A CONCEPTUAL FRAMEWORK FOR COSTING DEFENSE CONTRACTS

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TABLE OF CONTENTS

Chapter Page

III. (CONTINUED)

Chapter Page

IV. (CONTINUED)

LIST OF EXHIBITS

CHAPTER I

INTRODUCTION

The Department of Defense (DOD) comprises a significant portion of all procurement done by the Federal Government. Where price competition is available, procurement of goods and services can take place on an "accept the lowest bid" basis. However, much of the DOD's procurement takes place without benefit of price competition[1], and cost data must be relied upon in determining procurement contract prices.

For fixed-price contracts, where the contract price is fixed in amount and the contractor has full responsibility for controlling costs and achieving a profit, various types of cost analyses are used by the contracting officers as a basis for negotiating the contract price. For cost-reimbursement contracts, where total contract price is an after-the-fact determination based upon actual costs plus a negotiated fee, cost data are needed throughout contract

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[1]There are numerous reasons why price competition might be lacking in specific situations. Primary among them are: (1) reliance on a sole supply source made necessary because of the expertise required of the supplier; (2) the type of work to be performed never done before; (3) indefinitive specifications of work to be done; and (4) work of a secretive nature which prevents any type of advertising or competitive bidding.

negotiation and performance. The results are that methods of determining and communicating cost data for individual contracts are vital to determining the prices of contracts placed by the DOD with private industry.

Cost accounting is often considered a specialized area within the total accounting framework, and costing defense contracts might be considered a specialized area of cost accounting. Conventional practices for costing defense contracts are primarily extensions of each contractor's own accounting system and procedures. These practices are the result of the absence of unified thinking as to those types of costs which should be accepted on Government contracts as well as the related cost accounting methods for assigning costs to individual contracts.

During the course of the literature review, which included publications of various accounting and other professional organizations, private firms, and Government, little material was found dealing with conceptual aspects of costing defense contracts.[2] The literature generally dealt with

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[2]It should be mentioned here that one conceptual area in which the DOD has been the forerunner is in the implementation of Planning, Programming, Budgeting Systems (PPBS) in Government. Primary application of PPBS within the DOD has been its use as a management tool in allocating resources to various defense programs by providing budgeting information and a framework for resource allocation decisions. The only significant relationship of this study to PPBS would be the input to PPBS that might be gained from the cost accounting function. In all other respects the two functions differ since costing defense contracts takes place after resource allocation decisions have been made within a PPBS framework.

isolated instances focusing on procedures or techniques rather than underlying concepts of costing. The lack of concern for basic costing concepts is probably due to traditional utilization of cost accounting for internal management uses which, as would be expected, consists of procedures and techniques designed to best satisfy management's needs in each instance.

For financial accounting purposes, the accounting profession has developed generally accepted accounting principles to provide guidance and promote uniformity in financial reporting. Due to the specialized nature of cost accounting within each firm, no counterpart of generally accepted accounting principles exists in the cost accounting field. This situation becomes especially noticeable during attempts to specify how costs are to be determined for cost-reimbursement contracts. "Thus, in the cost accounting areas there is no generally accepted statement of cost accounting principles which could be used in a contract to express the will of the parties."[3]

The DOD has used its own cost principles since the 1940's in attempts to better specify those costs that should be charged to defense contracts. During the 1960's, both the DOD and defense contractors directed greater attention to the numerous costing methods in use and the lack of

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[3]Howard W. Wright, Accounting for Defense Contracts (Englewood Cliffs, 1962), p. 9.

agreed upon concepts dealing with costing problems. The increased attention to costing matters eventually resulted in legislation designed to provide better guidelines for costing defense contracts.[4]

Lack of adequate treatment in the literature of concepts for costing defense contracts was the primary reason for initiating this study. In attempting to improve upon current contract costing methods, legislation has been passed to provide for developing and promulgating cost accounting standards. However, identifying and defining appropriate concepts for the contract costing process is considered a first step in order to provide a proper basis for developing the standards. The conceptual framework developed in this study is intended to serve such a purpose.

Purpose

Cost accounting standards useful for providing guidance in contract costing must be based upon usable costing concepts. The literature reflects that in the past, a piecemeal approach has been taken to contract costing problems, resulting in a lack of any type of coordinated set of concepts for determining contract costs. Therefore, this study develops a conceptual framework for developing cost accounting standards.

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[4] Defense Production Act—Extension, Etc., Statutes at Large, LXXXIV, Sec. 796 (1970).

Methodology

Two methods were used for determining the requirements of a conceptual framework: (1) the development of tentative concepts from the literature review and (2) a field study of a large defense prime contractor. The review of the literature was undertaken to secure a thorough understanding of defense contract costing problems and to search for the existence of appropriate concepts. Various publications were examined, including those from the Federal Government, professional accounting organizations, industrial organizations, private firms, and relevant court cases.

The field study was designed to supplement the information gained from the literature review so that a complete conceptual framework could be developed. The basic approach to the field study was to examine contract cases of the referenced defense contractor over a several-year period in search of elements that should be included in the costing framework, not revealed in the literature.

After fully developing the framework, one representative case was selected and written up to demonstrate the soundness of the framework. Only one case was selected for this purpose in order to prevent duplications of material since all of the case studies contained similar characteristics as their essential ingredients.

In selecting the case to be written up two sources were utilized. First, Board of Contract Appeals Decisions were

reviewed for the period 1965 through 1972 to determine if costing issues revealed in the cases were sufficient for demonstrating the completeness of the framework developed in this study.

Second, contract audit cases of the field study firm were reviewed in search of a single case that could adequately serve as a demonstrative example of all the cases reviewed. Approximately 500 reports of supplier contract audits covering the period 1968 through 1972 were scrutinized, and those audits with reports indicating the involvement of a broad range of contract costing issues were selected for a more detailed examination. From those selected, one audit case was picked by this writer as being representative of all the cases examined. Management of the Auditing Department of the field study firm concurred with the case selection and also indicated that the case was a fair representation of the types of costing problems normally encountered by them during the course of contract audits. A summary of the cases reviewed in detail, both live and published, as well as the approach to selecting published cases, is provided in Appendix A. The case selected for the comprehensive write-up is the subject of Chapter IV.

Scope

The total requirements for costing all types of defense contracts cover a broad area. To provide comprehensive

treatment of all costing requirements was beyond the scope of this study. Instead, attention focused on identifying and developing basic objectives and costing concepts for assigning costs to cost-type contracts only, within which cost accounting standards might be developed, as opposed to stating detailed rules that are likely to be a part of fully developed standards.

The field study was of a qualitative nature designed to supplement and complete the tentative framework developed from the literature review. Accordingly, no attempt was made to subject the results to statistical analysis. Among the cases reviewed many similarities were noted and, in order to eliminate duplication, only one case examined in the field research was written up in this study. The confidential nature of material in the case necessitated disguising names, places, and quantitative data, but in no way limited the effectiveness of the purposes of the case or the field study.

Significance

In the past a strict pragmatic approach has been taken for solving most problems encountered in costing defense contracts. During the course of the literature review it became evident that many now recognize a need for a conceptual approach to costing defense contracts. Of those favoring the development of cost accounting standards based upon some type of conceptual foundation, Anthony's comment is

typical. He states that the first stage in developing cost accounting standards should be "The developmet of a few underlying, basic concepts."[5] This study focused primary attention on the development of such concepts, but also demonstrated applicability of the concepts to actual contract costing practices in a case study (Chapter IV).

Organization of the Study

In order to accomplish an orderly presentation for the remainder of this study, the following organization is utilized.

Chapter II: A historical development of contract costing guidelines and cost accounting standards legislation is presented. Special emphasis is placed on current costing guidelines contained in the Armed Services Procurement Regulation, its deficiencies, and the need for a different approach to costing defense contracts.

Chapter III: A conceptual framework for costing defense contracts is developed. Each component of the framework is discussed in terms of its meaning in accounting generally then more specifically within the field of cost accounting. For each of the cost measurement and allocation concepts one method of implementation is suggested to demonstrate how the concept might be put into practice.

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[5]Robert N. Anthony, "What Should 'Cost' Mean?" Harvard Business Review, LXVIII (May-June, 1970), p. 125.

Chapter IV: From the summary of published and field study cases presented in Appendix A, one field study case is developed and presented as a case study. The case write-up provides a means for presenting a real-world situation for defense contract costing in addition to providing a means for demonstrating the soundness of the framework developed in Chapter III.

Chapter V: A summary of the purpose and research approach of this study is presented. Each component of the costing framework developed in this study is reviewed, and recommendations are made for possible future research that should be beneficial to the defense contract costing field.

Definition of Terms

Generally Accepted Accounting Principles

Generally accepted accounting principles are derived primarily from practice and agreement rather than being formulated from a formal set of postulates. Generally accepted accounting principles encompass the conventions, rules, and procedures necessary to define accepted accounting practices at a particular time.[6] References to generally accepted accounting principles in this study are within the context of financial accounting (external reporting via

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[6]American Institute of Certified Public Accountants, "Basic Concepts and Accounting Principles Underlying Financial Statement of Business Enterprises," Statement of the Accounting Principles Board No. 4 (New York, 1970), p. 54.

financial statements) as opposed to the more specialized field of cost accounting (internal accounting utilized for cost allocations and the various managerial functions).

Cost-Type Contract

Compensation arrangements between the Government and contractors are accomplished through the utilization of a variety of contracts. A cost-type contract is one under which the contractor is reimbursed for allowable costs assignable to a contract either with or without fee. In reference to defense contracts, cost-type and cost-reimbursement are often used in describing the same type of contract and are considered synonyms in this study. Other terms intended to have the same meaning and used interchangeably in this study are "contractor" with "supplier" and "costs" with "expenses."

Costing

"Costing is the process of determining the cost of doing something, e.g., the cost of manufacturing an article, rendering a service, or performing a function."[7] In this study, the term "costing" will refer to the process of measuring and assigning costs to individual contracts.

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[7]George J. Staubus, Activity Costing and Input-Output Accounting (Homewood, 1971), p. 1.

Cost Objective

"The article manufactured, service rendered, or function performed is known as the object of costing."[8] An object of costing, termed "cost objective" in this study, is any product, program, or service for which costs are incurred. Firms undertake numerous activities and incur costs in pursuit of objectives. A cost objective can be any organizational unit, activity, product, program, or service to which costs are to be identified and assigned.

Cost objectives may be intermediate or final. For example, an indirect cost pool awaiting disposition to other indirect cost pools or final cost objectives would be an intermediate cost objective. Examples of final cost objectives are end products or defense contracts.

Costing Concepts

McFarland has used the word ". . . 'concept' . . . to designate those mental impressions associated with accounting terms. . . ."[9] In further describing the use of accounting concepts in the proper context, McFarland stated: "Operational definitions of accounting concepts can be formulated only in context of intended uses. . . ."[10] The

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[8] Ibid.

[9] Walter B. McFarland, Concepts for Management Accounting (New York, 1966), p. 4.

[10] Ibid., p. 5.

accounting terms of primary interest in this study will be formulated within the context of costing defense contracts. The purpose of these concepts is to provide a framework designed to promote a better understanding between parties to a cost-type contract as to those costs which should be assigned to the contract.

Cost Accounting Standards

As revealed in the literature, the term "cost accounting standards" has no generally agreed upon meaning. As used in The General Accounting Office (GAO) study to determine the feasibility of utilizing uniform cost accounting standards for costing defense contracts, the term included related principles, standards, and general rules of procedures and the criteria for their usage.[11] Since this definition lacks specific meaning, it will be used in this study only when reference is made to the GAO feasibility study. For all other purposes of this study, the following definition of cost accounting standards will be used:

> Cost standards are the means by which costing concepts are implemented. A cost standard or cost principle is a normative statement indicating how specific cost elements or groups of elements should be assigned to individual cost objectives, in this case individual contracts. The accounting rules and procedures that a particular contractor has adopted determine how much cost is assigned to individual contracts. The contractor has a good

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[11] U. S. Comptroller General, Report on the Feasibility of Applying Uniform Cost Accounting Standards to Negotiated Defense Contracts (Washington, D. C., 1970), p. 27.

> deal of latitude in choosing these rules and procedures, but its freedom of choice can be exercised only within the limits imposed by the applicable cost standards.[12]

Costing concepts, as used in this study, represent the basic framework necessary to provide relevance to assigning costs to individual contracts. Alternative techniques and procedures for assigning individual elements of costs to contracts are ordinarily available, and cost accounting standards will state the circumstances under which various alternative methods are appropriate. Cost accounting standards are considered here to be procedures prescribed by an authority, in this case the Cost Accounting Standards Board.

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[12]The Committee on Management Accounting Practices and Its Subcommittee on Basic Cost Concepts, "Tentative Concepts for Cost-Type Contracts," Management Accounting, LII (May, 1971), p. 46.

CHAPTER II

HISTORICAL REVIEW OF GOVERNMENT CONTRACT COSTING REQUIREMENTS

Introduction

Government-established cost accounting requirements for defense contracts have been slow in materializing. Demands placed upon the accounting function by increased procurement complexities have not been coupled with appropriate research in developing guidelines for costing defense contracts. This chapter provides the historical background necessary for understanding current contract costing problems and the need for a conceptual approach to developing costing guidelines as opposed to strict pragmatic approaches taken in the past.

Technological advances in the last three decades have necessitated numerous changes in contract procurement methods by the DOD. During this period, defense procurements have shifted from the so-called arsenal system (in-house provision), where the Government owned its own defense plants, to outside acquisition from private industry. In addition to procurement of defense hardware, rapid technological advances have necessitated the outside procurement of services for hardware development. The Government's

heavy reliance on private enterprise to fulfill its needs in the defense area has created compensation problems[1] resulting in DOD placing special demands on the accounting function of contractors.

Where business enterprises operate in a free competitive market and management can exercise full control over internal operations, contracts can normally be filled on a fixed-price basis. For standard production items, the same policy can be followed. During periods of rapid technological changes and greater sophistication of weaponry systems, contractors are often unwilling to enter into fixed-price contracts due to the many design and production unknowns. These conditions create a climate for utilization of cost-reimbursement contracts in order to provide some degree of contractor protection from unexpected cost incurrences during contract performance. Regardless of the type of contract used, cost data are essential throughout the contract negotiating and costing stages.

The specific purposes of this chapter are to (1) provide a historical review of contract costing guidelines leading to current problems in contract costing; and (2)

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[1] Numerous variations of both fixed-price and cost-reimbursement contracts have been developed in attempts to arrive at different methods of compensating contractors. Comprehensive treatment of the various contract types is provided in the following sources: Dean Francis Pace, Negotiation and Management of Defense Contracts (New York, 1970), Chapter VI; Paul M. Trueger, Accounting Guide for Defense Contracts, 6th ed. (New York, 1971), Chapter V.

review current literature leading up to and subsequent to passage of cost accounting standards legislation. Primary attention focuses on current costing guidelines, their weaknesses, and the need for defining basic costing concepts prior to developing cost accounting standards.

History of Contract Costing Guidelines in Procurement Regulations

World War I Period

Prior to the World War I period, little effort had been directed toward establishing cost accounting requirements for Government contracts. Attempts were made during World War I to limit contractors' profits on war contracts, but the widespread use of cost-plus-a-percentage-of-cost contracts in Government procurement limited the effectiveness of most profit-limiting efforts. The use of cost-plus-a-percentage-of-cost contracts was effective in limiting the percentage of profits but did not curb the amount of profit.[2] Increasing costs under a cost-plus-a-percentage-of-cost contract also increased the amount of profit that could be earned. This situation not only resulted in ineffective cost control but provided the opportunity for inefficient or unscrupulous contractors to increase their profits by incurring excessive costs.

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[2]Paul M. Trueger, Accounting Guide for Defense Contracts, 6th ed. (New York, 1971), p. 2.

The use of cost reimbursement methods for compensating contractors during the World War I period did serve to focus attention on special uses of cost accounting.[3] The construction of facilities and production of war goods by private concerns created a need to know the costs of performing specific projects. These conditions created questions concerning the composition of costs. Should the costs of carrying out a specific project include only the added costs incurred as a direct result of the project, or should part of a contractor's already incurred fixed costs be included? If fixed costs were to be included in contract costs, how could the proper amount chargeable to the Government be determined? Attempts to answer these and similar questions underscored the importance of the cost accounting function and its applications for determining costs of specific projects undertaken by private industry for the Government.

It is difficult to assess improvements made in cost accounting as a direct result of costing problems encountered during the World War I period. As a minimum, however, the war resulted in attention being focused on costing problems which, in turn, resulted in better communications between Government agencies and industry representatives on costing matters. Formation of the National Association of

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[3]Charles H. Towns, "Impact of Government on Cost Accounting," in Handbook of Cost Accounting Methods, ed. by J. K. Lasser (New York, 1949), pp. 398-408.

Cost Accountants in 1919 was influenced, at least in part, by costing problems experienced during the war period.[4]

The Vinson-Trammell Act

As an outgrowth of experiences during World War I, legislation was enacted prior to World War II requiring greater utilization of cost accounting in assigning costs to Government contracts. The Vinson-Trammell Act was approved by Congress on March 27, 1934, with application limited to contracts for Naval vessels and aircraft. Its provisions called for contractors to return to the Treasury all profits in excess of ten percent on certain contracts with the Department of the Navy. Profits, however, were only broadly defined as contract price less costs of performance.

Determining costs was necessary for computing profits on Navy contracts; however, the Act provided for nothing more than indirect approaches to cost accounting as it was to be utilized. Provisions contained in the Act made only broad statements concerning costs of performing a contract and provided little in the way of guidance for a contractor in assigning costs to a specific contract.

A significant part of the Vinson-Trammell Act was the granting of powers to the Secretary of Treasury in ascertaining the amount of excess profit. In effect, this meant costs had to be determined according to the regulations

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[4] Ibid., p. 399.

issued by the Treasury Department. Numerous Treasury Decisions were issued but contained little in the refinement of cost accounting practices other than computing costs to the Treasury's satisfaction.

