation Board. When the initial determination is made, the Fee Determination Official forwards a letter to the contractor stating the award fee amount, strengths, weaknesses and areas that need improvement. The contractor may refute this initial determination by providing evidence or support to the Fee Determination Official. Once the final award fee determination is made, the decision is final and not subject to the disputes clause [Ref. 1:p. 16.404-2(a)].

I. SPECIFIC METHODOLOGY USED IN EVALUATING PERFORMANCE AND DETERMINING AWARD FEE TO BE PAID

This methodology ties together some of the areas previously discussed, such as the award fee pool, functional areas to be evaluated, criteria, and measurement processes. This methodology converts actual overall performance weighted ratings into award fee payments. This recommended fee is a specific dollar amount derived by a mathematical process using weights and scores. It may appear to be very objective. However, the initial score is derived from subjective rating criteria and adjectival ratings (excellent, good, marginal, etc.) [Ref. 16:p. 19]. An award fee conversion chart is the method most commonly used to convert weighted performance scores to dollar amounts, as shown in Appendix C. It should be noted that a score of 60, which on the adjectival rating scale was a submarginal grade, corresponds to a award of $0. This is consistent with the idea of that the award fee is for performance above a minimum acceptable level.

J. CONTRACTOR PARTICIPATION IN THE AWARD FEE DETERMINATION PROCESS

The Department of Defense Supplement to the Federal Acquisition Regulation states that consideration may be given "to afford the contractor an opportunity to present matters on his own behalf" [Ref. 9:p. 216.404-2(b)(S-72)(i)]. This can be accomplished by allowing the contractor to present

supporting evidence to the Performance Evaluation Board. Such evidence may include: specific examples of what they did to merit a favorable evaluation in each performance area; discussion of internal problems and corrective action taken; trend information on several periods of performance; self evaluation of performance; and answers to any questions potentially raised by the Performance Evaluation Board. Although this is not required, it does create the image that the award fee determination process is fair and equitable. **[Ref. 20:p. 54]**

K. PAYMENT INTERVALS

These normally correspond with the evaluation period and are based on the type of contract. Payments that do not correspond with the evaluation period may dilute the contractor's incentive to improve performance.

L. REPORTING AND RECORD KEEPING PROCEDURES

These will specify the exact procedures that will be followed to insure that all personnel, Government and contractor, understand and are informed of their responsibilities. These will generally depend on the contracting activity's procedures and the specific contract. [Ref. 21:p. 24]

M. SUMMARY

The final plan should be equitable, realistic, and provide timely performance reviews and assessments. The contractor will only be motivated if he feels that the award fee is attainable and the process is fair. The award fee plan must also clearly communicate what will be evaluated and the means by which performance will be measured. [Ref. 16:p. 7]

VI. OPTIMAL AWARD FEE MODEL

A. REQUIREMENT FOR ESTABLISHING THE AWARD FEE POOL

The unique incentive tool of an award fee contract is the ability to reward the contractor for above average performance. This award pool consists of two parts: the base fee and the award fee.

The base fee is a fixed fee established at the beginning of the contract. It is incrementally paid to the contractor regardless of their performance.

The award fee portion of the total award pool is the amount established at the onset of the contract that is used to reward the contractor. The award fee amount must be sufficient to motivate the contractor to attain excellent performance. The question arises, what is sufficient?

Acquisition regulations and guidelines do provide some guidance for determining the award fee amount. The FAR simply states that the award amount should be sufficient to provide "motivation for excellence in such areas as quality, timeliness, technical ingenuity, and cost-effective management." [Ref. 1:p. 16.404-2].

The Department of Energy [Ref. 3] recommends determining the award fee amount jointly with the base fee to establish an amount that is most likely to motivate the contractor to

attain expressed performance levels. This guideline also recommends that the combined base fee and award fee should not normally exceed 50 percent of the maximum allowable CPFF fee or a fee developed using the weighted guidelines method. [Ref. 3:p. 2-3D3]

The weighted guidelines method is a structured technique that the Government uses to insure that the relative value of appropriate profit factors are considered in establishing a profit objective and negotiating the contract. Appropriate profit factors include contractor's effort, contractor's cost risk, facilities investment, and special factors such as productivity, independent development, etc. [Ref. 7:p. B-10]

Using weighted guidelines or an alternate structured approach to determine the award fee pool is prohibited by the Department of Defense. The DFARS states that the contracting officer in developing a fee objective for a CPAF contract shall not use the weighted guidelines method or alternate structured approach and shall not complete a DD form 1547 (record of weighted guidelines method application) [Ref. 9:p. 215.974]. The contracting officer is referred back to the FAR guidance for subjectively determining an amount sufficient to motivate the contractor.

B. USE OF ECONOMIC MODELING

An economic model may help the contracting officer determine an optimal award fee amount that will sufficiently

motivate the contractor. As in all procurements, the Government is concerned with cost minimization and the contractor with profit maximization. An economic model could be used to determine an efficient allocation of both the Government's and contractor's resources.

Economic Efficiency, or Pareto efficiency as it is sometimes called, is concerned with determining both the Government's and the contractor's well being and the efficient allocation of their resources. If an award fee pool is too small, the contractor will not be sufficiently motivated and performance will lower than the Government's expectations. If the award fee pool is too large the contractor may meet all performance expectations, but the Government is foregoing budget dollars that could be used for other programs. The goal of the economic model is to determine the optimal award fee amount. This amount will sufficiently motivate the contractor and use Government resources efficiently. Government resources include both budgeted dollars and the personnel involved in monitoring contractor performance.

C. OPTIMAL AWARD FEE MODEL

The model developed in this chapter focuses on two factors. The first factor is the contractor's effort. Since the Government can not control the contractor's effort, it wants the contractor to expend maximum effort. Presumably the harder the contractor works, the higher the chance of

favorable contract performance. This factor measures the complexity of the work and the resources required of the prospective contractor.