Treasury Decision 5000 (TD 5000)

TD 5000 was signed on August 7, 1940, by the Commissioner of Internal Revenue and was approved by the Secretaries of the Treasury, War, and Navy Departments. It was promulgated for the purpose of recapturing profits in excess of those provided for by the Vinson-Trammell Act. TD 5000 has considerable historical significance in that it was written into nunerous contracts between the Government and commercial concerns whenever it was necessary to compute costs.[5] One of the primary reasons for writing it into these contracts can be attributed to its being the basic document for defining reimbursable costs it cost computations. Although TD 5000 did not contribute greatly to developments in cost accounting, it is considered the forerunner of subsequent regulations dealing with cost determination.

The "Green Book"

In April, 1942, the War and Navy Departments issued a

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[5]U. S. Department of Defense. Contract Audit Manual, SR 36-70-1 NAVSANDA Publication No. 261-AFM 175-3 (Washington, D. C., 1952), p. 202.

publication entitled "Explanation of Principles for Determination of Costs Under Government Contracts." Because of its green cover, this publication became known as the "Green Book." It explained and embellished TD 5000 and, for many years, reflected more clearly than any other publication the cardinal principles and thinking of the Government regarding cost determination under defense contracts.[6]

The "Green Book" was prepared to state in principle those costs which may be admissible, inadmissible, or subject to limitation as determined under Government contracts. There was no attempt in its provisions to specify rigidity in accounting systems that could be used, i.e., uniform accounting systems. In fact, any accounting system or method of costing could be used as long as it was in accord with generally accepted and sound accounting practices. What constituted accepted and sound accounting practices was not defined, but presumably reference was to financial accounting practices prescribed by the American Institute of Accountants[7] and not cost accounting practices. The only significant control required in the costing system was that cost accounts had to be controlled by general ledger accounts. This requirement created a definite tie between the general books of account and the cost accounts rather

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[6]Paul M. Trueger, Accounting Guide for Defense Contracts, 6th ed. (New York, 1971), p. 3.

[7]Now named the American Institute of Certified Public Accountants.

than permitting a group of independently kept cost accounts.

The "Green Book" also contained descriptions of what might be included in direct and indirect cost classifications, but at the same time recognized that uniform definitions in cost classifications did not exist. Along these same lines problems in apportioning indirect costs were recognized, but no rules applicable to all cases could be set forth. Attempts were made, however, to provide contractors with some guidance for arriving at indirect cost allocation methods with "benefit received" being the primary criterion set forth for consideration.

Limitation of admissible contract costs was a significant aspect of provisions contained in the "Green Book." It was the first official publication naming specific costs not admissible for the purpose of performing a Government contract. These cost-limiting provisions have taken on increased significance over time as the philosophy of limiting certain costs has been carried forward into subsequent regulations. Specific inadmissible costs named in the "Green Book" are:[8]

(a) Allowance for interest on invested or borrowed capital, however represented.

(b) Commissions, bonuses, and special premiums under whatever name, paid in connection with negotiations for or procurement of a Government contract.

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[8]War Department-Navy Department, Explanation of Principles for Determination of Costs Under Government Contracts, an outline contained in Paul M. Trueger, Accounting Guide for Defense Contracts, 3rd ed. (New York, 1960), pp. 262-263.

(c) Entertainment expenses.

(d) Dues and memberships other than in regular trade associations.

(e) Donations other than those to local charitable or community and similar organizations to the extent constituting ordinary and necessary business expenses.

(f) Losses on other contracts.

(g) Losses from sales or exchanges of capital assets.

(h) Extraordinary expenses arising from strikes or lock-outs.

(i) Fines and penalties.

(j) Amortization or unrealized appreciation of values of assets.

(k) Expenses, maintenance, and depreciation of excess facilities other than reasonable stand-by facilities.

(l) Provisions in reserve accounts for contingencies, repairs, compensation insurance (except as provided with respect to self-insurance).

(m) Income and excess profits taxes.

(n) Bond discounts or finance charges.

(o) Premiums for life insurance on the lives of officers.

(p) Special legal and accounting fees incurred in connection with reorganizations, security issues, patent infringement or anti-trust litigation, and the prosecution of claims of any kind (including income tax matters against the United States).

(q) Taxes and expenses on issues and transfers of capital stock and bonds.

(r) Losses on investments.

(s) Bad debt losses and charges to reserves therefor; also expenses of collection and exchange.

(t) In general, commercial advertising and commercial selling expenses.

War Department Technical Manual 14-1000 (TM 14-1000)

TM 14-1000 contained a number of cost interpretations under TD 5000. It was published by the War Department in 1946 under the title "Administrative Audit Procedures for Cost-Plus-A-Fixed-Fee Supply Contracts." The primary purpose of this manual was the provision of instructions for applying audit procedures to cost-plus-a-fixed-fee contracts--especially for plants working under this type of contract while undertaking other kinds of work at the same time.

TM 14-1000 was designed to provide guidance in auditing cost-type contracts, but it also had significance in costing them. Cost interpretations set forth in TM 14-1000 in effect stated the basic philosophy for costing cost-plus-fixed-fee contracts. TM 14-1000 also provided a certain amount of uniformity in the interpretation of accounting terms associated with overhead expenses.

Armed Services Procurement Regulation (ASPR)

Prior to World War II, Federal procurement in this country strongly favored a practice of formal advertising as the preferred method of procurement. During World War II, the opposite extreme of procurement by negotiation was

widely practiced. In 1947, The National Security Act established the Department of Defense (DOD) which resulted in greater unification of the military services. A significant feature of this act is the flexibility given to DOD in its procurement practices. The act permits DOD to use either formal advertising or negotiation in procurement, thereby permitting use of methods more in line with whatever its immediate needs might be. The use of negotiation versus formal advertising has now become the predominant method for DOD to do business with private industry, and it places increased significance on obtaining accurate cost data for contract negotiation and costing.

A companion piece of legislation to the Armed Services Procurement Act is The Armed Services Procurement Regulation. The section of ASPR of primary interest in this study is Section XV Part 2, entitled "Principles and Procedures for Use in Cost-Reimbursement Type Supply and Research Contracts with Commercial Organizations." The first ASPR included a set of cost principles mandatory for all cost-type contracts entered into after March 1, 1949. These first cost principles consisted of a short four-page listing of allowable and unallowable costs. Numerous revisions were subsequently made to the cost principles, but Section XV Part 2 remained substantially the same until Revision No. 50 in November, 1959. This revision expanded the short explanation of allowable and unallowable costs into a twenty-seven page exposition of selected costs. Subsequent

revisions have expanded Part 2 to approximately forty-six pages of contract costing guidelines. Thus, over the last thirty years, Section XV Part 2 of ASPR has evolved from a brief document concerning allowability of costs into a general guide of cost accounting procedures for costing defense contracts.

In addition to expanding the contents of Part 2, its scope of application has been broadened. Initially Part 2 was mandatory for cost-type contracts but used only as a guideline in negotiating fixed-price contracts. This situation resulted in the lack of any official cost principles mandatory in negotiating fixed-price contracts even though price is ordinarily determined on the basis of cost data. However, Defense Procurement Circular No. 79, dated May 15, 1970, requires that Section XV Part 2 cost principles be incorporated by reference into <u>both</u> cost-reimbursement and fixed-price supply, service, and research contracts with other than educational institutions. The significance of this requirement is that Section XV Part 2 is now a basic regulation applicable to <u>all</u> ASPR defense contract procurement with commercial organizations.

Section XV of ASPR begins with the following statement:

> This section contains general cost principles and procedures for the pricing of contracts and contract modifications whenever cost analysis is performed (see 3-807.2), and for the determination, negotiation, or allowance of costs when such action is required by a contract clause.[9]

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[9]U. S. Department of Defense, <u>Armed Services Procurement Regulation</u>, Section 15-000 (Washington, 1970), p. 1501.

The above quotation indicates that Section XV of ASPR contains provisions for both "pricing" and "costing" contracts. "Price analysis" is concerned with the determination of whether or not a price quotation is fair and reasonable by price comparison and not by analyzing the cost and profit components of the price. Examples would be comparison of quotations received from various sources; comparison of current quotations with those received in the past, etc. "Cost analysis" is utilized where price competition cannot be appropriately used, as in cases where competition is lacking or nonexistent. It involves a detailed breakdown and analysis of a contractor's price proposal utilizing only cost data. In order to properly evaluate the cost accounting requirements of Part 2, it is necessary to differentiate between those requirements relating to cost accounting and those relating to pricing.

Those parts of Section XV Part 2 necessary for providing guidance in contract costing are presented and evaluated below. Part 2 contains numerous sections, and it is not within the scope of this study to give comprehensive treatment to all of them. Instead, only selected sections dealing with those areas contributing to the majority of current costing problems and controversies are covered.

Concept of Cost. ASPR does not provide a precise meaning for the term "cost." However, total cost of a contract is defined in Section 15.201.1 as follows:

> . . . is the sum of the allowable direct and indirect costs allocable to the contract, incurred or to be incurred, less any allowable credits. In ascertaining what constitutes costs, any generally accepted method of determining or estimating costs that is equitable under the circumstances may be used, including standard costs properly adjusted for applicable variances.

The above section does not adequately define what is meant by the term "cost." A list of generally accepted methods for determining or estimating cost cannot be found in either ASPR or the accounting literature. Also, an interpretation of cost that is "equitable under the circumstances" might include historical, replacement, opportunity, imputed, or some notion of economic cost.

Although not specifically mentioned, Section XV deals primarily with historically recorded costs and utilizes the full absorption method of cost accounting. Examples supporting the historical cost concept can be found in various parts of Section XV. Section 15-205.6 dealing with compensation for personal services mentions all remuneration paid currently. Section 15-205.22, material costs, mentions actual purchase cost being chargeable to a contract.

Deviations from the historical cost concept can also be found. Section 15-205.6, Compensation for Personal Service, makes provision for compensation to sole proprietors and partners in lieu of salaries. This provision means that imputed costs, at least for compensating sole proprietors and partners, are valid and acceptable contract costs. In the same section, the cost of bonuses paid in stock may be

measured according to the fair market value of the stock at the time of the transfer. Also, Section 15-205.16 provides for contract charges resulting from approved self-insurance programs.

Section XV never explicitly states that historical cost is the predominant basis for costing defense contracts, but it is clearly evident from observing current practices. Historical cost is the traditional method practiced by most companies as well as the apparent philosophy followed by agencies procuring under the provisions set forth in ASPR. A more comprehensive discussion of a concept of cost for costing defense contracts is provided in Appendix C of this study.

Generally Accepted Accounting Principles (GAAP). ASPR cost principles make numerous references to cost acceptability based upon conventional accounting practices conforming to GAAP. But GAAP concern primarily determining and communicating externally the accounting results of an entire business while cost accounting is concerned more with determining the cost of specific products, programs, etc., and furnishing information to management for internal use. Therefore, references to GAAP in ASPR cannot fulfill the intended purposes of providing guidance for costing specific projects such as defense contracts.

ASPR's numerous references to GAAP are undoubtedly attempts to provide reference to an authoritative group of

accounting principles. It has been assumed in the past, at least in ASPR regulations, that GAAP have general applicability to cost accounting. However, these accounting principles are more applicable in determining the amount of cost flowing through the cost system and provide little guidance for internal allocation of these costs. ASPR references to GAAP have probably been too numerous due to the basic difference between the purpose of these principles and ASPR's requirements for internal cost allocations. ASPR has relied upon references to GAAP to help solve internal costing problems--a function which they are not intended to fulfill. A decision handed down by the Armed Services Board of Contract Appeals (ASBCA) points out their inappropriateness. Included in the decision was the following quote from Howard W. Wright:

> Therefore, we must conclude that using the phrase 'generally accepted accounting principles' as the basis for cost determination is about as satisfactory as catching eels or quicksilver with one hand. . . .[10]

Relying on GAAP for costing defense contracts has proved to be ineffective in the past, and the same results could be expected in the future. Instead, a comprehensive, concise statement of costing principles for internal cost allocations to defense contracts is needed. Appropriately developed cost accounting standards can fulfill this need.

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[10] Board of Contract Appeals Decisions, ASBCA No. 10-913, 68-2 BCA 7222 (New York, 1968), p. 33546.

Indirect Costs. The majority of current contract costing problems concerns the accumulation and allocation of indirect costs.[11] Direct costs are often readily identifiable with specific cost objectives, but the relationship between indirect costs and specific cost objectives is often nebulous. ASPR Section 15-203 defines indirect costs and describes their general allocation as follows:

> (a) An indirect cost is one which, because of its incurrence for common or joint objectives, is not readily subject to treatment as a direct cost. . . .
>
> (b) Indirect costs shall be accumulated by logical cost groupings with due consideration of the reasons for incurring the costs. Each grouping should be determined so as to permit distribution of the grouping on the basis of the benefits accruing to the several cost objectives. . . .
>
> (c) Each cost grouping shall be distributed to the appropriate cost objectives. This necessitates the selection of a distribution base common to all cost objectives to which the grouping is to be allocated. The base should be selected so as to permit allocation of the grouping on the basis of the benefits accruing to the several cost objectives. This principle for selection is not to be applied so rigidly as to complicate unduly the allocation where substantially the same results are achieved through less precise methods. . . .
>
> (d) The method of allocation of indirect costs must be based on the particular circumstances

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[11] During the course of the General Accounting Office Study to determine the feasibility of uniform cost accounting standards for costing defense contracts, Defense Contract Audit Agency and General Accounting Office auditors were asked to submit cases demonstrating current contract costing problems. Out of ninety cases involving seventy different contractors, eighty percent of the costing problems identified involved either direct-indirect cost distinctions or allocations of indirect costs.

> involved. The method shall be in accord with those generally accepted accounting principles which are applicable in the circumstances. . . .
>
> (e) A base period for allocation of indirect costs is the period during which such costs are incurred and accumulated for distribution to work performed in that period. . . .

The above regulation is only a broad guideline designed for general applicability. The result is that contractors have a great deal of flexibility in choosing the manner in which indirect costs will be accumulated and assigned to individual contracts. Different operating characteristics among contractors necessitate some flexibility for indirect cost assignment, but more comprehensive treatment of criteria for selecting among alternative methods is needed in costing regulations.

Pricing Aspects of Section XV Part 2. Parts of ASPR Section XV Part 2 pertain to contract price determinations and not to matters of cost accounting. The principal pricing considerations in Part 2 are those related to cost allowability and reasonableness criteria.

For example, Section 15-205 sets forth numerous rules and statements pertaining to costs that are either unallowable or have limited allowability as defense contract costs. Such restrictions on the allowability of costs can generally be attributed to various Government policies and not to matters of cost accounting. Cost accounting, as it applies to defense contracts, is chiefly concerned with the allocability

of costs. Therefore, allowability of costs should not affect their allocability, and matters relating to cost allowability should not be included in the same part of ASPR that sets forth costing guidelines.

Also contained in Section XV Part 2 are regulations pertaining to reasonableness of costs. Section 15-201.3(a) sets forth general reasonableness criteria, and provisions of the section pertain mostly to matters outside the realm of cost accounting. Reasonableness criteria are important to overall contract administration, but, like allowability criteria, they should not be contained in that part of ASPR setting forth costing guidelines.

Pricing considerations dealing with allowability and reasonableness of costs do not provide the type of guidance needed by contractors in assigning costs to individual contracts. Combining costing guidelines and pricing considerations into the same sections only promotes confusion in interpreting ASPR regulations. This problem can be solved by making distinct differentiations between cost accounting and pricing matters and including regulations pertaining to each in a separate section of ASPR.

Summary of Section XV Part 2. Current costing guidlines contained in ASPR Section XV Part 2 are insufficient to provide adequate guidance for defense contractors in assigning costs to individual contracts. Most of the provisions in Part 2 are loosely related and based upon both

GAAP and numerous pricing considerations peculiar to defense contracts. The result is a conglomeration of statements and rules that are flexible and permit numerous alternative accounting methods without any kind of conceptual foundation.

Review of Current Literature

General Review

A review of published sources discloses a lack of any type of coordinated literature in those areas dealing with costing defense contracts. Outside basic procurement regulations, the literature primarily considers special problems encountered by either the Government or contractors. As a result, most costing problems have been dealt with on a piecemeal basis. This situation can, for the most part, be attributed to the many unique features of defense contracting.

A majority of the literature arises from controversies surrounding the application of costing guidelines set forth in ASPR to specific circumstances involving assignment of costs to defense contracts. Both the Government and contractors have expressed interest over the allowability of costs, accounting for special areas such as research and development, allocation of indirect costs, and contract profits. These particular areas of interest comprise only a partial listing of total problem areas, but they do

represent those areas creating the majority of current interest in the literature.

As previously mentioned, a large part of the literature concerning defense contract costing deals with current contract costing guidelines. Government regulations affecting cost assignments to individual contracts is a chief concern to both the Government and contractors. Costing guidelines are the means whereby the Government, in this case DOD, can exercise control over cost charged to its contracts. Likewise, individual contractors must conform to Government regulations on contract costing in making cost assignments to defense contracts.

During the 1960's, contract costing guidelines, as they existed in ASPR Section XV Part 2, became the subject of a great deal of discontent on the part of both the Government and contractors. Highly publicized cases of cost overruns and excessive profits on defense contracts during this period provided strong indications that adequate cost data were not being obtained in negotiating and costing defense contracts. These conditions led many to believe that the effectiveness of Section XV Part 2 had become too limited in its applications and new approaches to contract costing were needed--principally in the form of uniform cost accounting standards.

The General Accounting Office (GAO) Feasibility Study

The issue of uniform cost accounting standards first came under consideration during Hearings before the House and Senate Committees on Banking and Currency in 1968. Congressional interest in defense contract costing problems eventually led to passage of legislation directing the Comptroller General to:

> . . . undertake a study to determine the feasibility of applying uniform cost accounting standards to be used in all negotiated prime contract and subcontract defense procurements of $100,000 or more.[12]

After eighteen months of research and writing, results of the feasibility study were published by the Committee on Banking and Currency of the House of Representatives. The study was later referred to as ". . . one of the most comprehensive that the General Accounting Office has undertaken."[13] The general conclusions of the study, in summary form, are:

1. It is feasible to establish and apply cost accounting standards to provide a greater degree of uniformity and consistency in cost accounting as a basis for negotiating and administering procurement contracts.

2. Cost accounting standards should not be limited to defense cost-type contracts. They should apply to negotiated procurement contracts

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[12] Defense Production Act--Extension, Etc. Statutes at Large, LXXXII, Sec. 279 (1968).

[13] Elmer B. Staats, "Uniform Cost Accounting Standards in Negotiated Defense Contracts," Management Accounting, L (January, 1969), p. 21.

and subcontracts, both cost type and fixed price.

3. Cumulative benefits from the establishment of cost accounting standards should outweigh the cost of implementation.

4. New machinery should be established for development of cost accounting standards. The objective should be to adopt at an early date the standards of disclosure and consistency and to strive for the elimination of unnecessary alternative cost accounting practices--alternatives not required for equitable recognition of differing circumstances.

5. Contractors should be required to maintain records of contract performance costs in conformity with cost accounting standards and any approved practices set forth in a disclosure agreement or be required to maintain the data from which such information could be readily provided.[14]

Results of the GAO feabisility study were accepted by some accounting and industrial associations and rejected by others. Viewpoints of the different associations were quite varied with each appearing to express the feelings of its own constituency. Among the comments made by professional accounting organizations, the following are typical:

> American Institute of Certified Public Accountants. We do not object to the major conclusions of your study that uniform cost accounting standards are feasible. But we cannot at this time give unqualified endorsement to the conclusion because of what we perceive to be the continuing uncertainty as to the meaning and impact of uniform cost accounting standards.[15]

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[14] U. S. Comptroller General, Report on the Feasibility of Applying Uniform Cost Accounting Standards to Negotiated Defense Contracts (Washington, D. C., 1970), p. 20.

[15] Ibid., p. 107.

> The Task Force on Defense Contracts of the American Accounting Association. We were impressed by the thorough study that was made as well as the well-organized presentation in the report. We concur with the conclusion that uniform cost accounting standards can be established for defense contracts, and that this is desirable provided that the standards are established and applied in a reasonable manner.[16]
>
> The Financial Executives Institute. We have seen no persuasive evidence that wide-spread abuses exist, or that uniform cost accounting standards likely to evolve from any future effort will improve the current practice of total cost determination in any meaningful way. In the absence of such evidence, we are not in a position to accept the conclusion of the report that uniform cost accounting standards are necessary or desirable. We continue to oppose on economic and practical grounds a determination that uniform cost accounting standards are necessary. We believe that current principles and practices are adequate to protect the government from abuses. It is clear that the size and diversity of the defense contracting environment makes occasional problems inevitable. We do not believe, however, that a set of detailed standards designed to cover every conceivable situation can or should be developed.[17]

Despite the lack of general agreement on the GAO feasibility study, its conclusions were of primary significance in gaining passage of cost accounting standards legislation.

Cost Accounting Standards Legislation

During hearings held before the Subcommittee on Production and Stabilization of the Senate Committee on Banking and Currency on March 31, April 1 and 2, 1970, various views were expressed concerning the desirability of cost accounting

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[16] Ibid.

[17] Ibid., p. 108.

standards legislation. Convincing testimony was presented both for and against passage.

Typical comments of those testifying in favor of passing cost accounting standards legislation are:

1. Establish criteria for the use of alternative methods of cost accounting and narrow the use of alternatives where appropriate criteria for their use cannot be established.

2. Cost principles used today in defense procurement, as contained in Section XV of ASPR, are very general in nature and make frequent references to 'generally accepted accounting principles' and 'Internal Revenue Service Regulations.' Neither of these references is intended to be used for central costing purposes.

3. Today's accounting rules make it very difficult to determine how much it actually costs to manufacture defense equipment.

4. Uniform cost accounting standards could provide contractors with authoritative support for costs incurred.

5. Current practices permit too much flexibility leading to different results from the same thing.

Typical comments of those who testified in opposition are:

1. The cost of establishing and implementing the standards is not known.

2. A general lack of agreement exists as to what is meant by uniform cost accounting standards.

3. Accepting that cost accounting standards are feasible, a need for them has not been established.

4. Adoption of such standards will likely lead into uniform accounting systems and hinder the development of commercial cost accounting practices.

5. Insufficient research has been done in actual operating situations.

Legislation was subsequently passed establishing a Board in the public sector authorized to develop and promulgate defense contract cost accounting standards. This piece of legislation is considered to be of utmost importance to both defense procurement and the accounting profession; therefore, it is reproduced in its entirety as Appendix B. Some of the most important provisions of this legislation, as they are likely to affect cost accounting practices in the future, are:

1. A five member Cost Accounting Standards Board (CASB) is established. Its Chairman is the U. S. Comptroller General; two members are from the accounting profession, one from industry, and one from a department or agency of the Federal Government.

2. The Board is directed to promulgate cost accounting standards designed to achieve uniformity and consistency in the cost accounting principles practiced by defense contractors and subcontractors under Federal contracts in excess of $100,000.

3. The Board is authorized to issue rules and regulations to implement any cost accounting standards promulgated. Such regulations shall require defense contractors and subcontractors to disclose in writing their cost accounting principles as a condition of contracting and to follow those principles consistently.[18]

Members of the CASB have now been selected, and the Board is an operating unit. The Board published its first proposed requirements, which pertained to its rules and regulations, in the December 30, 1971, issue of The Federal Register. Since that time, the Board has officially

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[18] Defense Production Act--Amendments--Economic Stabilization, Statutes at Large, LXXXIV, Sec. 796 (1970).

promulgated cost accounting standards in the following areas: consistency in estimating, accumulating, and reporting costs; consistency in charging and allocating costs incurred for the same purpose; allocation of home office expense to segments; capitalization of capital assets; and accounting for unallowable costs. In mid-1973, the Board also indicated the possible development of standards in the following areas:[19]

1. Depreciation.
2. Standard costs
3. Vacation, sick pay, holiday pay
4. Cost accounting period
5. Allocation of segment G and A expenses to contracts
6. Scrap
7. Termination accounting
8. Inventory pricing methods
9. Special facilities
10. Retirement plan costs
11. Allocation of burden
12. Cost of capital
13. Deferred incentive compensation
14. Other labor-related costs
15. Direct and indirect charging
16. Independent research and development and bid and proposal costs
17. Current value or price-level accounting
18. Terminology for cost accounting.

It is difficult at this time to assess the ultimate impact of creating a Board within the public sector to promulgate cost accounting standards for certain defense contractors. The great diversity in the numbers and sizes of affected business firms indicates the significance of cost accounting standards legislation. Initially, cost

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[19]News Report, The Journal of Accountancy, CXXXVI (July, 1973), p. 7.

accounting standards will apply only to negotiated defense procurements in excess of $100,000, but there have been signs of eventually applying the standards throughout all areas of Government procurement. The likelihood that cost accounting standards will permeate practically all large industrial firms places prime importance on the manner in which they are to be developed.

Eventual implementation of cost accounting standards is expected to improve the entire contract costing process. It is essential that the standards be conceived, developed, and implemented within a conceptual framework designed to achieve better decisions throughout contract negotiation and costing. Cost accounting standards should result in more useful cost data for contract negotiation as well as better management and control of cost during contract performance. In addition, properly developed standards should substantially reduce disputes between the Government and contractors resulting from disagreements on costing matters.

The development of a sound conceptual framework for contract costing is considered a prerequisite to formulating cost accounting standards.[20] If the CASB is to promulgate a

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[20]Although the CASB has never officially adopted nor rejected a conceptual approach to developing cost accounting standards, there are indications such an approach received considerable support from within the Board. One of its project directors expressed the Board's desire for a conceptual approach, but concern that the time and manpower required might take away from promulgating specific standards prevented use of the staff's efforts in the conceptual area. For a more complete discussion, see Paul R. McClenon, "Operations of the Cost Accounting Standards Board," The Journal of Accountancy, CXXXV (April, 1973), pp. 58-62.

set of cohesive standards, guidance in the form of a costing framework is needed. Evidence in support of this approach can be taken from experiences of the American Institute of Certified Public Accountants (AICPA). The AICPA has developed and promulgated standards of operating practices for numerous financial topics for many years without benefit of an agreed upon conceptual framework. The results have been numerous AICPA opinions and statements containing compromises designed to solve financial accounting and reporting problems as they arise.

The CASB should strive to avoid the approach taken by the AICPA and utilize a sound conceptual framework to serve as a guide in developing standards for costing defense contracts, thus providing a means whereby cost accounting standards promulgated by the CASB will possess coherence, and inconsistent or contradictory standards can be avoided.

Summary

A review of the history of Government procurement regulations clearly shows an expansion of the consideration given to cost accounting requirements. The use of various cost-reimbursement type contracts creates requirements for exactness in an accounting system not ordinarily required for normal business situations.

The Vinson-Trammell Act was primarily an attempt to limit the amount of profit that could be earned on a Government contract. Treasury Decision 5000, as promulgated

in the Green Book, was the first attempt to specify that certain costs were either inadmissible or subject to limitations as valid Government contract costs. TM 14-1000 pointed out the need for greater refinement and exactness in cost accounting systems. ASPR started as a brief listing of allowable and unallowable costs, and has expanded into a detailed regulation dealing with reasonableness and pricing criteria in addition to setting forth certain cost principles. Finally, formation of CASB to promulgate cost accounting standards for certain defense contracts will place even greater demands on the exactness required in accounting systems utilized for the purpose of assigning costs to individual Government contracts.

It will be difficult for the CASB to develop and promulgate cost accounting standards without reference to a set of sound concepts for contract costing. In an attempt to fulfill this need, this study develops basic accounting concepts into a conceptual framework. The framework was developed from a study of the literature, the writer's own experiences, observations, and thinking, and a field study. The framework sets forth the basic objectives and concepts this writer feels are essential to developing cost accounting standards. Without such a framework, it is likely that many cost accounting standards developed and promulgated by the CASB will be a disjointed, often inconsistent, set of

detailed rules and procedures difficult to apply in practice. The framework development is the subject of the following chapter.

CHAPTER III

A CONCEPTUAL FRAMEWORK FOR COSTING DEFENSE CONTRACTS

Introduction

In recent years, the accounting profession has directed most of its attention and resources to satisyfing creditors, stockholders, and others concerned with external financial reporting. Relatively little attention has been given to internal costing practices. These conditions exist in spite of management's demands for more and better cost data and increasing Government demands for costing defense contracts. As one writer stated:

> Hearings leading to the Board's creation showed that the accounting profession in developing accounting principles was placing maximum emphasis on principles related to financial reports to stockholders. Even with respect to financial reporting, the Accounting Principles Board of the American Institute of CPAs finds itself in substantial controversy concerning many of its issuances or lack of issuances. Problems concerning cost accounting have obviously received very low priority within the profession. The result is that a vacuum was left insofar as cost accounting principles were concerned.[1] (Underscoring added.)

The purpose of this chapter is to fill a void in past

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[1] Arthur Shoenhaut, "The Work of the Cost Accounting Standards Board," The GAO Review (Winter, 1972), p. 50.

developments of defense contract costing guidelines by developing a conceptual framework for contract costing. The design of the framework is to set forth broad qualitative objectives for costing defense contracts then develop cost accounting concepts for accomplishing the stated objectives. The intent of the framework is that it be utilized as a guide in developing cost accounting standards and subsequent testing of established standards promulgated by the CASB.

Environment of the Framework

The so-called defense industry basically operates within a monopsonistic market structure. The DOD is the sole buyer and can dictate many management practices to contractors. Such powers on the part of the Government are especially noticeable when it comes to determining costs and profits on defense contracts. Contractors are forced to comply with regulations which might require cost and revenue treatments not consistent with ordinary commercial operations.

Prior to developing a framework for costing defense contracts, it is necessary to set forth a few basic assumptions relating to costs and profits. These assumptions are needed for describing some of the issues and problems involved in costing defense contracts. The framework, however, is primarily concerned with concepts of cost accumulation and assignment as opposed to theoretical arguments involving profits and costs.

Profits

Profits to defense contractors are generally considered necessary for numerous reasons, primary of which is the maintenance of a broad industrial base, within a free enterprise system, attracted to performing defense contracts. A problem exists in determining what profits are and how to measure them. For example, ASPR regulations at the current time do not provide a definition of profit.

Accounting profit is ordinarily considered to be revenues less related expenses. Economic profit is also revenues less expenses, but the two profit results differ due to differences in the makeup of expenses and revenues. For defense contracts, it is assumed that revenue definition is not an issue--a fixed-price contract provides revenue that is equal to the contract price; for a cost-reimbursement contract revenue equals reimbursed costs plus the negotiated fee, if any. The distinction between accounting and economic profit can be made as follows:

Total Revenue	$ XXXX
Less Related Expenses	XXXX
Accounting Profit	$ XXXX
Less:	
Implicit Expenses	(XXXX)
Normal Profit (Entrepreneurial reward)	(XXXX)
Economic Profit	$ XXXX

As the example illustrates, given that revenue is not a definitional problem, the primary distinction between accounting and economic profit lies in the deductions from revenue.

To determine profits, it is necessary to ascertain those expenses to be deducted from revenue. For defense contract purposes, profits would be revenues less expenses as defined by appropriate regulations and cost accounting standards.

Costs

Costs of performing defense contracts are a measure of those goods and services used up which are assignable to a specific contract. The determination of costs flowing through an accounting system is ordinarily a function of GAAP. The internal assignment of these costs to specific cost objectives, e.g., contracts, is a function of cost accounting and is the primary thrust of the conceptual framework developed in this study.

Costs flowing through an accounting system, as determined by GAAP, do not always satisfy the requirements for determining costs that should be assigned to defense contracts. For example, imputing interest would not likely add much to the usefulness of financial statements for investors, but it is a necessary cost for price determinations and similar purposes.[2] Due to the significance of what is meant by the term "cost" as it relates to cost-reimbursement contracts, a more comprehensive treatment of the term is

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[2]Arthur Andersen & Co., Objectives of Financial Statements for Business Enterprises (Chicago, 1972), p. 69.

included as Appendix C of this study.

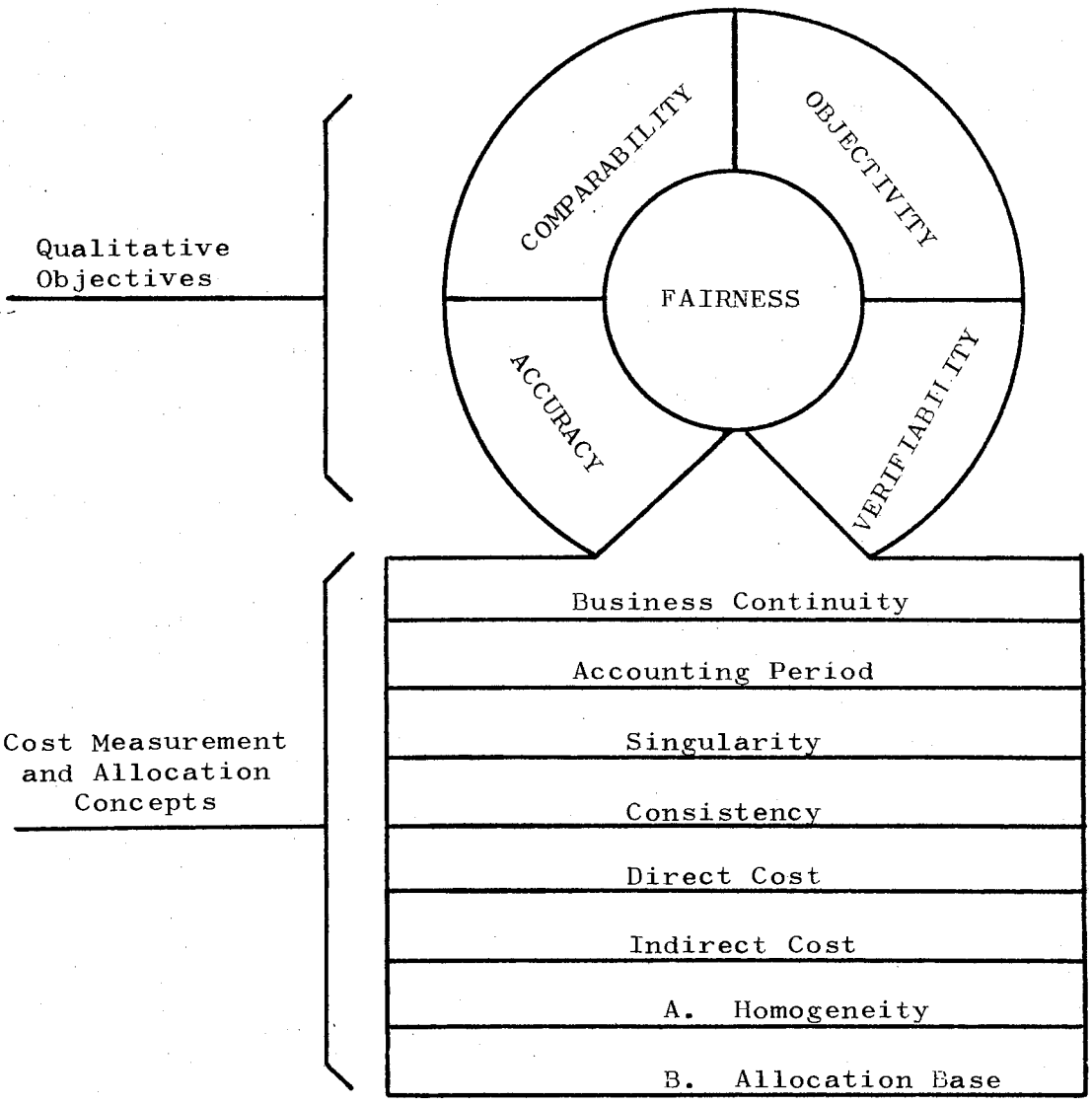
Structure of the Framework

The research approach undertaken in developing the framework employed two methods. First, a literature review was undertaken to determine existing accounting concepts, principles, rules, and practices suitable for inclusion in a tentative framework. Each concept selected for the tentative framework was examined in terms of its meaning to the field of accounting in general and within a more specific context of costing defense contracts. Based on the defined meaning and interrelatedness of individual concepts, coupled with prior work experiences of this writer in the contract costing field, an overall tentative conceptual framework was devised. Second, a detailed field study of a large defense prime contractor was undertaken to supplement previously obtained information and to finalize the framework. Thus, the framework presented in this chapter is the result of the literature review, the writer's work experiences, and a field study.