The second factor in this model is the expected results of the contractor's performance. The contractor's performance can vary from excellent to unacceptable. To simplify the model, it focuses on two desired results: very good performance and good performance.

Using these two factors, the contracting officer will evaluate the probability of the contractor expending extraordinary effort. This would result in very good performance with a probability **pH**. The contracting officer will also evaluate the probability of the contractor expending adequate effort. This would result in very good performance with a probability of **pL**. The preceding determination is summarized in TABLE 1.

TABLE 1: CONTRACTOR EFFORT PROBABILITY MATRIX

	Very Good Performance	Good Performance
Extraordinary Effort E = 2	pH	1 - pH
Adequate Effort E = 1	pL	1 - pL
Government Payment	Z	Y

1. Expected Government Gain

The Government desires to maximize the gain it receives from this contract. The Government's gain represents the amount that it benefits from the item that exceeds the Government's payment (costs plus net revenue) to the contractor, administrative costs, and opportunity cost of foregoing the use of budgeted dollars to other projects. The benefit is represented by **BV** for Very Good Performance and **BG** for Good performance. The Government gain (**GG**) is given by

$$GG = Maximize\ (GH, GL)$$
$$where: GH = (BV-Z)\cdot pH + (BG-Y)\cdot(1-pH)$$
$$GL = (BV-Z)\cdot pL + (BG-Y)\cdot(1-pL)$$

2. Contractor Optimization

To determine the optimal award fee, the contractor's utility function must be evaluated. This utility function has three components. The first component (**A**) is the nonmonetary benefit the contractor receives from the contract. This

benefit may be improving the contractor's competitive position in the commercial marketplace, enhancing the contractor's capability and expertise, expected follow-on production contracts, or other DOD, Government agency, or foreign military sales (FMS). The second component (**R**) represents the contractor's net revenue upon completing the contract. The third component (**E**) represents the firm's opportunity cost of undertaking a Government contract. It is the value of the activities a firm must forego in order to undertake the Government contract.

Zn and **Yn** denote the net revenue for the contractor such that **Zn = Z - C** and **Yn = Y - C**. **C** denotes the expected cost of production, including the base fee, which the contractor receives regardless of actual performance.

$$U = U(A,R,E) = A + R^b - dE$$
$$A>0,\ 0<b<1,\ d\geq 1$$

If E = 2:

$$UH = U(A,R,2) = pH(A+Zn^b-2d) + (1-pH)(A+Yn^b-2d)$$
$$UH = ApH+Zn^bpH-2dpH+A+Yn^b-2d-ApH-Yn^bpH-2dpH$$
$$UH = Zn^bpH-Yn^bpH+A-2d+Yn^b$$

If E = 1:

$$UL = U(A,R,1) = pL(A+Zn^{b}-1d) + (1-pL)(A+Yn^{b}-1d)$$
$$UL = ApL+Zn^{b}pL-dpL+A+Yn^{b}-d-ApL-Yn^{b}pL+dpL$$
$$UL = Zn^{b}pL-Yn^{b}pL+A-d+Yn^{b}$$

Then we want to have:

$$UH \geq UL$$

Substituting for UH and UL

$$Zn^{b}pH-Yn^{b}pH+A-2d+Yn^{b} \geq Zn^{b}pL-Yn^{b}pL+A-d+Yn^{b}$$
$$Zn^{b}pH-Zn^{b}pL \geq Yn^{b}pH-Yn^{b}pL+d$$
$$Zn^{b}(pH-pL) \geq Yn^{b}(pH-pL)+d$$
$$Zn^{b} \geq Yn^{b}+\frac{d}{(pH-pL)}$$
$$Zn \geq Yn+\left(\frac{d}{pH-pL}\right)^{\frac{1}{b}}$$

3. Optimal Government Payment

If the Government wants the contractor to expend high effort, then **GH > GL**. The Government wants to find (Z,Y) that achieves this objective while minimizing the expected Government payment (EGP). In the extraordinary effort case the Government will pay **Z = Zn + C**. In the adequate effort case, the Government will pay **Y = Yn + C**. If the contractor expends extraordinary effort:

$$EGP = pH \cdot Z + (1-pH) \cdot Y$$

To minimize its costs the Government will select a payment scheme where **Yn = 0**. If the payment scheme is set to elicit extraordinary effort:

$$Zn \geq Yn + \left(\frac{d}{pH - pL}\right)^{\frac{1}{b}}$$

$$Zn = 0 + \left(\frac{d}{pH - pL}\right)^{\frac{1}{b}}$$

$$Zn = \left(\frac{d}{pH - pL}\right)^{\frac{1}{b}}$$

Substituting these values for **Zn** and **Yn** into the expressions for **Z** and **Y**:

$$Y = C + Yn$$
$$Y = C \quad and$$

$$Z = C + Zn$$

$$Z = C + \left(\frac{d}{pH - pL}\right)^{\frac{1}{b}}$$

Therefore the optimal award fee is represented by:

$$\left(\frac{d}{pH - pL}\right)^{\frac{1}{b}}$$

D. MODEL ILLUSTRATION

This illustration shows that the optimal award fee amount in this model increases with the marginal cost of effort and decreases as the probability of a favorable outcome increases.

1. Reasonable Expectation of Very Good Performance

In the first scenario, the contracting officer determines the probability of performance outcomes as illustrated in TABLE 2 below.