The framework consists of thirteen segments classified under two major groupings. A schematic representation of the entire framework is provided in Exhibit I. In constructing the framework, broad qualitative objectives, the first major grouping, were developed first and constitute the apex of the framework. Delineation of the qualitative objectives provides direction for the remainder of the

EXHIBIT I

CONCEPTUAL FRAMEWORK FOR COSTING
DEFENSE CONTRACTS



framework. The purpose of a detailed statement of costing objectives in the framework is to set forth specific goals to which individual cost accounting standards can be directed. To provide support in accomplishing the qualitative objectives, basic concepts for cost measurement and allocation were developed and are presented as the second major grouping of the framework. Prior to developing cost accounting standards, it is necessary to establish the basic concepts of cost accounting to be utilized in costing defense contracts. These concepts provide the essential elements to be considered in determining and allocating costs to individual contracts.

Practical considerations and complexities of defense procurement are likely to necessitate development of cost accounting standards containing numerous detailed rules. However, the necessity of a myriad of rules does not affect the usefulness of basic concepts for cost determination and allocation. These concepts, as formulated in this study, provide the substantive elements for developing cost accounting standards essential to achieving the qualitative objectives of the framework.

The cost measurement and allocation concepts provide an overall test of the quality of cost accounting standards. Each concept, standing alone, cannot provide complete fulfillment of any one of the qualitative objectives; but each concept contributes to the accomplishment of two or more qualitative objectives. Taken collectively, the

concepts provide the properties cost accounting standards must possess to satisfy the stated contract costing objectives. The concepts are interrelated to varying degrees, but their interrelatedness cannot be measured with preciseness. Taken together, the concepts provide a cohesive whole contributing to the accomplishment of the stated objectives. Both the qualitative objectives and costing concepts are discussed in the sections that follow.

Qualitative Objectives

Fairness

Problems are encountered throughout the defense procurement process, one being the determination and assignment of costs to various cost-type contracts. For example, in determining total costs of a cost-reimbursement contract, conflicting viewpoints are often held by the different contract parties. Such differences are to be expected. A contractor is concerned with maximization of certain output factors, e.g., profits, which require assigning the maximum amount of costs possible to a contract while remaining within contract provisions. Likewise, the procuring agency is concerned with gaining efficient contract performance at a minimum cost.

In developing a general conceptual framework for costing defense contracts, an overall broad objective of fairness was selected to serve as a source of direction for the

entire framework. Fairness is an elusive concept in accounting and often lacks specific meaning unless defined within a specific context. Nevertheless, it is felt to be a desirable objective worthy of efforts directed to its attainment.

Fairness is not a new concept to the accounting profession. For years, many writers have advocated a fairness concept as being fundamental to the development of accounting principles, however, because of its subjectivity, others have rejected the concept as a basis for developing accounting principles. Regardless of the disagreements on the value of the concept, it has never been totally rejected as a useful objective in developing accounting principles.

D. R. Scott supported fairness as a primary element in the development of accounting principles. In a 1941 publication, he stated: "Accounting rules, procedures, and techniques should be fair, unbiased, and impartial. They should not serve a special interest."[3] Thus, results of the accounting process should not serve to benefit one person or group while being detrimental to others.

Scott also recognized the need for accounting principles and procedures to be fluid ". . . in order that they may continue to embody the principles of justice, fairness, and truth."[4] The fluidity characteristic of accounting principles is especially important to costing defense contracts.

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[3]D. R. Scott, "The Basis for Accounting Principles," The Accounting Review, XVI (December, 1941), p. 343.

[4]Ibid.

Our economy is a dynamic one often experiencing rapid technological and social changes. What is fair to one party at any given time, may not be fair to the other. Stagnant accounting principles are not likely to fulfill a fairness concept in our changing economic environment.

Cost accounting standards must be developed which contain a degree of flexibility necessary for meeting changing economic conditions. For example, price-level changes at one time were gradual and considered insignificant over relatively short periods of time. However, recent rapid increases in the overall price level are significant to a contractor attempting to recover and provide for replacement of invested capital. Cost accounting standards must possess sufficient flexibility for this and similar situations before a fair cost of performing a contract can be ascertained.

Additional support of the significance of a fairness concept can be taken from the literature. One public accounting firm, Arthur Andersen & Co., has often taken the position that fairness is the primary criterion for developing accounting principles. A 1960 publication of the Firm contained the following statement:

> Thus, the one basic accounting postulate underlying accounting principles may be stated as that of fairness--fairness to all segments of the business community (management, labor, stockholders, creditors, customers, and the public), determined and measured in the light of the economic and political environment and the modes of thought and customs of all such segments--to an end that the accounting principles based upon this postulate shall produce

> financial accounting for the lawfully established economic rights and interests that is fair to all segments.[5]

The Firm's basic position on the significance of a fairness concept did not change during the 1960's and into the 1970's.[6]

James W. Pattillo also supported a fairness concept as a basic standard for developing accounting principles and in his book stated:

> . . . from contrasting the connotation of justice, truth, and fairness, the current social concept of fairness is selected as the basic standard by which to measure the propriety of accounting principles and rules which purport to be the means of attaining the objective. Fairness to all parties, therefore, is formulated to be the single basic standard of accounting, that criterion or test which all accounting propositions must reflect before being included into the accounting structure.[7]

Current ASPR costing principles contain provisions indicating some concern for achieving fairness in costing defense contracts. Although the term "equity" is used instead of fairness, the difference appears to be only in the choice of terms. Section 15-201.1, pertaining to what constitutes total costs, permits use of any generally accepted method of determining or estimating costs that is

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[5]Arthur Andersen & Co., The Postulate of Accounting--What It Is, How It Is Determined, How It Should be Used (Chicago, 1960), p. 31.

[6]For example, see Arthur Andersen & Co., A Search for Fairness in Financial Reporting to the Public, 1969. A Collection of Selected Addresses by Leonard Spacek, 1956-1969, especially pages 21, 201, and 431.

[7]James W. Pattillo, The Foundations of Financial Accounting (Baton Rouge, 1965), p. 60.

equitable under the circumstances. Also, in Section 15-201.4 dealing with allocability of costs, a cost is allocable to a cost objective if it is in accordance with the relative benefits received or other equitable relationship. References to equity also exist in other sections of ASPR, but the term is only casually mentioned and not made a pervading concept to which all ASPR costing guidelines are related.

Included also is the reasonableness of costs. An excellent definition of what constitutes a reasonable cost asserts that:

1. It is in accordance with the action that a prudent contractor would take in the circumstances, considering his responsibilities to all suppliers of invested capital, employees, customers, the Government and the public at large.

2. It is ordinary and necessary for the conduct of the contractor's business or the performance of the contract under the conditions present at the time the action occurred.

3. It is generally recognized as acceptable business practice.

4. It results from arm's-length bargaining, with no material conflict of interest.

5. It is required to comply with Federal and state laws and regulations.

6. It is required to comply with contract terms and specifications.[8]

This definition does not provide for a quantitative

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[8]Alan Peterson, "Cost Accounting Standards for Defense Contracts." Speech given before the Twin Cities Chapter of the National Contract Management Association, April, 1972.

test to determine whether or not a cost is reasonable in amount. Instead, the definition provides a qualitative test of the over-all nature of a cost and its necessity for performing a contract. Cost accounting standards developed to achieve an overall goal of fairness would be expected to include adequate provisions for eliminating unreasonable costs as valid contract charges.

In fulfilling a fairness concept, all reasonable costs necessary to the performance of a contract, as determined within cost measurement and allocation concepts presented in this study, should be considered valid contract charges. Costing is a measurement process and elimination of costs on moral or ethical grounds, as witnessed by listings of unallowable costs in current ASPR provisions, should not be considered a part of the costing process. Allowability of costs should be limited only by their allocability. That is, legitimate business costs that are reasonable and necessary in performing a contract should be allocated to it. Total elimination of certain cost classes, such as interest under current regulations, does not result in fair treatment to contractors performing cost-type contracts.

Fairness relates to those cost accounting concepts and practices permitting contractors to recover all costs incurred in performing a contract, while the Government is absorbing only its share of contractor costs. To achieve fairness, it is necessary to develop and implement cost

accounting concepts and practices with a goal of fairness in mind.

Cost accounting standards should be the vehicle through which fairness can be accomplished. Due to the elusiveness of a fairness concept at the practical level, more identifiable objectives are necessary at the standard development stage. Each of these additional objectives (sub-objectives to the overall goal of fairness), is a partial surrogate for fairness. Collectively, achieving all the sub-objectives should result in attainment of the overall goal of fairness. The sub-objectives selected as partial surrogates for fairness are (1) accuracy, (2) comparability, (3) objectivity, and (4) verifiability.

Accuracy

Both the procuring agency and the supplier should have as a common goal accurate accounting for costs, coupled with a minimum expenditure for the accounting function. Accuracy throughout the accounting process is essential to increasing the overall quality and reliability of cost data. Any type of fairness evaluation would be difficult, if not impossible, without accurate cost data as a basis for evaluation. Without accuracy of data, it is difficult to ascertain the truth of a situation; without the truth of a situation, it is impossible to determine what is fair.

Accuracy, as the term is used in this study, means more than freedom from mechanical mistakes and errors in

determining, recording, summarizing, and allocating costs in the accounting process. Accuracy is also a qualitative standard for judging the accounting processes themselves and the extent to which the processes achieve intended ends.

Achieving absolute accuracy in accounting is virtually impossible whenever cost estimates and allocations are necessary. Estimation and allocation methods are too imprecise to expect results from their use to be totally accurate. However, it is possible to judge the accuracy with which agreed upon measurement and allocation methods are used. The contention here is not that a given amount of cost allocated to a specific objective is an accurate cost in an absolute sense--only that it is accurate within the allocation method used. The degree to which accuracy is accomplished in assigning costs to defense contracts must be determined according to costing principles and procedures agreed upon by a contractor and procuring agency.

Achieving accuracy in defense contract costing can result by developing cost accounting standards conforming to cost measurement and allocation concepts set forth in this study. Exhibit II indicates those concepts that should, when implemented via cost accounting standards, result in attainment of accuracy in contract costing.

Exhibit II provides a summary of the cost measurement and allocation concepts providing support to the qualitative sub-objectives of the framework. A check mark (X) in a box opposite each cost measurement and allocation concept denotes

EXHIBIT II

RELATIONSHIP OF COST MEASUREMENT AND ALLOCATION CONCEPTS TO QUALITATIVE SUB-OBJECTIVES

COST MEASUREMENT AND ALLOCATION CONCEPTS	QUALITATIVE SUB-OBJECTIVES			
	Accuracy	Comparability	Objectivity	Verifiability
Business Continuity	X	X		X
Accounting Period	X	X		X
Singularity	X	X		X
Consistency	X	X		X
Direct Costs	X	X	X	X
Indirect Costs	X	X	X	X
A. Homogeneity	X	X	X	X
B. Allocation Base	X	X	X	X

the sub-objectives receiving support from that individual concept. The boxes containing check marks under each sub-objective indicate those cost measurement and allocation concepts essential for developing cost accounting standards that should, when implemented, result in accomplishing that sub-objective. The placement of the check marks is based primarily on this author's judgment and experiences in the defense contract costing field, and results of the literature review and field study.

Comparability

Comparability of financial data has received attention from the accounting profession, stock exchanges, and Government regulatory agencies for many years. Most of the emphasis placed upon a concept of comparability has been in the area of external financial reporting to stockholders and others interested in the overall financial position of a concern. In general, this approach to comparability has been in reference to comparing financial data between entities. In this study, attention is focused primarily upon a comparability concept as it is applicable within a given entity.

The literature reveals that comparability has been a loosely defined term without a clear meaning. Kohler's definition is representative of those found in the literature. He states that comparability is ". . . the quality

attributable to two or more items or groups of items whereby the presence of a comparable or disparate condition or trend may be discerned."[9]

In defense contract costing there are two areas in which comparability of cost data is necessary. The first concerns comparing cost data of different firms. Whenever a procuring agency attempts to compare cost data of various contractors, it is essential that the data be derived on the basis of similar costing concepts, guidelines, and procedures. The second and primary area requiring comparability of cost data involves comparison of costs within a given firm. Cost-type contracts are entered into on the basis of negotiation. The contractor submits cost data in a contract proposal, and the Government relies upon this data as a basis for negotiation. It is imperative that results of the actual costing process be comparable to data submitted in the contract proposal. To accomplish comparability between cost data submitted for contract negotiation and subsequent contract costing, similar methods of costing should provide comparability among cost accumulations for different products, jobs, or contracts.

The use of a disclosure statement provides an efficient method of accomplishing comparability between costs in a contract proposal and costs actually assigned to contracts. This statement should contain a detailed description of the

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[9]Eric Kohler, A Dictionary for Accountants (Englewood Cliffs, 1970), p. 109.

cost system and all essential methods used in arriving at those costs included in the contract proposal. The same system and methods should then be used in actual costing of a contract. This arrangement will not produce absolute comparability in all cases, but use of disclosure statements should provide the basis whereby substantial comparability can be attained.

Determining what should be included in a disclosure statement will vary from contractor to contractor. Nevertheless, all disclosure statements should include a breakdown of costs into direct-indirect classifications, identification and description of different overhead pools to be used, and the basis of allocation for each pool. Yet caution must be exercised in making a disclosure statement too rigid. Changing conditions during the term of contract performance might necessitate changes in costing procedures. Prior agreements should not be so rigid that needed changes are precluded. Each change considered necessary should be judged on its own merits, particularly fairness of the change to both the contractor and the Government.

Comparability of cost data, as set forth in this study can be attained through properly developed cost accounting standards. The standards must be formulated according to sound concepts of cost measurement and allocation. Exhibit II indicates those concepts that, when implemented through cost accounting standards, should result in cost data that meet necessary comparability characteristics for costing

defense contracts. Gaining greater comparability in terms of what a contractor says he will do (to which the Government agrees) and what a contractor actually does will provide a useful basis for judging fairness in the contract costing process.

Objectivity

Objectivity is considered a basic accounting concept, often supported on the premise that it adds reliability to financial data. However, members of the accounting profession have not reached substantial agreement on its meaning. Wojdak states that ". . . although objectivity is often used to support theoretical arguments little certainty exists about its meaning or the level at which it is applicable."[10]

Some of the early writers defined objectivity in a strictly impersonal sense. Paton and Littleton contended that for accounting information to be dependable it must be from evidence objective in nature.[11] They then defined objective evidence as ". . . evidence which is impersonal and external to the person most concerned, in contrast with that person's unsupported opinion or desire."[12] Arnett reached a

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[10] Joseph F. Wojdak, "Levels of Objectivity in the Accounting Process," The Accounting Review, XLV (January, 1970), p. 96.

[11] W. A. Paton and A. C. Littleton, An Introduction to Corporate Accounting Standards (Evanston, Ill., 1955), p. 18.

[12] Ibid., p. 19.

similar conclusion that ". . . data still need to be impersonal in order to be objective."[13]

Some contemporary writers favor an "impartiality in attitude" approach to objectivity as opposed to a strict impersonal interpretation. Moonitz used the term "objective" as meaning "unbiased: subject to verification by another competent investigator."[14] An American Accounting Association (AAA) Committee chose a meaning similar to that of Moonitz. The AAA Committee used the phrase "Freedom from Bias" instead of the term "objectivity" in the following definition:

> Freedom from bias means that facts have been impartially determined and reported. It also means that techniques used in developing data should be free of built-in bias. Biased information may be quite useful and tolerable internally but it is rarely acceptable for external reporting.[15]

Ijiri and Jaedicke take a similar stand and point out that it is more realistic to base a definition of objectivity on the consensus among a given group of observers or measurers instead of upon the existence of objective factors independent of persons who conceive them.[16]

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[13]Harold E. Arnett, "What Does Objectivity Mean to Accountants?", The Journal of Accountancy, CXI (May, 1961), p. 68.

[14]Maurice Moonitz, "The Basic Postulates of Accounting," Accounting Research Study No. 1 (New York, 1961), p. 42.

[15]Committee to Prepare a Statement of Basic Accounting Theory, A Statement of Basic Accounting Theory (Evanston, Ill., 1966), p. 7.

[16]Yuji Ijiri and Robert K. Jaedicke, "Reliability and Objectivity of Accounting Measurements," The Accounting Review, XLI (July, 1966), p. 476.

Objectivity is a desirable and attainable goal in costing defense contracts. For contract costing purposes, the term is intended to mean the application of fair judgment in light of existing economic circumstances. Thus, employing costing regulations would require an attitude of fairness on the part of both the contractor and the Government. Neither party should gain an unfair advantage over the other through exercising bias in carrying out opposing viewpoints. The degree to which objectivity is achieved, as Ijiri and Jaedicke suggest, must be measured on the basis of a consensus among an independent group of observers.

A strictly impersonal interpretation, as many writers propose, would be difficult to apply at the practical level. For example, McFarland stated:

> . . . it has sometimes been necessary to stretch the concept of objectivity to a point where it ceases to have any real significance. It would be much simpler to admit that some accounting procedures are, and by virtue of their nature must be, guided by subjective judgment rather than by objective evidence. If it can be shown that results of such procedures are useful, further justification is unnecessary.[17]

Personal judgment permeates all of accounting and is especially important in internal costing where independent sources of evidence are not always available. Whenever costing matters are concerned with determining amounts of historical costs, little judgment is required because

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[17] W. B. McFarland, "Concept of Objectivity," The Journal of Accountancy, CXI (September, 1961), p. 29.

historical costs are determined on the basis of empirical fact. Allocation of historical costs is a different matter and usually requires the exercise of personal judgment.

Anytime personal judgment is used as the basis for a course of action, it can be assumed that some degree of subjectivity exists. The existence of subjectivity does not necessarily mean that personal bias is present--only that empirical facts might be absent. The important point here is that personal judgment must be exercised in a competent and fair manner to the concerned parties. If the parties to a defense contract agree to the results of a costing process, the presence of an adequate degree of objectivity in the costing process can be assumed. If one of the parties disagrees with the results, the degree of objectivity existing at the time contract costing was undertaken must be determined by the consensus of independent observers.

Achieving objectivity in costing defense contracts is a difficult goal and can be attained only in varying degrees. The degree to which objectivity is accomplished in a specific circumstance depends heavily upon attitudes of fairness and absence of personal biases on the part of both the supplier and Government. Nevertheless, it is a desirable goal that must be achieved to the highest degree practical if the overall goal of fairness in defense contract costing is to be achieved.

Cost accounting standards developed with a view of objectivity in mind will greatly enhance fairness throughout

the costing process. To assure the implementation of cost accounting standards that contribute to achieving objectivity in the costing process, the standards should be developed according to the cost measurement and allocation concepts indicated in Exhibit II.

Verifiability

Verifiability in accounting receives its primary application in the field of auditing. The concept takes on a narrow meaning in auditing and relates primarily to proving accuracy, i.e., accuracy in footing journals, posting to ledgers, comparing amounts entered in journals to source documents, etc.

The meaning of verifiability in auditing implies that procedures are available whereby accuracy of the accounting process can be proved. A concept of verifiability in costing defense contracts must encompass broader applications than attempts to prove accuracy. There are few areas in the entire contract costing process where indisputable facts are present. The most pressing decisions in costing, e.g., indirect cost allocations, are based largely upon personal judgments and not indisputable facts. Thus, verifiability in contract costing must be concerned with areas of costing where personal judgment is necessary as well as in areas where factual information is available.

Verifiability provides a means for judging the degree to which accuracy and objectivity have been achieved in

costing contracts. Also, most cost-reimbursement contracts contain a clause permitting the Government to examine all books and records of the contractor involving transactions relating to the contract. These so-called "audit clauses" necessitate the verifiability of costs assigned to individual contracts. In addition to audit requirements for cost-reimbursement contracts, fixed-price contracts are subject to an audit of cost or pricing data to determine if cost or pricing information at the time of contractual agreement was based on accurate, complete, and current data.

The key to verifiability is the existence of evidence supporting a course of action. In areas of contract costing involving direct costs, little difficulty in availability of evidence should be encountered. Evidence in the form of time sheets, clock cards, purchase orders, travel expense vouchers, materials requistioned from stores, etc., should be readily available for substantiating direct charges.

Allocations of indirect costs normally require the application of personal judgment. These judgments should be formulated on the basis of existing evidence. Mautz and Sharaf stated that ". . . evidence gives us a rational basis for forming judgments."[18] Verifiability of evidence utilized in formulating judgments is not as accurate as the verifiability of evidence supporting direct charges to

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[18] R. K. Mautz and Hussein A. Sharaf, The Philosophy of Auditing (Evanston, Ill., 1968), p. 68.

contracts. Nevertheless, it is important that personal judgments be formulated on the basis of verifiable evidence in order to test the soundness of the judgments used.

The types of evidence useful in formulating judgments are varied and depend on individual circumstances. Records common to most organizations, such as invoices, payroll and stores records, reconciliations, etc., comprise one type of evidence. Other types include engineering and statistical studies and other information lending support to indirect cost allocation methods used.

Verifiability in contract costing can be accomplished by implementing cost accounting standards developed with an awareness of the types of evidence normally available to contractors. These standards should provide, to the greatest extent possible, that each element of cost assigned to a contract be traceable back to its origin. If there are areas where adequate evidence is not likely to exist, criteria should be set forth for selecting from available alternative methods of cost assignment. Cost accounting standards developed according to the cost measurement and allocation concepts indicated in Exhibit II should possess the necessary elements for achieving verifiability in the contract costing process.

Cost Measurement and Allocation Concepts

While qualitative objectives set forth the desired goals for costing defense contracts, costing concepts

comprise the means for accomplishing these goals. Cost accounting standards should be developed within the framework of sound cost measurement and allocation concepts. Utilization of costing concepts as guidelines in developing cost accounting standards should result in standards that will, when implemented, achieve the qualitative goals of the framework.

Support of the qualitative objectives provided by individual cost measurement and allocation concepts, as well as the relationships among the cost concepts themselves, cannot be measured with a great degree of preciseness. The interrelatedness of the costing concepts and their support of the qualitative objectives are based largely upon judgments formulated by this writer after undertaking a literature review and field study. Exhibit II provides a summary of the cost measurement and allocation concepts lending support to each qualitative objective. In the sections that follow, each cost measurement and allocation concept is developed and discussed relative to its position in Exhibit II. At the end of each section, one proposed method for implementing the concept discussed in that section is presented.

Business Continuity

"Business Continuity" or "Going Concern" is a basic accounting assumption concerning the environment in which businesses operate. A continuity concept is commonly interpreted to mean that an accounting entity will remain in

operation indefinitely unless evidence to the contrary exists.[19]

Continuity in business operations receives primary consideration in financial accounting, but it is also relevant for cost accounting because expected business continuity provides the basis for depreciation of plant, equipment, and other long-lived assets which often comprise a significant cost for defense contractors.

Business continuity should be a basic assumption for developing cost accounting standards; however, the unique nature of the defense industry requires some modification to the concept as it is normally interpreted. Most defense contracts contain clauses permitting the termination of a contract at the Government's convenience. Other interventions into contract performance by the Government can also result in substantial reduction of work in areas where a contractor has invested in facilities, equipment, personnel, etc. These and similar conditions require cost determinations based on an assumption of liquidation as opposed to continuity.

When conditions of business cessation occur, as in some segment of a firm where terminated contracts were being

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[19]American Institute of Certified Public Accountants, "Basic Concepts and Accounting Principles Underlying Financial Statements of Business Enterprises," Statement of the Accounting Principles Board No. 4 (New York, 1970), p. 45.

performed, venture accounting[20] would be appropriate. Venture accounting does not assume continuity, thereby permitting concepts of cost accounting consistent with a view of liquidation. This approach would permit all costs related to the venture, in this case contracts, to be charged to it without consideration of continuity of the firm as a whole.

A continuity assumption, as previously described, is essential for developing cost accounting standards if the qualitative objectives of accuracy, comparability, and verifiability are to be achieved. Before any of these objectives can be achieved in a given contracting situation, the appropriate assumption concerning business continuity must be known. Contract costing must be carried out under either a view of contract continuation or cessation. Once the correct approach to take is known, appropriate cost accounting standards can be implemented.

A continuity assumption also lends support to the concept of an accounting period. The approach taken to either continuity or cessation in a given situation will dictate the appropriate accounting period, under existing circumstances.

Cost accounting standards should be developed according

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[20]This approach is similar to McFarland's discussion of project profit planning where each project is treated as a separate accounting entity. For a complete discussion of his approach, see Walter B. McFarland, Concepts for Management Accounting (New York, 1966), pp. 12-35.

to a continuity assumption that the business entity will continue indefinitely and contracts will be carried out to their completion. Such an approach permits development of standards for determining appropriate depreciation of long-lived assets and other current expensing of costs benefiting more than one accounting period. However, standards should also be developed setting forth appropriate cost accounting methods for contracts not completed, whether for termination or other reasons. Such standards should contain guidelines for determining how costs are to be charged to a contract when work stoppage occurs, e.g., fixed assets purchased for a specific contract, disposal of assets and inventories, etc. Development of standards in this manner assures implementation of the proper continuity concept through the standards themselves.

> Implementation. Depreciation of plant and equipment is determined by giving consideration to the estimated life of the assets expressed in either years or units of production. The amount of depreciation charged to an accounting period is the estimated portion of the assets' lives used up during the period. It can normally be expected that the assets will remain in use until their estimated lives have expired, which is the basic assumption for allocating costs of long-lived assets among accounting periods.
>
> When special conditions arise resulting in loss of useful value of fixed assets to a contractor, original methods of determining depreciation may have to be abandoned. When contract terminations or substantial reductions in work occur and special equipment, tooling, etc. has been provided by the contractor, which he is not capable of using in other work, a normal approach to depreciation is no longer valid. Instead, a view of liquidation is appropriate, and venture accounting can be applied for charging the remaining fixed asset costs, less salvage, to appropriate cost objectives.

Accounting Period

The concept of an accounting period is relatively new in the accounting field. When venture accounting was widely practiced, profits were calculated over periods of varying lengths.[21] The significant accounting period for a venture was the time required for its completion. As businesses became more complex, often undertaking numerous ventures continuous in nature, it soon became necessary to take periodic measurements of business units to determine their profitability. Laws and customs have now firmly entrenched the concept of an accounting period in practically all phases of accounting practice.

In financial accounting, it is customary to measure the economic activities of a firm over some specific period of time, usually of equal length such as a month, quarter, or year. Equality of time periods permits comparisons of financial data of two or more time periods in addition to meeting numerous other requirements such as determining taxable income, etc.

Conforming to an accounting period concept necessitates utilization of specific accounting techniques such as accruals, deferrals, interperiod allocations, estimates, judgments, etc. These techniques are commonly used in determining total costs for an entire accounting period but have

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[21] Maurice Moonitz, "The Basic Postulates of Accounting," Accounting Research Study No. 1 (New York, 1961), p. 16.

applications in costing specific objectives as well. For example, some of the more important applications of an accounting period concept in costing defense contracts are the following:

(1) A uniform time period for measuring the total costs of the period;

(2) A measured time in which indirect costs are allocated against direct costs;

(3) A predetermined period of time for measuring accomplishments against budgets, plans, etc.;

(4) A useful cut-off point for accounting summarizations and posting to permanent records;

(5) A base period to be used in allocating indirect costs.

The concept of an accounting period for costing defense contracts should agree with the calendar or fiscal year utilized by a contractor for financial accounting. When contract performance extends beyond one year, the costs chargeable to the contract should be determined on an annual basis. Total contract costs would be the amounts accumulated over the entire period of contract performance. However, cost accounting standards should give recognition to the possibility that accounting periods shorter than one year might be appropriate under certain circumstances. If contract performance extends over only part of an accounting period and the entire period is used in determining allocation bases, unfair treatment might result for one of the parties to the contract. For example, drastic changes in

the level of contractor activity during the period prior or subsequent to the period of contract performance could result in overhead allocation rates not representative of the actual rates incurred during the term of contract performance.

An accounting period concept has obvious implications for a going concern concept in the use of accruals, deferrals, etc. The notions of an accounting period previously mentioned also lend support to accomplishing the qualitative objectives of accuracy, comparability, and verifiability. Conforming to an accounting period concept follows conventional accounting practices and results in more accurate costing data by removing effects of year-to-year fluctuations in levels of operations, etc. Also, use of an accounting period in contract costing promotes greater comparability of cost data and eases the auditing task by providing a time frame within which costs can be verified. Cost accounting standards developed within the framework of an accounting period should result in implementation of standards that will contribute to accomplishing those qualitative objectives indicated in Exhibit II.

> Implementation. Costs assigned to defense contracts should be determined and allocated over a period consistent with the contractor's fiscal year. The use of a fiscal year provides a period of time for determining allocation bases that should be free from seasonal and other short-term fluctuations. Periods of time longer than a fiscal year do not follow conventional accounting practices, and abnormal changes in work levels over long time periods might produce an overall time period not representative of any single

> period making up the total time frame. But a time period limited in length to a single fiscal year will provide an accurate base for work performed within that year.
>
> Circumstances can arise, however, where a period shorter than the contractor's fiscal year might be proper. For example, if a contract is performed over only part of a fiscal year, it might be necessary to determine an allocation base for indirect costs over the shorter period in order to avoid substantial changes in the contractor's cost structure over the remainder of the year. However, use of a period shorter than a fiscal year would have to be determined and substantiated on a case-by-case basis.

Singularity

A common error in costing defense contracts is to charge a contract twice with the same type of cost during a single time period. Errors of this type are commonly referred to in the literature as "double-screening" or "double-counting."

To prevent double charges to defense contracts, the concept of singularity is necessary. This concept means that a given type of cost should be charged either directly or indirectly to individual cost objectives during a single time period. Adherence to the singularity concept would prevent an individual cost objective from receiving a direct charge for a specific type of cost then receiving an allocation from an indirect cost pool containing the same type of cost.

Implementation of a singularity concept to prevent double charges to defense contracts can be illustrated by an

example. Suppose a procuring agency demands exacting specifications for its work and requires 100% inspection in an area where the contractor normally inspects on the basis of a sample of 5 parts per 1000. Under these conditions, the procuring agency will probably accept inspection labor on its work as a direct charge although inspection is normally an indirect cost in the contractor's system. Adherence to a singularity concept would require that the contractor (1) remove from the appropriate indirect cost pool all inspection labor not charged directly; and (2) if a direct labor base is used for allocating indirect costs, the inspection labor removed from the indirect cost pool must be added to the direct labor base. This procedure prevents a single type cost, inspection labor, from being charged as both a direct and indirect cost.

Singularity in contract costing lends support to the qualitative objectives of accuracy, comparability, and verifiability. Without conforming to a singularity concept contract charges would be inaccurate, lack comparability characteristics, and be difficult to verify due to lack of congruency in direct-indirect cost treatments. In addition, achieving fairness to both contractual parties would be seriously impeded in the absence of singularity in contract costing.

> Implementation. A contract should be charged only once for a given type cost--either directly or indirectly. A contract charged directly with particular types of costs should receive charges from indirect cost pools only after removal from

> the pools of cost incurred for the same pursuits as those for which a contract was charged directly. Conversely, a contract receiving an allocation from an indirect cost pool should not receive a direct charge for the types of costs making up the cost pool.

Consistency

Consistency, as the term is used in this study, refers to consistent application of accounting procedures within a firm, both interperiod and intraperiod. A consistency concept should not, however, be viewed as a virtue of necessity and applied in a strict sense if the facts of a situation indicate a departure from the concept is necessary. Achieving fairness in contract costing is an overriding goal. Whenever existing conditions dictate, consistency should give way to fairness if conforming to a consistency concept would result in unfair costing results to one of the contract parties.

Interperiod consistency in contract costing has its greatest significance in providing comparability of cost data. Contract performance often extends over more than one accounting period. Changes in methods of costing from period to period make the comparison of cost data difficult, if not impossible. Conforming to interperiod consistency in costing methods is necessary for producing cost data that are comparable on a period-to-period basis.

Adhering to a consistency concept during the period of cost determination and allocation is necessary for obtaining

costing results supporting the qualitative objectives of accuracy, comparability, and verifiability.

Consistency in costing methods enhances the likelihood that cost data will possess a greater degree of accuracy when like transactions and events are accounted for in the same manner. Furthermore, greater comparability among cost proposals, costing results, and various cost proposals should result from consistent application of costing methods which, in most instances, will also ease the task of verifying costs charged to specific contracts, jobs, products, etc. Two important facets of intraperiod consistency are "intra-project consistency" and "interproject consistency."

Changes in costing methods could result in unfair charges to a specific contract if the changes created substantial differences in allocation bases, make-up of cost pools, etc. Intraproject consistency also requires consistency within given lines of work. For example, research and development costs of a contractor charged to customers (Government) should be accounted for in a manner consistent with accounting for research and development costs incurred specifically for the contractor's own internal uses.

Interproject consistency requires use of the same costing principles and procedures for all projects, at least whenever costs assigned to a Government contract would be affected. Utilizing different accounting methods for different projects can result in some projects being penalized in favor of others in terms of cost allocation procedures.

To avoid such inequities, transactions of a like nature should be treated consistently from project to project.

Consistency in contract costing also has applications in the contract proposal-costing stages. Without consistent costing methods between estimated costs included in contract proposals and subsequent charging of costs to contracts, comparability between the negotiation and costing stages is difficult to achieve. This comparability between the proposal and actual costing is important because it provides a means of determining if costs have been accounted for according to agreed methods.

The concept of consistency presented above plays a significant role in accomplishing accuracy, comparability, and verifiability throughout the contract costing process. Consistency in contract costing is essential if cost data are to be accurate. A costing method is not likely to produce accurate results, especially where a defense-commercial production mix exists, if divergent methods are employed in arriving at cost data for various classes of work. Inaccuracies in costing results are likely by-products of inconsistent accounting procedures, and results would not contain necessary comparability characteristics. Consistency in costing methods also enhances verification of costs charged to contracts whereas inconsistent methods hinder the verification process and can even prevent verification between cost proposals and contract costing. Adherence to a consistency concept in developing cost accounting standards

should provide for standards that will, when implemented, produce costing results lending support to accomplishing the qualitative objectives indicated in Exhibit II.

> Implementation. A contractor submits a cost proposal which includes direct-indirect cost classifications, indirect cost pools, bases for allocating indirect cost pools, etc. Subsequent accumulation and assignment of costs should be implemented along the same lines set forth in the cost proposal. This requirement includes, in addition to Government contracts, all other cost objectives whenever different costing methods between Government and other work would affect the amount of costs assigned to Government contracts. Consistency among and within different projects is necessary to assure that comparable events will be accounted for in the same manner.

Direct Costs

Among the most prevalent problems in costing defense contracts today is the determination of those costs which should be charged directly and the corollary of charging indirect costs. The comments that follow in this and the subsequent section are not attempts to list those costs that are direct or indirect. Instead, attempts are made at describing what makes the two classifications of costs different, i.e., the characteristics of each classification.