TABLE 2: REASONABLE PERFORMANCE EFFORT PROBABILITY MATRIX

	Very Good Performance	Good Performance
Extraordinary Effort E = 2	.67	.33
Adequate Effort E = 1	.33	.67

To simplify the illustrations the following variables will be held constant:

$A = 1$
$b = 0.50$
$d = 1$
$BV = 130$
$BG = 110$
$C = 100$

The preceding probabilities and variables yield the following results:

pH	pL	BV	BG	C
.67	.33	130	110	100

Optimal Award Fee Amount (**Zn**) = 9
Expected Government Payment(**High Effort**) = 106
Government Gain (**High Effort**) = 17.33
Expected Government Payment(**Low Effort**) = 101
Government Gain (**Low Effort**) = 15.67

In this scenario the Government gain from the high effort contract is greater than that gain expected from the low effort contract. The low effort contract is what the Government would expect if they chose not to utilize the award fee contract and were satisfied with the performance resulting from not incentivizing the contractor's effort. This low effort contract would be similar to utilizing a Cost-Plus-Fixed-Fee (CPFF) contract in which the contractor's profit or fee is fixed regardless of actual contract performance. In the illustration this payment is **101**. This is the cost of **100**, which includes the opportunity cost of foregone investments, and a fixed profit of **1**.

2. High Expectation of Very Good Performance Scenario

In this scenario, the contracting officer determines there is a high probability of very good performance illustrated in TABLE 3.

TABLE 3: HIGH PERFORMANCE EFFORT PROBABILITY MATRIX

	Very Good Performance	Good Performance
Extraordinary Effort E = 2	.95	.05
Adequate Effort E = 1	.50	.50

The preceding probabilities yield the following results:

pH	pL	BV	BG	C
.95	.50	130	110	100

Optimal Award Fee Amount (**Zn**) = 4.94
Expected Government Payment(**High Effort**) = 104.69
Government Gain (**High Effort**) = 24.31
Expected Government Payment(**Low Effort**) = 101
Government Gain (**Low Effort**) = 19.00

In this scenario the award fee has decreased from **9** to **4.94.** Since the expectation of the contractor's performance has increased, the amount required to motivate him to achieve this level of performance has decreased.

3. **Very Low Expectation of Very Good Performance**

In this scenario, the contracting officer determines that there is a very low expectation of very good performance, as illustrated in TABLE 4.

TABLE 4: VERY LOW PERFORMANCE EFFORT PROBABILITY MATRIX

	Very Good Performance	Good Performance
Extraordinary Effort E = 2	.33	.67
Adequate Effort E = 1	.25	.75

The preceding probabilities yield the following results:

pH	pL	BV	BG	C
.33	.25	130	110	100

Optimal Award Fee Amount (**Zn**) = 144
Expected Government Payment(**High Effort**) = 148
Government Gain (**High Effort**) = -31.33
Expected Government Payment(**Low Effort**) = 101
Government Gain (**Low Effort**) = 14.00

This scenario results in an optimal award fee amount of **144**. This is extremely large compared to the contract cost. This is expected since the probability of very good performance is so low. To motivate the contractor to extraordinary effort requires a large incentive. However, the benefit is **-31.44** as compared to **14** for the CPFF contract. In this scenario, the Government would be better off not using an award fee contract. The probability of very good performance does not merit the extra cost.

4. Optimal Award Fee compared to levels of pH and pL

Figure 1 illustrates the relationship between the probability of very good performance and the optimal award fee. As the probability of very good performance increases the optimal award fee decreases.