Basically, problems in assigning costs to individual contracts are those of allocability. Current ASPR costing guidelines provide only a broad description of when costs are allocable to a contract. ASPR Section 15-201.4 states:

> A cost is allocable if it is assignable or chargeable to a particular cost objective, such as a contract, product, product line, process, or class

> of customer or activity, in accordance with the relative benefits received or other equitable relationship. Subject to the foregoing, a cost is allocable to a Government contract if it--
>
> (i) is incurred specifically for the contract;
> (ii) benefits both the contract and other work, or both Government work and other work, and can be distributed to them in reasonable proportion to the benefits received;
> (iii) or is necessary to the overall operation of the business, although a direct relationship to any particular cost objective cannot be shown.

The essential message in the above statement is that a particular cost is not allocable to a contract if all of the contract's terms and conditions can be performed without that cost's incurrence. The statement also indicates a close tie between the allocability of costs and a benefit concept.

A first step in determining those costs chargeable[22] to a contract is describing the properties of direct costs. A common error in cost accounting is to use a physical relationship as the chief criterion for determining which costs are direct as to a given cost objective. This condition undoubtedly grows out of traditional product costing where only raw materials incorporated into a final product and labor expended in converting the raw materials receive

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[22]The term "chargeable" is used here instead of ASPR's use of "allocable" in order to prevent confusion. Allocable or allocability is a common term used in discussing distributions of indirect costs. Technically, a direct cost is allocated when charged to a specific cost objective. However, use of the term chargeable is felt to be more appropriate and creates less confusion in terminology.

direct cost treatment. Outside of these so-called "prime costs", all other manufacturing costs are classified as indirect.

The uses and importance of cost accounting have expanded beyond traditional product costing. Business activities are often divided into fractional parts, commonly referred to as segments, in order to facilitate various cost analyses. A segment can be any activity or part of an organization for which separate cost determination is desired. Physical relationships, as they exist in product costing, are often not available for determining direct costs of segments. One example is the widespread use of program costing throughout industry and Government. When a program is the cost objective, there is no final product in a physical sense. Therefore, in this and similar situations, direct costs must be described according to properties other than those growing out of a physical relationship.

All costs of an accounting entity are direct if the entire entity is identified as a single cost objective. Costs become indirect only as certain cost objectives within the entity are identified as being subordinate to other cost objectives of a higher order, or when a joint cost is common to multiple cost objectives. Therefore, a chief prerequisite to determining direct costs is a detailed identification and description of each cost objective within a cost system (essential requirements of a contractor's cost system are provided in Appendix D of this study).

Once cost objectives are sufficiently described, it becomes easier to identify costs incurred specifically for only one cost objective. Anthony gives a direct classification to those costs "specifically traceable to or caused by the manufacture of a product or the carrying out of a program."[23] Thus, direct costs would include all assets and services used up in performing, and can be traced to, a single cost objective. The primary means of judging traceability is to determine if a particular cost would exist over the short run in the absence of a specific cost objective; if it does, then that cost is not caused solely by the cost objective and is not a direct cost chargeable to it.

It is the specific identification of cost objectives and the resultant traceability characteristics of costs to those cost objectives that make a cost direct--not a categorization of costs in the accounts. A costing system can easily influence the directness of costs through arbitrary classifications when primary consideration should be centered on the nature of the costs. This problem is readily apparent in the areas of labor and material costs where the direct-indirect dichotomy is applied for reasons of expediency rather than conforming to the facts of a situation.

Labor costs incurred as a result of efforts expended for and traceable to a specific cost objective would be a

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[23]Robert N. Anthony, Management Accounting--Text and Cases, 4th ed. (Homewood, 1970), p. 361.

direct cost of that cost objective. Direct labor is one type of cost that is relatively easy to trace to specific cost objectives. However, labor fringe costs are often dumped into overhead pools and allocated to cost objectives as an indirect cost. Since the fringe costs are directly attached to the direct labor, they should also be charged directly as the traceability characteristics of the costs are sufficient to do so. The result is a more accurate charging of labor related costs, which are becoming increasingly large, than an indirect allocation procedure would provide.

A situation similar to labor costs exists for material costs. Materials incurred for a specific cost objective are ordinarily easy to determine, and are charged directly, within practical limitations (small cost items would be eliminated). Material related costs of acquiring, storing, and issuing materials are commonly charged to indirect cost pools and allocated to cost objectives. As in the case of direct labor, material related costs should be charged directly to cost objectives along with direct material charges. This can be accomplished through material loading rates, which is as close to direct charging as can be attained from a practical standpoint, and would result in more accurate costing for the total cost of materials.

In addition to labor and material costs, all other costs that are traceable to a specific cost objective should be treated as direct costs. A direct cost possesses a

higher degree of accuracy in measurement than an indirect cost, and the overall accuracy of the costing process can be improved by reducing the amount of costs that must be allocated on something other than a direct basis.

Charging costs directly to contracts whenever possible promotes increased accuracy, comparability, and objectivity in cost assignments by avoiding less precise indirect cost allocations. In addition, verifiability of contract charges is greatly enhanced by the traceability characteristics inherent in direct costs.

The concept of direct costs presented in this section should be incorporated into the development of cost accounting standards for the specific purpose of providing direct charges to contracts for as many costs as possible. Costing guidelines increasing the number of direct charges to contracts would eliminate many costs from less accurate indirect methods of allocation. Also, eliminating costs from indirect categories is likely to result in less complexity in costing methods.

> Implementation. All costs which can be identified with and traced to a single cost objective should be charged directly thereto. For example, labor costs incurred for a single cost objective should be treated as direct costs of that cost objective. In addition to the basic labor costs, fringe benefits are becoming increasingly significant costs and can be closely attached to basic labor costs. Labor fringes should be charged directly to cost objectives along with direct labor. Labor fringes can ordinarily be accumulated and expediently determined by pooling the fringe costs and arriving at a fringe rate for different categories of labor. Charging fringe costs directly with labor costs should result in more accurate charging of the

> fringes than including them in some indirect cost pool. Moreover, better information is provided for the true cost of the labor function.[24]

Indirect Costs

Direct costs were previously defined as "those assets and services used up in performing which can be traced to a single cost objective." Therefore, all residual costs are indirect. That is, all costs incurred for more than one cost objective are common costs and must be charged to the benefited cost objectives on something other than a direct basis.

There are no hard and fast rules for distinguishing an indirect from a direct cost. The type or general nature of a cost does not make it indirect--it is the jointness of benefits to two or more cost objectives produced by the incurrence of a single cost. To state that certain costs are always indirect would be in error. Determination of direct-indirect classifications must be made in light of a specific cost system within which cost classifications are to be made. The sophistication and detail produced by a given cost system is instrumental in determining traceability characteristics of costs flowing through the system. The traceability characteristics will, in turn, determine

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[24] At least one Armed Services Board of Contract Appeals case (ASBCA No. 12918, 68-2 BCA 7402) did not agree with allowing labor fringe as direct costs. However, the soundness of treating labor fringes as direct charges was not questioned--only that it was not consistent with the contractor's prior practices.

which costs must be classified indirectly.

Indirect costs often comprise a large part of total contract costs. A contractor is interested in making certain all legitimate direct costs are charged to Government contracts. Likewise, the Government is interested in being charged only its proper share of indirect costs. It is unlikely that allocation of indirect costs can ever be made in any kind of scientifically correct way. In spite of that, cost accounting standards are to be developed that will serve as guidelines for indirect cost allocations by contractors. To encourage standards that will provide useful support in attaining accuracy, comparability, objectivity, and verifiability in indirect cost assignments, the standards should be formulated according to the concepts of (A) Homogeneity of Cost Groupings and (B) Proper Allocation Base. An exposition of these concepts appears below.

(A) Homogeneity of Cost Groupings. When a cost cannot be traced directly to a single cost objective, practical considerations prevent tracing the cost to multiple cost objectives. Instead, all indirect costs are usually aggregated in some fashion, then assigned to cost objectives according to various allocation bases. These aggregation and assignment methods are essentially averaging processes and can result in significant losses in accuracy of cost assignments if applied in a careless manner. This section is concerned with the aggregation portion of the averaging process.

Final or end cost objectives of firms commonly consist of products, product lines, programs, etc. In accomplishing end objectives various support functions, termed "intermediate cost objectives" in this study, are often significant sources of costs. Intermediate cost objectives consist mostly of service-type functions such as security, plant maintenance, building occupancy, personnel, general corporate expenses, etc. Prior to allocations of intermediate objective costs, it is necessary to accumulate the costs in appropriate pools. A cost pool is a group of related costs that are to be aggregated then allocated to various cost objectives utilizing the same allocation base. Of utmost importance in increasing the effectiveness of the aggregation-allocation process is the homogeneity of costs contained in the individual cost pools.

Shillinglaw states that homogeneity has the following two dimensions:

> First, an account should embrace only those costs having a common set of determinants, i.e., costs having different determinants should be summarized in separate accounts.
>
> Second, the costs assigned to a particular account should have the same pattern of response to the various determinants of cost behavior.[25]

The first dimension requires that costs having different determinants be summarized in separate accounts while the second requires costs assigned to a single account possess

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[25]Gordon Shillinglaw, Cost Accounting: Analysis and Control, Rev. ed. (Homewood, 1967), p. 143.

the same behavior pattern relative to the account's determinants. The relationship existing between a cost pool and its determinants is an important test for ascertaining the degree of cost homogeneity in a cost pool. No set of dogmatic rules can be promulgated for determining either the degree of homogeneity existing in a cost pool or the number of cost pools required. Costs incurred are a function of an organization's structure and the types of work being performed. Each business unit must determine its own relationships between cost behavior and its determinants.

Various means exist for testing the homogeneity of costs in a pool and their relation to a common determinant. In situations where production or program processes are relatively simple, the relationship may be easily determined through observation or judgment. In complex situations, more scientific methods may be required. For example, statistical techniques utilizing correlation or regression analysis can be used in testing the relationship between the behavior of costs and a common determinant.

No rules exist for determining the number of indirect cost pools to be used by a contractor. The use of one or two pools by a contractor is likely to result in groupings of heterogeneous costs having no common determinants. The use of a greater number of pools containing homogeneous costs might result in greater accuracy in costing, but indirect cost pool can be fragmented into unnecessarily small groups. Whenever the number of pools is increased,

costs of maintaining the necessary records will also increase. Efforts devoted to achieving a high degree of homogeneity in cost pools should not be carried to extremes but evaluated in terms of gaining greater accuracy in cost assignments at a reasonable cost of operating the costing system and the materiality of amounts involved.

Each contractor should determine the number and composition of cost pools to be utilized by him according to his own production processes, programs undertaken, organizational structure, etc. When a defense contractor undertakes both commercial and defense work, a minimum requirement expected is the utilization of separate cost pools for (1) commercial work only; (2) defense work only; and (3) situations where commercial and defense work are mixed. The number and composition of cost pools within each of these categories would depend upon an individual set of circumstances for each contractor.

As a first step toward gaining more preciseness in indirect cost assignments, indirect cost pools, whatever their number, should consist of homogeneous cost elements. Cost accounting standards developed to accomplish homogeneity in cost pools should not be so complex and strict that the exercise of judgment is precluded. Complexity in costing systems is no guarantee of increased accuracy. Being cognizant of the interrelatedness of various cost elements and approaching costing problems with a view toward accomplishing costing objectives with the simplest allocation

procedures possible will likely result in the greatest increase in accuracy at a minimum cost.

Achieving fairness at the indirect cost allocation stages of contract costing is a principal requirement if an overall goal of fairness is to be achieved. Homogeneity in cost pools should enhance accuracy and objectivity in indirect cost allocations through increased efficiency in allocation methods. In addition, interrelatedness of costs in a single cost pool is expected to provide better comparability of indirect cost rates among contractors and within the same contractor over time. Pooling costs according to common relationships, as opposed to heterogeneous groupings, also provides a valuable criterion for verifying costs not otherwise obtainable. Grouping costs into homogeneous pools, along functional lines for example, provides an easier means of verifying the proper share of each cost pool chargeable to different cost objectives than would be possible if costs of numerous functions were grouped into a single pool of heterogeneous costs.

> Implementation. Indirect cost pools should consist of those cost elements that are homogeneous in nature and, to the extent economically feasible, are highly correlated with the base over which they are to be allocated. Fragmentation of indirect cost pools should be avoided unless results of additional pools improve upon overall accuracy and efficiency of cost allocations commensurate with increased costs of the accounting function. For example, if it can be shown that one indirect cost pool will produce substantially the same results as two or more separate pools, then fragmentation could not be justified in terms of the added costs, and a single pool should be used.

(B) Proper Allocation Base. Once indirect costs have been grouped into homogeneous cost pools, a proper base for distributing the pools to cost objectives must be selected. In selecting an allocation base, primary consideration should be given to factors causing incurrence of the costs, benefits received by the various cost objectives to which allocations are to be made, or other criteria which relate the cost pool to a common distribution base.

Accountants have not generally agreed upon specific objectives and criteria for arriving at indirect cost allocation bases. Typical viewpoints for selecting an allocation base are:

> The primary objective in selecting a base is to insure the most accurate application of overhead cost to products manufactured. Ordinarily, the base selected should be closely related to functions represented by the overhead cost being applied. . . . A secondary objective in selecting a base is to minimize clerical costs and effort. When two or more bases provide approximately the same applied overhead cost, the simplest base should be used.[26]

> . . . bases for cost assignment must be selected in some way that is not merely arbitrary or capricious. When there are various methods available which produce significantly different results there should be some recognized norm; and any departure from that norm ought to be explained.[27]

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[26]Adolph Matz and Othel J. Curry, Cost Accounting--Planning and Control, 5th ed. (Cincinnati, 1972), p. 187.

[27]William J. Vatter, "Standards for Cost Analysis," in Report on the Feasibility of Applying Uniform Cost Accounting Standards to Negotiated Defense Contracts, by The Comptroller General of the United States (Washington, 1970), p. 541.

> The base . . . must be selected so as to cause a distribution to the cost objectives in accord with benefits received, reason for incurring the cost, or logic and reason.[28]

> Given a total-cost pool and a cost object, the most important criterion for selecting a cost allocation base is to relate the total cost to its most causal factor.[29]

The comments above relate some of the contemporary thoughts on selecting an allocation base. In a 1945 article, Vatter reached the following conclusions concerning overhead allocation bases:

> (1) Criteria for overhead cost allocations have not yet been developed which are capable of statistical verification.
>
> (2) Bases chosen for cost assignment are frequent but imperfect expressions of the criteria themselves.
>
> (3) Overhead costs must be averaged to be assigned at all. The limitations of averaging are inherent in overhead cost assignment. Averaging assumes a degree of homogeneity of costs that is not always sufficiently present to permit averaging with logical consistency.[30]

Vatter's conclusions reflect, to a great extent, problems encountered in allocating indirect costs today. Advances made in statistical and linear programming techniques, coupled with the advent of the computer, have increased the

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[28]Howard W. Wright, Accounting for Defense Contracts (Englewood Cliffs, 1962), p. 60.

[29]Charles T. Horngren, Cost Accounting--A Managerial Emphasis, 3rd ed. (Englewood Cliffs, 1972), p. 397.

[30]William J. Vatter, "Limitations of Overhead Allocation," in Readings in Cost Accounting, Budgeting, and Control, ed. by William E. Thomas, 3rd ed. (Cincinnati, 1968), p. 307.

capabilities of indirect cost assignments, but criteria for the use of these techniques are not well established. For example, in costing defense contracts, many contractors separate indirect fixed and variable costs in order to allocate them on different bases. However, the predominant practice among contractors is to not separate fixed and variable costs for allocation purposes.[31]

The allocation base is the determinant used for allocating indirect cost pools to individual cost objectives. Selecting criteria for determining an allocation base is closely related to choosing the number and composition of indirect cost pools. The base should be comprised of a determinant common to costs contained in the pool to be allocated, and it should have a common relationship to all cost objectives to which the pool is to be allocated.

The most desirable characteristic of an allocation base is that it be the primary causal factor creating the costs it is to allocate. This relationship would indicate a high correlation between the base and cost pool. That portion of the allocation base derived from each cost objective would then represent the proper portion of the cost pool to be allocated to individual cost objectives.

As a practical matter, identifying the primary causal factor for a given cost pool may be difficult to determine.

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[31] In a questionnaire circulated as a part of the GAO Feasibility Study, 55.8% of 636 respondents with Government contract experience did not separate fixed and variable indirect costs for cost assignment purposes.

Difficulties in relating costs in a pool to a common causative factor can arise from the make-up of either the cost pool, the allocation base, or both. Gaining the desired relationship between the pool and base might require more cost accumulations along functional lines, which suggests the possible need for more pools and a different allocation base for each pool.

Current methods of allocating indirect costs are not precise and in some cases are purely arbitrary and judgmental. The degree of preciseness that can be attained in charging indirect costs to defense contracts, while remaining within practical limitations, is an unknown today. Research and experimentation with statistical techniques applied to data in the defense industry could possibly lead to new or improved techniques in arriving at the type of allocation bases alluded to in this study.

Properly developed allocation bases provide a significant element for accomplishing the qualitative objectives of accuracy, comparability, objectivity, and verifiability. Accuracy and objectivity are natural results of costing processes where allocation bases are developed utilizing statistical or other methods relating the allocation base to the contents of a cost pool. Likewise, the soundness of such methods permits compilation of cost data that are comparable and easier to verify. Cost accounting standards should be developed that set forth criteria and broad guidelines for contractors to consider in developing and testing

allocation bases. Each contractor should then have the flexibility to develop allocation bases within his own organizational structure, product lines, etc.

> Implementation. Allocation bases should be selected that relate cost pools to cost objectives to which the pools are to be assigned. Bases reflecting such a relationship can be determined only after cost analyses and studies have indicated the most appropriate base from those available. Selecting an allocation base is closely related to the manner in which costs are pooled. For example, pooling costs along functional lines such as people related, machine related, etc., narrows the choice of bases and simplifies the selection process. Broadly based costs, such as general corporate expenses, will generally have to be allocated over a more practical base such as cost of sales or cost of production. The primary consideration for selecting an allocation base is to increase the accuracy and efficiency of assigning indirect cost pools without unduly increasing costs of the accounting function.