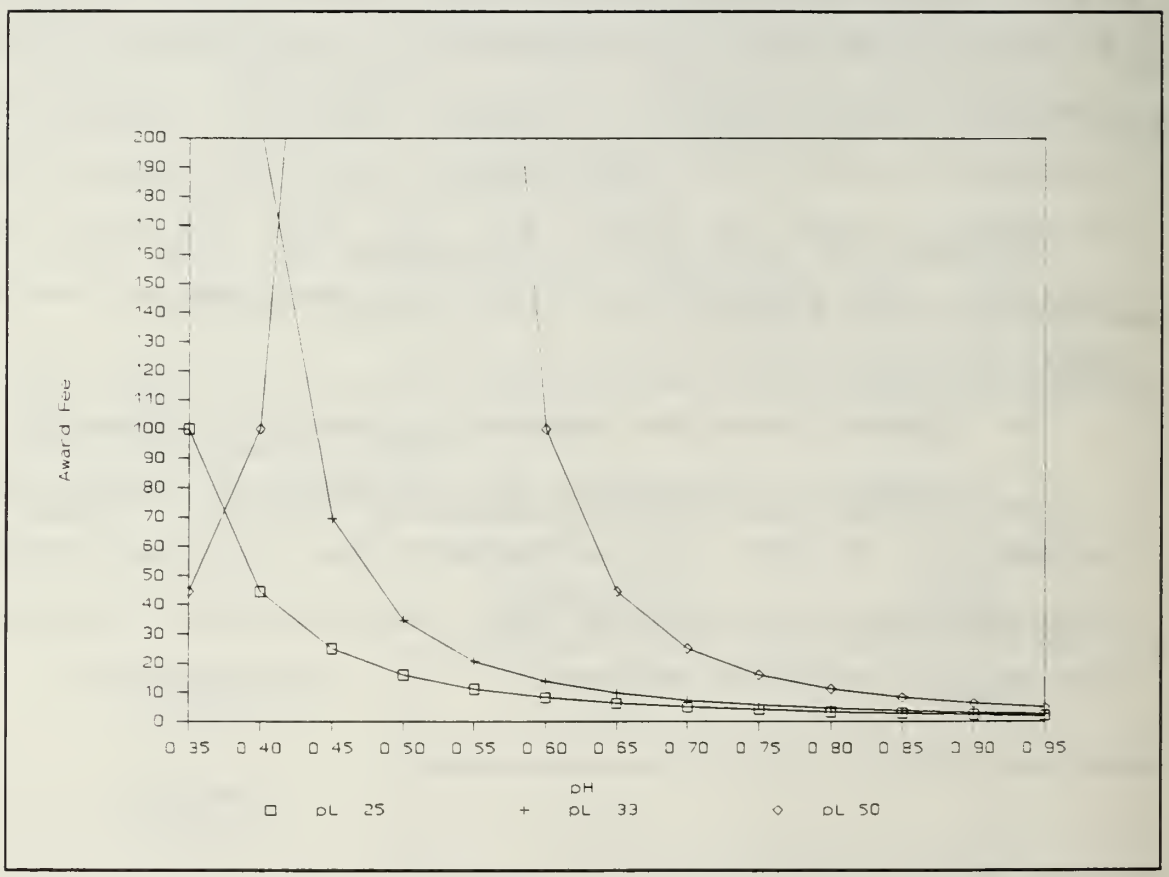

Figure 1: Optimal Award Fees

5. Expected Government Gains compared to the level of pH

Figures 2, 3 and 4 illustrate the expected Government gain as the probability of pH increases. The intersection of GG (high) and GG (low) is that point where it becomes advantageous for the Government to use the CPAF contract.

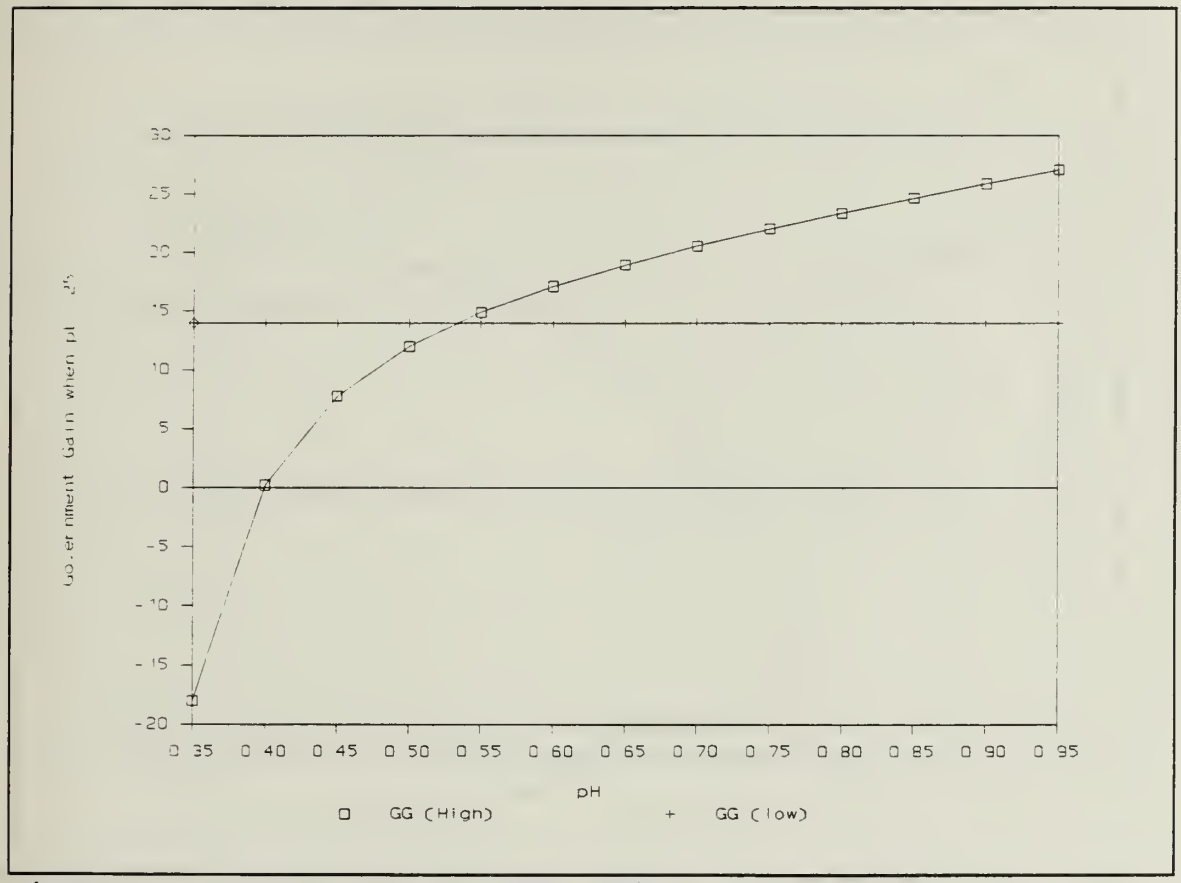

Figure 2: Expected Government Gain at pL = .25

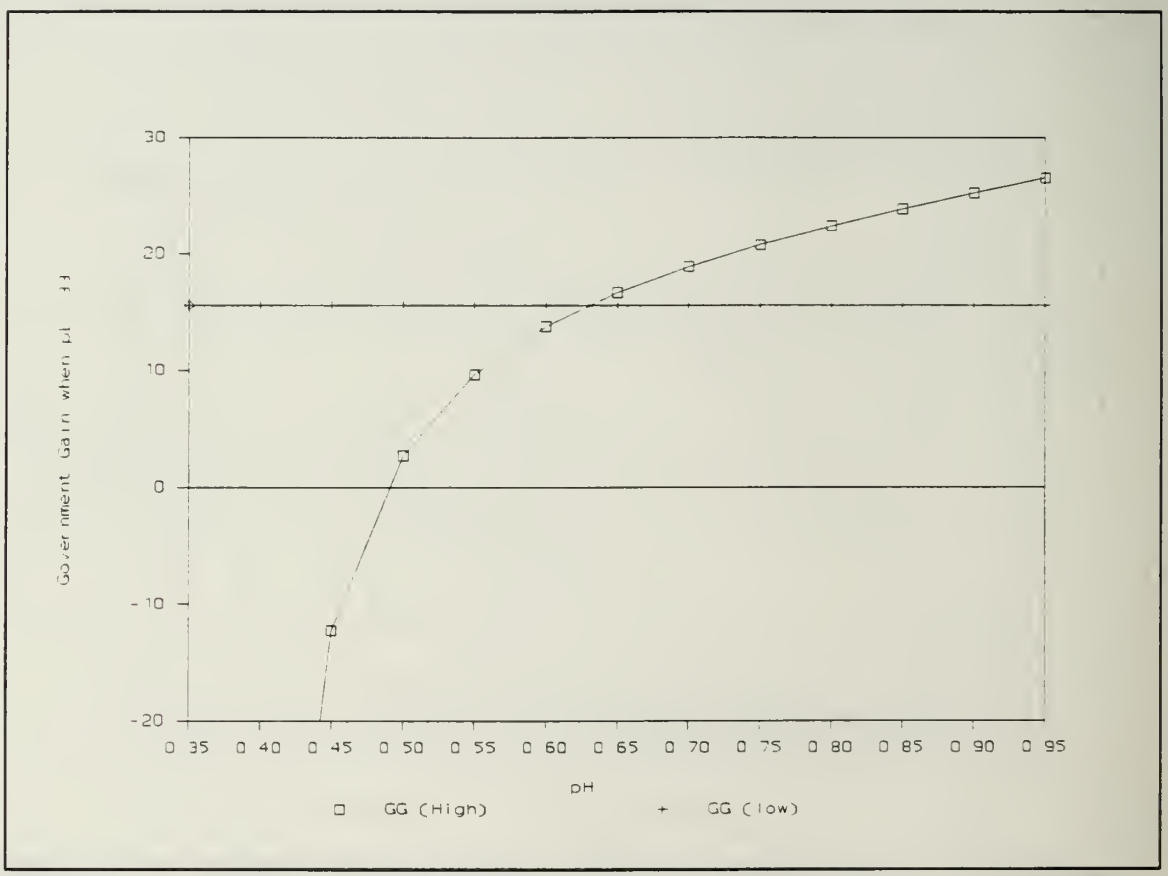

Figure 3: Expected Government Gain at pL = .33

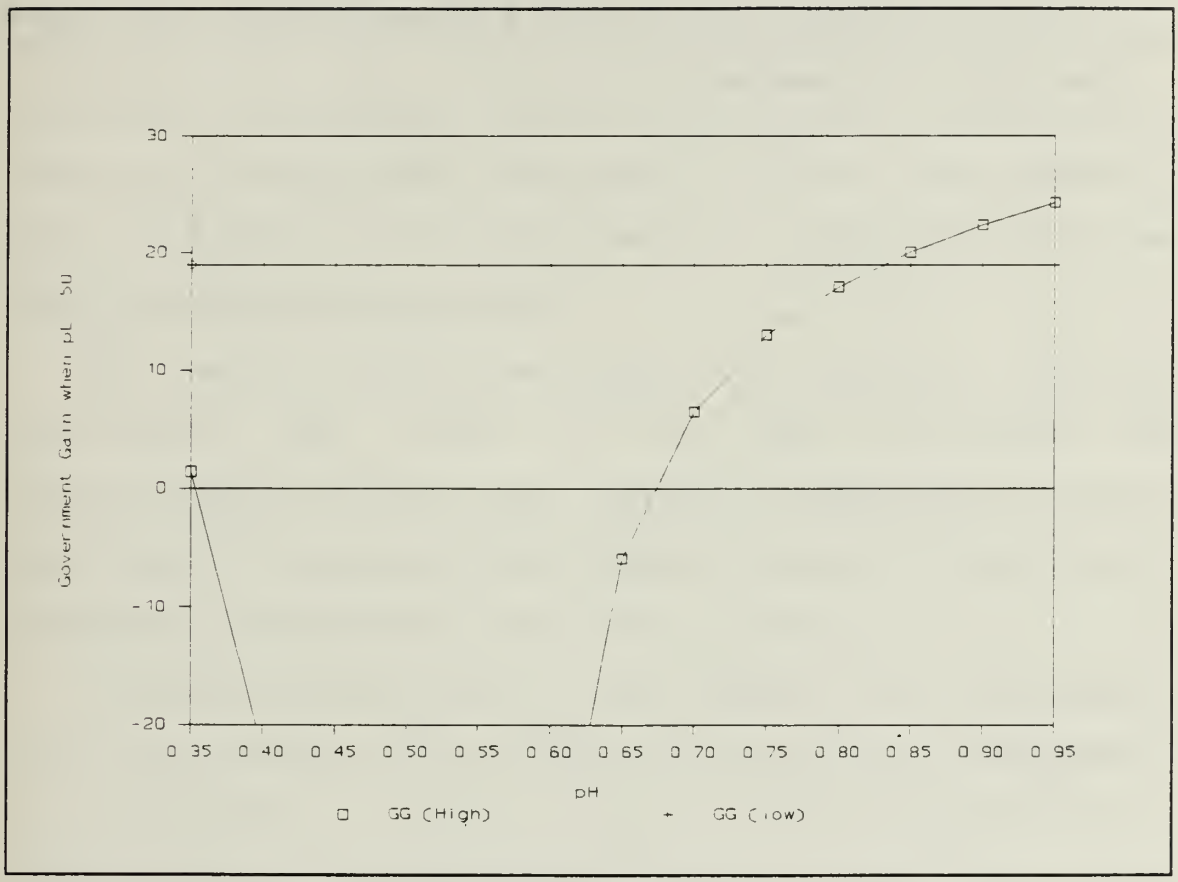

Figure 4: Expected Government Gain at pL = .50

E. SUMMARY

Using an economic model similar to the one proposed here can help the contracting officer determine the optimal award fee that will appropriately incentivize the contractor. Applying this model will also help determine if the CPAF contract is appropriate for the proposed acquisition, based on the model's parameters.