Summary

The conceptual framework for costing defense contracts developed in this chapter is designed to serve as a guideline for development and subsequent testing of cost accounting standards. The individual elements of the framework were taken primarily from existing accounting concepts and practices revealed in the literature and based upon the results of a field study, modified for specific application to internal costing practices. The concepts were then organized into a framework for costing defense contracts. The plan of the framework was to first develop an overall broad qualitative objective supported by sub-objectives. Next, cost measurement and allocation concepts supporting

accomplishment of the qualitative objectives were developed, and one suggested method for implementing each cost measurement and allocation concept was presented.

The individual concepts utilized in this study are not new to the field of accounting; but the relationships presented in the framework may provide direction in developing cost accounting standards. Little research has been published relating commonly used accounting concepts to the cost accounting function. This chapter has attempted to develop appropriate accounting concepts within which cost accounting standards for defense contracts should be developed.

The costing framework is to be implemented through appropriately developed cost accounting standards. At the operational level of implementation, certain requirements are necessary before any cohesive set of costing guidelines can be properly utilized. These requirements are set forth separately as Appendix D of this study.

During the course of the literature review and field study, numerous contract audit cases were reviewed as a means of gaining more knowledge into contract costing processes and problems.[32] Results of these reviews revealed many similarities among the cases, yet each case was unique in some respect. To prevent reporting duplications occurring among the cases, results of one comprehensive audit

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[32]A listing of the cases appears in Appendix A of this study.

case were developed into a case study and utilized as a means of demonstrating the soundness of the normative costing framework presented in this chapter. The case study is the subject of the following chapter.

CHAPTER IV

CASE STUDY OF A COST-TYPE DEFENSE CONTRACT AUDIT

Background to the Case

Introduction

The audit of a cost-type contract placed with a defense contractor is a normal procedure for determining the cost to be accepted for performing each contract. Diversities among contractors and the great variety of products and services procured rule out the existence of a "typical audit." The varieties of problems encountered in costing defense contracts cover a broad range occurring over long periods of time. The audit presented in this case study is not intended to be a "typical" audit case, but exemplify many of the current issues and problems encountered in costing defense contracts.

The general purposes of presenting the results of an audit in the form of a case study are twofold. First, an insight is provided into some of the costing problems encountered by both the contractor and procuring agency. Second, the case depicts a real-world situation useful for demonstrating the soundness of the contract costing

framework developed in this study.

Specifically, the contracts under audit in this investigation were for designing, developing, tooling, and fabricating special types of electronic equipment. The procuring agency was a large defense prime contractor doing all of its business with the Federal Government. From an operational viewpoint, the procuring agency could be considered an arm of the Federal Government. The supplier involved in this case was an electronics division of a large diversified firm with operating plants in several locations. The contracts under consideration in this case were performed at two locations - Plant Location 1 and Plant Location 2.

Contract Procurement Procedures[1]

BODE's Auditing Department performs a significant function in the overall placing and subsequent finalization of contracts placed with suppliers. In order to provide the proper perspective of the Auditing Department's involvement in the total contracting process, a sequential outline of the basic procurement procedures followed by BODE is provided below. Although these procedures might not have general application in all circumstances, similar procedures would be expected for most defense procurement.[2]

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[1] In order to maintain anonymity in this case the contractor (supplier) is referred to as Electro Corporation and the procuring agency as BODE (acronym for buyer of defense equipment).

[2] Taken from information contained in the files of BODE's Auditing Department.

I. A purchase requisition from the procuring organization is sent to the Purchasing Department.

A. If the procurement is from a sole source and exceeds a stated minimum, justification for using a sole source is required from the requisitioning party.

B. If the procurement is competitive, the source is up to the Buyer, i.e., the Purchasing Department representative responsible for placing and administering the contract.

C. For contracts of a developmental nature cost-plus-a-fixed-fee type contracts will probably be used.

D. Product procurement contracts might utilize either fixed-price or cost-plus-fixed-fee contracts.

1. Fixed-Price Contracts

(a) Buyer acquires a detailed cost breakdown in support of the contract price. Buyer may request a conference with the appropriate engineer, price and cost analyst, and supplier before making a final determination on placing the contract.

(b) Before a contract can be placed, the price quote goes to auditing for their review.

(c) After a contract is placed, the Auditing Department must determine if a post-award audit of cost and pricing data is necessary. Such a determination normally involves a review of the Buyer's files, other appropriate company files, and opinions of the contracting principals. If a decision is made to review the contractor's records for adequacy and accuracy of cost and pricing data, the reviews will normally take place after the contract is complete and actual total costs are known.

2. Cost-Plus-Fixed-Fee Contracts

(a) Buyer's requests from the Auditing Department depend upon previous experiences of doing business with the contractor. For contractors with no prior experience with BODE the Buyer notifies the Auditing Department which then performs the functions listed below.

(b) The Auditing Department performs an accounting systems survey to determine if the contractor's records will permit adequate costing of a CPFF contract as well as produce auditable records. The system survey must be performed before the contract can be placed with the contractor.

(c) The auditor performing the system survey makes sure the contractor understands the appropriate procurement regulations, accounting required, and any special contract terms involving accounting requirements.

(d) If the reviewing auditor does not believe the contractor's system and records will provide all the data needed, the contractor is requested to make necessary changes. The Buyer is notified by the auditor of the changes necessary prior to placing the contract. The ultimate decision for placing the contract rests with the Buyer.

II. Annual Cost Audit of Contracts

A. The Auditing Department performs annual audits of all cost-type contracts placed with suppliers. The audit report lists in detail all costs booked against each contract by the supplier and the auditor's adjustments, if any.

B. The audit report is sent to the appropriate Buyer who contacts the supplier and seeks his agreement to the audit results.

C. If disputes to the audit results arise between BODE and the supplier, attempts are made to negotiate the differences. If an agreement cannot be reached between the contract parties, the supplier may ultimately appeal to The Armed Services Board of Contract Appeals. This Board's decisions may then be appealed to the U. S. Court of Claims.

Nature and Purpose of Contract Audits

A procuring agency has one primary objective in performing an audit of cost-type contracts--to verify costs claimed by contractors for goods and services according to terms of the contract(s). In carrying out audits of this type, consideration must be given to the appropriate procurement regulations, contractor's accounting system, methods of allocating costs, and the mix of defense and commercial production at single plant locations which might produce cost assignment complexities during a given fiscal period.

Prior to entering a cost-type contract, it is first necessary to determine if the contractor's accounting and overall record keeping system are adequate for properly reporting the results of contract performance. Such a determination includes a substantial assurance (1) that costs can be accurately accumulated and (2) that costs assigned to contracts can be verified with a reasonable expenditure of audit time and effort. If these conditions have not been previously ascertained by the procuring

agency, a survey of the contractor's accounting system is necessary prior to completing a contract agreement.

Development of the Audit

Systems Survey

Prior to undertaking a number of cost-plus-fixed-fee (CPFF) contracts with Electro Corporation, BODE's Auditing Department, at the request of the Purchasing Department, conducted a survey of Electro's accounting system. The primary objective of the survey was to determine if Electro's accumulation and assignment of costs were carried out in a manner permitting accurate and auditable cost assignments. The type of survey undertaken in this case closely followed the format of the survey questionnaire in Exhibit III.

The auditor making the survey required Electro Corporation to make the following changes in its costing system:

(1) Transfer from overhead to the Direct Labor Base all direct labor on engineering projects.

(2) Accumulate direct labor and all other direct charges on each engineering project.

(3) Include in overhead the costs of engineering projects acceptable as research and development under the procurement regulations.

(4) Eliminate from the general and administrative expense pool all costs not allowable under the procurement regulations.

(5) Compute a general and administrative expense rate using a cost of goods manufactured base instead of cost of goods sold.

In addition to the above changes required by the auditor, Electro requested permission to assign overtime labor as a

EXHIBIT III

AUDIT SURVEY QUESTIONNAIRE

GENERAL SECTION

1. Company: _____ Date of Survey _____
   Address: _____ Auditor _____
   _____ Buyer _____
   Telephone: FTS - _____ Contract No. _____
   Co. - _____ Est. Amount _____
   Home Office and/or Accounting Office (if different from above) Type of Contract _____
   Fiscal Year Ends _____

2.

Persons Contacted	Title	Phone Ext.	Familiar With: ASPR Yes	No

3. Key contact for auditing (A) and who will be authorized to speak for the company in settlement of final costs(B).

4. Show the following for total company and for plants working on BODE Contract:

	Location	No. of Empls.	Business Volume	% Govt.	% Cost Type	Resident DCAA*
a.						
b.						
c.						

5. Show names and phone numbers of DCAA Auditors in Charge (keyed to above).

a.						
b.						
c.						

*Defense Contract Audit Agency

EXHIBIT III (Continued)

6. Obtain the following:
   a. Published report to stockholders
   b. Organization chart
   c. Chart of accounts

7. Other General Comments:

CPFF SECTION

1. List elements of cost, including overhead and G & A percentages, which are included in the quotation. (Is quote compatible with accounting system?)

2. Type of cost system_____. (Get examples of records for accumulating contract costs.)

3. Review Section II (Boiler Plate), articles A4-A7, A-10 and A-13, with the contractor.*

4. Labor

	Clock	Non Clock
a. What records are used to account for the employees time?	_____	_____
b. How is time charged? Hours	_____	_____
Amount	_____	_____
c. Is the labor distribution reconciled with payroll?	_____	_____

   d. Do employee records show occupation codes? Yes_____ No_____
   e. What categories of labor (e.g., Engineering, Production, Assembly) will be charged directly to this contract?

   f. Are these categories of labor normally charged direct? Yes_____ No_____
   (If not, adjust the direct labor base for calculating O/H rate(s).)

*Reference is to special contract provisions.

EXHIBIT III (Continued)

g. List categories of labor included in direct labor base.

h. Are there any labor agreements in effect? Yes___ No___ If so, what are the wage re-opener provisions?

i. Verify and describe labor rates quoted as to actual, standards, and adders.

j. Indicate accounting treatment for direct labor employees:

	Charged	
	Direct	Indirect
(1) Overtime and Shift Premiums	_____	_____
(2) Idle Time	_____	_____
(3) Travel Time	_____	_____

5. Material and Services

a. Will all purchases for this contract be on a fixed price basis? Yes___ No___ If not, explain.

b. How will materials be charged to this contract? (Direct purchase___, From Invty.___, How Priced _____)

c. Are there any handling charges or material overheads assessed to material purchases? Yes___ No___

d. How are purchase discounts handled?_____

e. Do intracompany transactions exclude profit? Yes___ No___

f. Do transactions with affiliates exclude profit? Yes___ No___

g. Does contractor maintain an adequate control system for materials purchased or furnished by BODE? Yes___ No___

EXHIBIT III (Continued)

6. Tooling and Capital Equipment

a. Compare treatment of cost items to be charged against this contract with contractors policy for their own tooling and capital equipment.

	Tooling		Capital Equipment	
	This Contract	For Contractor	This Contract	For Contractor
Labor				
Overhead				
G & A				

b. If the proposed charges to this contract differ from the contractors system, determine and reach agreement for equitable costing.

c. Does contractor maintain an adequate control system for tooling and equipment purchased, manufactured or furnished by BODE? Yes___ No___

7. Travel

a. Are employees on actual?____ Per Diem?____ or Combination?___

b. If on Per Diem

Includes	Daily Amount	Fractional Days		
		Yes	No	&
All expenses				
Partial (meals, etc.)				

8. Indirect Expense Rates

a. Are separate overhead rates established for each plant? Yes___ No___ If no, explain.

b. Does contractor plan to recover IR&D on this contract? Yes___ No___ If yes, explain procedures.

c. Do overhead pools include any charges for fully depreciated assets? Yes___ No___ If yes, explain.

d. Is marketing and/or selling expenses segregated in the contractor's books? Yes___ No____

EXHIBIT III (Continued)

8. e. Does contractor plan to claim any? If so, explain.

f. Does contractor pay manufacturing or sales representatives a commission or fee? Yes___ No___

g. Does the contractor plan to claim these costs on this contract? Yes___ No___ If so, explain BODE Policy.

h. Determine Indirect expense rates on attached schedule.

i. Other Comments:

9. Suggest any advance agreements required in the following areas:

a. Direct charges (labor, material, tooling, capital equipment, travel, etc.)

b. Overhead rate(s) (reclassification of items normally charged to overhead which are being charged direct, including IR&D and Bid and Proposal Labor, etc.)

c. General and Administrative Rate (items not applicable such as Sales or Manufacturing Representatives, conversion from cost of sales to cost of manufacturing, etc.)

EXHIBIT III (Continued)

SCHEDULE OF OVERHEAD POOLS AND RATES

Provisional Rates						DCAA	Latest Negotiated DCAA Rates		
Pool		Base			Adj. to	Provisional		Per	
Description	Amount	Description	Amount	Claimed	ASPR*	Rates	Year	Claim	Negotiated

*Make appropriate adjustments to the expense pools and bases for (1) unallowable items, (2) IR&D, (3) bidding costs and (4) items normally charged indirect which will be charged direct. (Show calculations.)

direct charge and was permitted to do so if the practice was applied consistently for all work.

Subsequent to performing the system survey, several CPFF contracts were placed with Electro Corporation. Provisional overhead rates for interim billing purposes were agreed upon by Electro and BODE with final rates and cost determinations to be based upon annual audits by BODE.

Results of BODE Audit

Performance of the contracts placed with Electro took place over a several-year period. The audit selected for this case study covered Electro's 1971 fiscal year, which was considered to be the most representative of all the periods over which BODE's contracts were performed. Included in the audited costs were three completed and seven incomplete CPFF contracts. Summary results of the audit are presented in Exhibit IV; contract audit differences are explained below.

Schedule A - Material Adjustment

The auditor's adjustments for material charged to the contracts arose primarily from contractor errors or disallowance of charges according to terms of the contracts. A detailed listing of the audit adjustment is provided below.

EXHIBIT IV

SUMMARY OF AUDITED COSTS

FISCAL YEAR 1971

Types of Costs	Costs Per Contractor	Costs Per Audit	Difference	Schedules Explaining Differences
Material	$ 340,000	$ 318,000	$ 22,000	A
Labor:				
Manufacturing Location 1	480,000	480,000	---	B
Manufacturing Location 2	20,000	20,000	---	B
Engineering	80,000	80,000	---	B
Overhead:				
Manufacturing Location 1	657,816	548,755	109,061	C
Manufacturing Location 2	20,050	20,075	(25)	C
Engineering	161,066	157,866	3,200	C
Other Direct	4,000	19,000	(15,000)	D
General & Administrative:				
Division	252,346	165,271	87,075	E
Corporate	---	25,916	(25,916)	E
Independent Research and Development	5,840	1,752	4,088	F
Excess Material Costs	---	(36,000)	36,000	G
Totals	$ 2,021,118	$ 1,800,635	$ 220,483	

Description	Amount
Outside services contracted by Electro charged as materials but should be charged as 'other direct'	$ 15,000
Prior year cost charged to contracts in prior year	2,000
Material purchases not benefiting BODE contracts but charged thereto	1,000
Travel not allowed per terms of the contracts but charged as material	2,000
Equipment rentals not allowed per contractual terms but charged as materials	2,000
Total Material Adjustment in Exhibit IV	$ 22,000

Schedule B - Labor

As Exhibit IV discloses, there were no audit adjustments to Electro's claimed labor costs. A primary reason for no adjustments being necessary can be attributed to Electro's control of labor by departments and BODE's work being performed in a limited number of departments. Also, in most departments where BODE's work was performed, a large percent of each department's work was on BODE's contracts only.

The absence of audit adjustments does not mean there were no problems encountered by the auditors. In this particular audit, considerable difficulties occurred in locating all of the time cards for certain periods. Also, payroll summaries and time cards were not sufficiently reconciled throughout all of the fiscal year. Auditors were, however,

able to satisfy themselves as to the validity of the direct labor charges.

Schedule C - Overhead

Adjustments to Electro claimed overhead charges were the result of applying audited overhead rates to the audited bases instead of Electro's rates. Exhibit V and its supplementary schedules provide a full explanation of adjustments made to the overhead pools and allocation bases as well as the derivation of audited overhead rates.

Specifically, the audit adjustments were computed as shown below.

Manufacturing Overhead

Claimed by Electro at Location 1:		$657,816
Direct Labor per audit	$480,000	
Overhead rate per Exhibit V	114.324%	548,755
Audit Adjustment		$109,061
Claimed by Electro at Location 2:		$ 20,050
Direct Labor per audit	$ 20,000	
Overhead rate per Exhibit V	100.375%	20,075
Audit Adjustment		$(25)

Engineering Overhead

Claimed by Electro		$161,066
Engineering Labor per audit	$ 80,000	
Overhead rate per Exhibit V	197.333%	157,866
Audit Adjustment		$ 3,200

Schedule D - Other Direct

See Schedule A - Outside contracted services charged as materials	$ 15,000

Schedule E - General and Administrative (G & A)

General and administrative expense adjustments reflect the application of audited G & A rates to the audited distribution base, which is cost of goods manufactured in this case. Adjustments to the division and corporate G & A pools, allocation bases, and the derivation of G & A rates are provided in Exhibit V.

Differences between audited and contractor claimed G & A expenses are the result of the following computations.

Division G & A

Claimed By Electro		$252,346
Cost of goods manufactured for BODE contracts per audit	$1,607,696	
Audited G & A rate per Exhibit V	10.28%	165,271
Audit Adjustment		$ 87,075

Corporate G & A

Claimed by Electro		$ -0-
Cost of goods manufactured for BODE contracts per audit	$1,607,696	
Audited G & A rate per Exhibit V	1.612%	25,916
Audit Adjustment		$(25,916)

Schedule F - Independent Research and Development (I R & D)

Adjustments to contractor claimed I R & D expenses stem primarily from adjustments made to the I R & D pool and allocation base as shown in Exhibit V. The specific audit adjustment to costs claimed by Electro follows.