VII. CONCLUSION AND RECOMMENDATIONS

A. CONCLUSIONS

The following conclusions apply to this research effort.

1. Properly administering award fee contracts is an excellent tool for incentivizing contractors to improve performance and quality, because of the breadth of performance evaluation reports and monitoring in award fee contracts. This is a benefit that is not inherent in other contract types used in Government procurement.

The award fee process fails to adequately motivate performance when areas of the award fee plan are inappropriately applied. Most common is inadequate Government monitoring. Significant expertise and effort are required to successfully administer award fee contracts.

Contractor motivation is also reduced when performance evaluation criteria are written so that excellent performance is unachievable. The top level of performance should be attainable and represent significantly better than average performance by a qualified contractor. Excellent performance should not translate to perfect performance.

2. Contracting personnel are aware of CPAF contracting, but the guidance on use, application, and structure of FPAF contracting is minimal to nonexistent. The advantage of using

award fee contracts should not be restricted only to cost-reimbursement contracts. Many applications exist in fixed-price contracts where award fee provisions would maximize the Government's value.

The DFARS specifies the application and structure of FPAF contracts. However, the current FAR language considers a FPAF contract as a hybrid contract. Language regarding these contract types is subject to interpretation. Purchasing, contracting, and acquisition textbooks and guidelines generally do not specify FPAF contracts when considering contract type selection. These omissions and ambiguities inhibit further use of award fee provisions in fixed-price contracts.

3. The administrative burden is the largest barrier in expanding the use of award fee contracts. When determining the appropriate contract type for a particular acquisition, and whether the award fee can be applied, administrative burden is one of the largest factors. This administrative burden includes increased performance monitoring, availability of technical experts for performance monitoring, training of inexperienced users and convening award fee determination boards.

The cost of the administrative burden problem is also very difficult to objectively quantify so it can be compared to the benefit derived by an award fee contract. This results in a

more subjective than objective determination of appropriate contract type.

B. RECOMMENDATIONS

1. Expand the awareness of FPAF contracts at the Navy Field Contracting Activity level

Many benefits can be derived from using award fee provisions with fixed-price contracts, when appropriate. All contracting personnel should be made aware of its use and application through training and policy guidance. Current FAR guidance and other directives are ambiguous and vague concerning FPAF contracts.

2. Develop Award Fee Guidebook for use by requiring activities

Developing an Award Fee Guidebook that discusses both pre-award and post-award factors would help enhance the contracting process and reduce the administrative burden. The guidebook should illustrate the benefits derived from award fee contracts and lead to better enthusiasm and less apprehension from requiring activities.

3. Change the FAR to recognize the FPAF contract as a specific contract type

The lack of specific FAR language concerning FPAF contracts inhibits greater utilization. Currently, using an award fee provision with a fixed-price type contract is classified as a hybrid contract type. The FAR language is

subject to interpretation in using this contract. Some contracting personnel believe that it is allowed since it would be in the Government's interest to use this contract. Others believe that it should not be used without deviation approval since it is not specified as an authorized contract type.

The DFARS removes this confusion for the Department of Defense by including specific language which allows FPAF contracts with the chief of contracting approval. This type of recognition would enhance FPAF contracts and make their use more acceptable.

C. ANSWERS TO RESEARCH QUESTIONS

1. What are the key elements and barriers in using of award fee contracts at the Navy Field Contracting Activity level and how can these barriers be overcome to facilitate the proper use of award fee contracts?

The key element and barrier in using award fee contracts is administrative burden. If an acquisition meets all other criteria (e.g. subjective performance criteria, large dollar value, risk assessment, etc...), an award fee contract may still be inappropriate because the contracting activity estimates that the large administrative burden would exceed the expected benefit.

2. What is the award fee concept?

The award fee concept is an unique incentive structure which allows the Government to reward the contractor based on subjective, after the fact evaluation of the contractor's performance.

The reward is increased if the contractor's performance is above an average level and no reward may be given if performance is below a minimal acceptable performance level.

3. What are the uses of Cost-Plus-Award-Fee and Fixed-Price-Award-Fee contracts?

Cost-plus-award-fee contracts have been successfully used in various contracts for research and development, engineering and technical services, production and complex service contracts. These uses have one thing in common. They all contain some subjective performance criteria, such as quality, reliability, maintainability, schedule, cost control and service provided.

Fixed-price-award-fee contracts can be used in construction, base operating services, custodial services and routine or predictable service contracts.

Award fee provisions may also be used with other contract types when appropriate conditions exist so that they are in the Government's interest. A common example of this is using award fee provisions with fixed-price incentive (firm

target) (FPIF) contracts. The objective cost incentives are predetermined and negotiated in the contract and award provisions are made to reward the contractor in subjective performance areas of quality, reliability, etc....

4. When should an award fee contract be used?

The important criteria that must be met when using award fee contracts is that subjective evaluation criteria must be used. If objective criteria can be developed, another contract type will be more appropriate. If objective evaluation criteria can not be developed, award fee contracts are appropriate.

If possible, the criteria should be quantifiable, even though they are subjective. Quantifiable standards are those that are measured against well defined, unambiguous or tangible standards. The criteria should be well written so that two separate evaluators can arrive at the same performance grade when monitoring contractor performance.

5. What are the barriers to using award fee contracts?

The most common barrier is that the requiring activity is unwilling or incapable of assuming the administrative burden associated with award fee contracts. The benefits of award fee contracting will be mitigated if any of the following occur:

1. Lack of sincere evaluation or performance monitoring.
2. Lack of evaluation checklists, work sheets, or performance standards.

3. Lack of performance monitoring plan.

4. Personal bias of evaluators.

5. Lack of technically competent evaluators.

6. Ineffective communication between evaluators and the contractor.

6. How might these impediments or barriers be reduced or eliminated?

The barriers can be reduced by developing a comprehensive award fee guide that could be used by the contract procurement, contract administration and requiring activity. Many guidebooks developed by other activities can be used as a reference. The guidebook should also illustrate the benefits of using award fee contracts as compared to other contract types. This would help in generating more responses from activities preferring award fee contracts.

D. AREAS FOR FURTHER RESEARCH

(1) Consider using award fee contracts as a mechanism for the Government and contractors to embody the current programs of Total Quality Management (TQM), Total Quality Leadership (TQL), and Continuous Quality Improvement (CQI).

(2) Expand the analysis of the proposed economic model for determining the optimal award fee.

APPENDIX A - GLOSSARY OF ACRONYMS

ADO	Award Fee Determining Official
COTR	Contracting Officer's Technical Representative
CPAF	Cost-plus-award-fee
CPFF	Cost-plus-fixed-fee
CPIF	Cost-plus-incentive-fee
CPPC	Cost-plus-percentage-of-cost
CS	Cost sharing
DFARS	Department of Defense FAR Supplement
DOD	Department of Defense
FAR	Federal Acquisition Regulation
FDO	Fee Determination Official
FFP	Firm-fixed-price
FPAF	Fixed-price-award-fee
FPI	Fixed-price incentive
FPIF	Fixed-price incentive (firm target)
FPIS	Fixed-price incentive (successive targets)
FPR	Fixed-price with redetermination
GOCO	Government-owned-contractor-operated
NASA	National Aeronautical Space Administration
PEB	Performance Evaluation Board
QAE	Quality Assurance Evaluator

APPENDIX B - SAMPLE PERFORMANCE EVALUATION REPORT

Sample Performance Evaluation Report Criteria
and
Contractor Performance Evaluation Report
[Source: DFARS 216.4-4]

TABLE 16-1, PERFORMANCE EVALUATION CRITERIA

		Submarginal	Marginal	Good	Very Good	Excellent
A Time of Delivery	(A-1) Adherence to plan schedule.	Consistently late on 20% of plans.	Late on 10% plans w/o prior agreement.	Occasional plan late w/o justification.	Meets plan schedule.	Delivers all plans on schedule & meets prod. change requirements on schedule.
	(A-2) Action on Anticipated delays.	Does not expose changes or resolve them as soon as recognized.	Exposes changes but is dilatory in resolution on plans.	Anticipates changes, advise Shipyard but misses completion of design plans 10%.	Keeps Yard posted on delays, resolves independently on plans.	Anticipates in good time, advises Shipyard, resolves independently and meets production schedule.
	(A-3) Plan Maintenance	Does not complete interrelated systems studies concurrently.	System studies completed but constr. plan changes delayed.	Major work plans coordinated in time to meet production schedules.	Design changes from studies and interrelated plans issued in time to meet product schedules.	Design changes, studies resolved and test data issued ahead of production requirements.
B Quality of Work	(B-1) Work Appearance	25% dwgs. not compatible with Shipyard repro. processes and use.	20% not compatible with Shipyard repro. processes and use.	10% not compatible with Shipyard repro. processes and use.	0% dwgs. prepared by Des. agent not compatible with Shipyard repro. processes and use.	0% dwgs. presented incl. Des. agent, vendors, subcontr. not compatible with Shipyard repro. processes and use.
	(B-2) Thoroughness and Accuracy of Work.	Is brief on plans tending to leave questionable situations for Shipyard to resolve.	Has followed guidance, type and standard dwgs.	Has followed guidance, type and standard dwgs. questioning and resolving doubtful areas.	Work complete with notes and thorough explanations for anticipated questionable areas.	Work of highest caliber incorporating all pertinent data required including related activities.
	(B-3) Engineering Competence	Tendency to follow past practice with no variation to meet requirs. job in hand.	Adequate engrg. to use & adapt existing designs to suit job on hand for routine work.	Engineered to satisfy specs., guidance plans and material provided.	Displays excellent knowledge of constr. requirs. considering systems aspect, cost, shop capabilities and procurement problems.	Exceptional knowledge of Naval shipwork & adaptability to work process incorporating knowledge of future planning in Design.

TABLE 16-1 (Continued)

		Submarginal	Marginal	Good	Very Good	Excellent
B Quality of Work (Cont'd)	(B-4) Liaison Effectiveness	Indifferent to requirements of associated activities, related systems, and Shipyard advice.	Satisfactory but dependent on Shipyard to force resolution of problems without constructive recommendations to subcontr. or vendors.	Maintains normal contact with associated activities depending on Shipyard for problems requiring military resolution.	Maintains independent contact with all associated activities, keeping them informed to produce compatible design with little assistance for Yard.	Maintains expert contact, keeping Yard informed, obtaining info from equip., supplies w/o prompting by Shipyard.
	(B-5) Independence and Initiative	Constant surveillance req'd to keep job from slipping--assign to low priority to satisfy needs.	Requires occasional prodding to stay on schedule & expects Shipyard resolution of most problems.	Normal interest and desire to provide workable plans with average assistance & direction by Shipyard.	Complete & accurate job. Free of incompatibilities with little or no direction by Shipyard.	Develops complete and accurate plans, seeks out problem areas and resolves with assoc. act. ahead of schedule.
C Effectivenss in Controlling and/or Reducing Costs	(C-1) Utilization of Personnel	Planning of work left to designers on drafting boards.	Supervision sets & reviews goals for designers.	System planning by supervisory, personnel, studies checked by engineers.	Design parameters established by system engineers & held in design plans.	Mods. to design plans limited to less than 5% as result lack engrg. system correlation.
	(C-2) Control Direct Charges (Except Labor)	Expenditures not controlled for services.	Expenditures reviewed occasionally by supervision.	Direct charges set & accounted for on each work package.	Provides services as part of normal design function w/o extra charges.	No cost overruns on original estimates absorbs service demands by Shipyard.
	(C-3) Performance to Cost Estimate	Does not meet cost estimate for original work or changes 30% time.	Does not meet cost estimate for original work or changes 20% time.	Exceeds original est. on change orders 10% time and meets original design costs.	Exceeds original est. on change orders 5% time.	Never exceeds estimates of original package or change orders.

TABLE 16-2. CONTRACTOR PERFORMANCE EVALUATION REPORT

Ratings
Excellent
Very good
Good
Marginal
Subnarginal

Period of _____ 19___
Contract Number _____
Contractor _____
Date of Report _____
PNS Technical Monitor/s _____
_____

CATEGORY	CRITERIA	RATING	ITEM FACTOR	EVALUATION RATING	CATEGORY FACTOR	EFFICIENCY RATING
A	TIME OF DELIVERY					
	A-1 Adherence to Plan Schedule	_____ x	.40 =	_____		
	A-2 Action on Anticipated Delays	_____ x	.30 =	_____		
	A-3 Plan Maintenance	_____ x	.30 =	_____		
		Total Item Weighed Rating		_____ x	.30 =	_____
B	QUALITY OF WORK					
	B-1 Work Appearance	_____ x	.15 =	_____		
	B-2 Thoroughness and Accuracy of Work	_____ x	.30 =	_____		
	B-3 Engineering Competence	_____ x	.20 =	_____		
	B-4 Liaison Effectiveness	_____ x	.15 =	_____		
	B-5 Independence and Initiative	_____ x	.20 =	_____		
		Total Item Weighed Rating		_____ x	.40 =	_____
C	EFFECTIVENESS IN CONTROLLING AND/OR REDUCING COSTS					
	C-1 Utilization of Personnel	_____ x	.30 =	_____		
	C-2 Control of all Direct Charges Other than Labor	_____ x	.30 =	_____		
	C-3 Performance to Cost Estimate	_____ x	.40 =	_____		
		Total Item Weighed Rating		_____ x	.30 =	_____

TOTAL WEIGHED RATING _____
Rated by: _____
Signature(s) _____

NOTE: Provide supporting data and/or justification for below average or outstanding item ratings.

APPENDIX C - AWARD FEE CONVERSION CHART

Performance Score	% of Available Award Fee	Performance Score	% of Available Award Fee
100	100.00	79	52.5
99	96.0	78	50.0
98	96.0	77	47.0
97	94.0	76	44.0
96	92.0	75	41.0
95	94.0	74	38.0
94	94.0	73	35.0
93	96.0	72	32.0
92	94.0	71	29.0
91	82.0	70	26.0
90	20.0	69	22.0
89	77.5	68	20.0
88	75.0	67	18.0
87	72.5	66	16.0
86	70.0	65	14.0
85	67.5	64	12.0
84	50.0	63	10.0
83	62.5	62	8.0
82	60.0	61	4.0
81	57.5	60	0.0
80	55.0		

APPENDIX D - INTERVIEW/SURVEY QUESTIONNAIRE

1. What contract types are you presently administering?
   a. fixed types:
   b. cost types:

2. What contract types are you familiar with/or consider for contract type selection?
   a. fixed types:
   b. cost types:

3. What areas are you contracting for? (i.e services, repairs, maintenance,etc...)

4. What is the most important criteria for contract selection type?
   - length of contract
   - dollar value
   - risk
   - schedule criteria
   - performance criteria
   - # of offerors

5. What role does the requiring activity play in contract type selection?

6. What areas are you applying award fee contracts to?

7. What areas do you consider are suitable/ appropriate for an award fee contract?

8. What influences most the use of an award fee contract?
   - customer preference
   - item/service being procured
   - statement of work
   - performance objectives
   - dollar amount
   - administrative burden

9. What most influences <u>not</u> using award fee contracts?
   - customer preference
   - dollar amount
   - availability of performance monitors
   - item/service being performed
   - availability of adequate performance work statements
   - administrative burden (pre-award)
   - contractor willingness

10. What are the advantages of using award fee contracts?

11. What are the disadvantages of using award fee contracts?

12. What is the "administrative burden" in an award fee contract?

13. Is there written guidance available in administering award fee contracts?

14. What areas need to be changed in the structure of award fees to make them easier to administer?

15. Is there a risk in awarding an award fee contract? (Risk in that other contract types will accomplish same goals without government involvement)

16. Have you used fixed price award fee (FPAF) or familiar with any agency that has?

17. Do you think that if fixed price award fee contracts were used that it should be structured similarly or differently from CPAF?

18. What types of contracts are being applied to areas that could utilize a FPAF contract?

19. Who should develop work statements?
    -requiring activity
    -contract specialists

20. Is it possible to boiler plate the work statements that will be utilized in a Award Fee contract?

21. Is there experience available in writing work statements?

22. Is there written guidance available in writing work statements?

23. Is the adequacy of work statements required for a Award Fee contract the same or different versus other types of contracts?
    - Fixed vs. Cost
    - Sole source vs. competitive

24. Are requiring activities providing contract oversight (COTR, IQUE) that could be used in Award Fee performance monitoring?

25. Can an Award Fee contract insure **Quality** better than other types of contracts?

26. What degree of communication with the contractor does award fee contract provide as compared to other types of contracts?

27. Are cost reimbursement and FPI contracts less costly to administer?

28. In instances of Cost type contracts
    - are the functions routine or non routine?
    - could a firm fixed price contract be used for the same function?
    - could a statement of work for a firm fixed price contract vs written for this function?

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