I R & D costs claimed by Electro		$ 5,840
Cost of goods manufactured for BODE contracts per audit	$1,607,696	
Audited I R & D rate per Exhibit V	.109%	1,752
Audit Adjustment		$ 4,088

Schedule G - Special Material Adjustment

The special adjustment for material costs ($36,000) is the result of a dispute between BODE and Electro on the cost of a component part used in assembling the product covered by the contracts under audit. The component part in question was initially purchased by Electro from an outside source. During the term of contract performance, Electro stopped purchasing the part from an outside source and began procuring the part from one of its own facilities at a distant location. The change in supply source resulted in a substantial cost increase for the part, which BODE auditors disallowed as being excessive and not substantiated by Electro's production and cost data.

Electro took the position that quality problems had been experienced with the outside vendor, and a change in the supply source was necessary. Furthermore, Electro argued that BODE had agreed to the change in the supply source.[3] Upon making the change in source no agreement was

[3]The Electro position was ascertained from information contained in a June 19, 1972, letter from Electro's Controller to the BODE buyer administering the Electro contracts.

reached with BODE on the manner in which the new cost of the part would be handled, and no change in the total contract amount was made. Electro felt the costs charged for the component part to BODE's contracts were fair and reasonable.

BODE contended that the change in the supply source was to be made without an increase in cost. First, subsequent to making the source change, Electro submitted a bid on a new fixed-price contract that included a quotation of $1 per unit for the part in question. The $1 per unit cost was also the quotation included in the cost proposal for the CPFF contracts under audit. BODE learned of Electro's claimed increase in costs during the course of the fiscal 1971 audit. Second, a test of Electro's production costs on the component part revealed fluctuations of monthly unit cost from a low of $3.20 to a high of $7.70 with no explanation of the per unit cost variation offered by Electro. Daily production runs were normal for the product, and wide cost fluctuations would not normally be expected.

During fiscal 1971, Electro used an average of the high and low production costs ($5.45) as the unit price for charging BODE's contracts. During the same period, Electro was charging fixed-price contracts for the same part at $.83 per unit. As a result of its findings, BODE auditors reverted to the cost of $1 included in the original cost proposal--and available from an outside source--as the unit cost to be allowed in costing its contracts.

Explanation of Indirect Expense Audit Adjustments

In arriving at audited rates for applying indirect expenses to contracts, numerous adjustments to Electro's cost data were necessary. These adjustments are separated into two parts--indirect cost pools and allocation bases. The adjustments are identified and discussed according to the audit adjustment numbers provided in Exhibit V on page 122.

Indirect Cost Pools

The cost pools summarized in Exhibit V were the only ones utilized by Electro for the purpose of allocating indirect costs to individual contracts. Due to the mix of commercial-defense business, it was necessary for Electro to make numerous worksheet reallocations of certain indirect costs, e.g., fringe benefits and occupancy costs, prior to determining final cost balances. After Electro's reallocations, BODE auditors found it necessary to make further adjustments to final cost pool totals.

Adjustment No. 1. Unallowable costs eliminated from the three overhead pools were of two types. Entertainment was not an allowable cost under ASPR procurement regulations and was specifically eliminated in total. Foreign travel was an acceptable contract cost only if prior approval from BODE's contracting officer was obtained before its

EXHIBIT V

COMPUTATION OF AUDITED INDIRECT EXPENSE RATES
FISCAL YEAR 1971

Audit Adj. No.	Description	Manufacturing Overhead Electro Location One	Manufacturing Overhead Electro Location Two	Engineering Overhead	General and Administrative Field Engineering	General and Administrative Division	General and Administrative Corporate	IR&D Applicable to BODE
	Expenses Per Contractor	$3,000,000	$800,000	$300,000	$500,000	$1,000,000	$ ---	$ 60,000
	Contractor Adjustment:							
	Reallocation of Depreciation	15,000	2,000	2,000	(10,000)	2,000	---	---
	Expenses as Adjusted	$3,015,000	$802,000	$302,000	$490,000	$1,002,000	$ ---	$ 60,000
	Audit Adjustments:							
1	Unallowable Expenses	$ (20,000)	$	$ (3,000)	$	$ (40,000)	$	$
2	Reclassify Direct to Overhead	10,000						
3	Non-benefiting Indirect Labor	(20,000)						
4	Reclassification to Engineering	(1,000)		1,000				
5	Reclassify Overhead to Direct	(40,000)		(5,000)		(10,000)		
6	Prior Year Expenses Accrued	(8,000)						
7	Reclassify Corporate G & A					(181,640)	181,640	
8	Reclassify to Division G & A				(12,000)	12,000		
9	Expense Capitalized					(2,000)		
10	Reclassify Division G & A	2,000	1,000	1,000	1,000	(5,000)		
11	Discounts & Other Income					(6,000)		
12	Eliminate Depreciation on Certain Location One Assets	(400,000)						
13	Eliminate Field Engineering				(479,000)			
14	Adjustment to Audited Expense						(61,000)	
	Overhead on IR&D Projects:							
15	Engr. Labor $20,000 @197.333%							39,467
15	Mfg. Labor $40,000 @114.324%							45,730
15	G & A on IR&D Projects @11.892%							19,320
15	IR&D Not Applicable to BODE Projects							(156,517)
	Expenses per Audit	$2,538,000	$803,000	$296,000	$ ---	$ 769,360	$ 120,640	$ 8,000
	Allocation Base per Contractor	2,200,000	800,000	150,000	---	7,000,000	7,000,000	7,000,000
	Audit Adjustments:							
16	Labor Reclassification to Direct	20,000						
17	Reclass. of Certain Divn. G & A					5,000	5,000	5,000
18	Add Field Engineering					479,000	479,000	479,000
19	Eliminate R&D Expense from R&D Base							(140,000)
	Allocation Bases per Audit	$2,220,000	$800,000	$150,000	$ ---	$7,484,000	$7,484,000	$7,344,000
	Indirect Expense Rates per Contractor	137.045%	100.250%	201.333%	---	14.314%	---	---
	Indirect Expense Rates per Audit	114.324%	100.375%	197.333%	---	10.280%	1.612%	0.109%

incurrence. Since prior approval was not obtained, all foreign travel was eliminated from the indirect cost pools.

Adjustment No. 2. Travel costs were normally classified as indirect costs in Electro's accounting system. However, the amount involved in Adjustment No. 2 was charged directly to BODE's contracts. Such a procedure was inconsistent within Electro's system and required the elimination of travel as a direct charge with a corresponding addition to the proper overhead pool.

Adjustment No. 3. Labor costs for certain part-time employees were classified as an indirect expense solely on the basis that the employees were not working full time. The functions performed by these employees were the same as other employees whose labor costs were classified and charged as direct expenses. The procedure followed by Electro for these part-time employees was inconsistent with its normal practices. The audit adjustment was made to eliminate the appropriate part-time labor costs from manufacturing overhead and to add the same amount to the direct labor base.

Adjustment No. 4. The reclassification adjustment from manufacturing overhead to engineering overhead reflects a distinction necessary for certain types of engineering expenses. When separate pools for manufacturing and engineering overhead are maintained, consistency of costs classifications between the two pools must be maintained.

Otherwise, overhead rates of the pools are affected by shifting expenses from one pool to the other, and individual contracts often have different percentages of participation in individual cost pools. In this instance, the audit adjustment was necessary to correct for the charging of support-type engineering expenses into the manufacturing overhead pool.

Adjustment No. 5. Due to the unique nature of certain requirements in BODE's contract with Electro, a prior agreement was reached between the parties concerning special treatment for particular types of costs. Because of exacting requirements in certain areas of BODE work, e.g., materials, machines, inspection, etc., the agreement called for direct charging of these costs to BODE contracts although they were normally treated as indirect costs in Electro's system.

The audit adjustment indicated in Exhibit V was necessary to eliminate a double charge for the same types of costs. Electro failed to remove from the appropriate overhead pools costs normally classified as indirect but charged directly to BODE's contracts. Elimination of these costs from the affected overhead pools prevented BODE contracts from receiving both a direct and indirect charge for the same types of costs.

Adjustment No. 6. Certain expenses accrued and included in indirect manufacturing costs at the end of fiscal

year 1970 were included in expenses again when paid during fiscal year 1971. Such a procedure obviously resulted in the double inclusion of the same items of expense in two successive fiscal years and was not an acceptable practice. Errors of this type by Electro indicated a weakness in its accounting system and raised questions concerning the overall accuracy of results produced by the accounting function.

Adjustment No. 7. The corporate home office billed the Electro division for corporate G & A expenses which were subsequently paid and recorded as division G & A by Electro. BODE required a separate division and corporate G & A rate based upon actual allowable G & A expenses at both the division and corporate level. Thus, corporation G & A expenses billed to the electronics division were removed from the divisional G & A pool and included in the corporate G & A pool.

Adjustment No. 8. Services of a general administrative nature were included in the field engineering cost pool. In order to maintain consistency in classifications, this expense was removed from field engineering and included in division G & A. Also, the adjustment was necessary in order to arrive at the correct total in the division G & A pool for rate determination purposes.

Adjustment No. 9. Expenses of a capital nature were removed from the G & A pool and disallowed as a current expense item. Electro followed an overall corporate policy

of capitalizing all single expenditures in excess of $700 and benefiting more than one fiscal year. The item expensed in this instance was not consistent with the general corporate policy normally followed by Electro.

Adjustment No. 10. Certain employee fringe benefits were charged to various individual cost centers. In order to treat all employee fringe benefits on the same basis, it was necessary to remove these expenses from the division G & A pool and include the appropriate accounts in the manufacturing, engineering, and field engineering cost pools.

Adjustment No. 11. Miscellaneous income items were not credited to various expense accounts but were classified as other income. Due to the mixed nature and immateriality of individual items comprising the other income total, e.g., scrap sales, discounts earned, etc., the balance was deducted in total from division G & A. Theoretically, individual amounts of miscellaneous income should have been credited to the various overhead pools consistent with the income sources. However, due to the immateriality of the amounts, crediting the total against division G & A was considered to be both expedient and fair to the contract parties.

Adjustment No. 12. The elimination of depreciation on certain Plant 1 equipment arose from an agreement between Electro and BODE. In order to facilitate development and production of the items called for in the CPFF contracts, a

special facility was provided by Electro at a new Plant Location 2. In addition to providing for more efficient performance of the contracts, the new Plant Location was expected to create less interference with Electro's commercial work and free Plant Location 1 from the accounting requirements of cost-type work.

Plant Location 2 was initially established in a leased facility furnished 100% with BODE equipment. The facility then operated as a department doing all of its work on BODE contracts. A subsequent management change resulted in closing Plant 2 and moving all BODE owned equipment to Plant 1. As a result of the move, it was necessary to restructure Electro's chart of accounts, realign direct-indirect cost classifications, etc.

Since BODE owned all of the equipment used in producing the product procured under its contracts, no further equipment depreciation was to be included in the Plant 1 manufacturing overhead pool. Electro claimed such a practice was inconsistent with practices for other indirect manufacturing costs and included equipment depreciation in the manufacturing overhead pool for Plant 1.

BODE's engineers examined a sixty-page list of equipment utilized in Electro's Plant 1 operations. From this list, it was determined that only a few items of Electro owned equipment were beneficial to the performance of BODE's contracts. As a result of their findings, BODE auditors eliminated the depreciation shown in Exhibit V from the

Plant 1 manufacturing overhead pool.

Adjustment No. 13. Field engineering expenses were considered by BODE auditors as sales related expenses and not an allowable contract charge under either its contract terms or the appropriate procurement regulations. Electro claimed the cost pool consisted primarily of administrative people vital to the existence of the company and was a type of cost to be shared by all its customers.

When Plant Location 2 was in operation, Electro's employees involved in contract administration were considered indirect charges, but BODE was purchasing 100% of the work performed at Location 2 and fully absorbing this type of cost. Therefore, upon relocation to Plant 1, BODE agreed to accept the contract administration people plus applicable overhead as a direct charge. Thus, no further allocation of costs to BODE for this type of service was deemed necessary for performance of its contracts, and the entire field engineering cost pool was eliminated for indirect cost allocation purposes.

Adjustment No. 14. Corporate G & A expenses applicable to Electro, as noted in Adjustment No. 7, were established as a separate G & A pool. The $61,000 adjustment was necessary to reduce the pool balance to the audited total of $120,640 as shown in Exhibit V. The manner in which the audited corporate G & A pool was determined is detailed below.

Corporate G & A per Electro		$ 840,000
Audit Adjustments:		
Credit miscellaneous income	$(160,000)	
Unallowable costs per ASPR	(54,000)	
Federal income taxes	(76,000)	
Personal compensation not incl.	8,000	(282,000)
Total G & A pool as adjusted		$ 558,000
Corporate Sales		$37,000,000
Corporate G & A rate based upon sales		1.508%
Electro Division Sales		$ 8,000,000
Corporate allocation to Electro Division - 1.508% X $8,000,000		$ 120,640

Adjustment No. 15. BODE agreed to share in I R & D expenses of Electro to the extent such expenses benefited BODE contracts. In computing the total I R & D pool in which BODE would participate, it was first necessary to load the labor contained in the pool with its share of manufacturing, engineering, and G & A overhead. The I R & D pool balance applicable to BODE contracts was then adjusted to the audited amount of $8,000 derived in the following manner.

Engineering Labor		$ 2,405
Engineering overhead at 197.333%		4,745
Sub-total		$ 7,150
Division G & A at 10.28%	$ 735	
Corporate G & A at 1.612%	115	850
Total I R & D applicable to BODE		$ 8,000

Allocation Bases

The allocation bases shown in Exhibit V were utilized to determine Electro's indirect expense rates. Direct labor costs were utilized as the base for manufacturing overhead at Plant Locations 1 and 2. Engineering labor served as the basis for determining an engineering overhead rate while

cost of goods manufactured was the basis used in determining indirect expense rates for division G & A, Corporate G & A, and I R & D. Adjustments to the indirect expenses bases are explained below.

Adjustment No. 16. This adjustment was the reclassification of labor as explained in Adjustment No. 3 relating to the indirect manufacturing cost pool for Plant 1.

Adjustment No. 17. Expenses classified as G & A should have been included in other overhead pools. The adjustment was necessary in order to properly classify these expenses as a part of cost of goods manufactured. Also, see Adjustment No. 10 which removed these costs from the division G & A pool.

Adjustment No. 18. Field engineering expenses, which were eliminated as a separate overhead pool by Adjustment No. 13, were added to Electro's computation of cost of goods manufactured. BODE auditors felt that the contents of the field engineering expense pool included the type of expenses that should be a part of the cost of goods manufactured total prior to its use as an allocation base. The effect of the adjustment was to increase the base amount for determining both G & A and I R & D indirect expense rates.

Adjustment No. 19. Included in the cost of goods manufactured total were I R & D expenses. Therefore, prior to determining an I R & D rate, it was necessary to remove

I R & D expenses from the cost of goods manufactured total. Electro's I R & D expenses, prior to any overhead loading, totaled $140,000. Removal of I R & D expenses from the cost of goods manufactured base had the effect of decreasing the base for determining the I R & D indirect expense rate.

Audit Results Summary

Exhibit IV disclosed a substantial difference between fiscal year 1971 costs claimed by Electro and costs properly chargeable to BODE's contracts as determined by an audit. The $220,483 difference between claimed and audited costs represented 10.91% of total costs claimed by Electro and 12.24% of total acceptable costs determined by BODE auditors.

Electro did not agree with the audit results except for obvious errors made in recording and classifying data and disallowances particularly mentioned in the procurement regulations. Specifically, Electro did not agree with the adjustments BODE auditors made to the manufacturing, field engineering, and G & A overhead costs pools. The foundation for Electro's disagreement with BODE's audit results relied primarily upon the equitableness and reasonableness of the costs claimed.

BODE auditors defended their audit adjustments, except for obvious recording and classification errors and specific procurement regulation disallowances, upon the unreasonableness and nonbenefiting nature of certain costs. Material costs were claimed to be excessive in amount, and both the

manufacturing and engineering overhead pools contained many costs that were either not beneficial to BODE's contracts or resulted in double charges to the contracts.

At this writing, the disagreements between Electro and BODE had not been resolved and will likely go to litigation. The inability of the parties to reach an agreement on their differences can be attributed to numerous factors, primary of which are (1) differences of opinions on the proper costing procedures to follow and (2) either the vagueness or total absence of guidance in costing matters as currently provided in defense procurement costing guidelines.

Case Evaluation of the Qualitative Objectives of the Framework

Fairness

Evaluating a fairness concept was difficult to achieve on the basis of the Electro Case. Difficulties were encountered for two primary reasons. First, fairness was not an apparent issue except in those costing areas where problems or disagreements were present. Second, when fairness appeared as a primary issue, other terminology, e.g., reasonable, equitable, etc., was used by both contract parties. Therefore, fairness was construed to have implicit connotations by the parties as opposed to an explicit meaning that could be used to support a position.

Electro's interpretation of fairness centered around its recovery of all costs that could, in any way, be related

to performing BODE contracts. Evidence of this position can be taken from the manner in which Electro selected indirect cost pools and allocation bases so that BODE's cost-type contracts would receive the greatest charges. When costs were disallowed for reasons other than errors or violations of procurement regulations and contract agreements, Electro argued for their allowance on the basis of the reasonableness of the costs. Therefore, it appeared Electro construed fairness to mean the acceptance of all reasonable costs as valid contract charges.

In a March, 1972, letter Electro's controller informed the BODE buyer managing the contracts that Electro's position was not in agreement with the material costs disallowances made by BODE auditors. The controller supported the material charges as being reasonable which, in his opinion, meant the costs were necessary, met a prudent businessman test, and were sound, established business practices. Such a statement can be interpreted as part of an overall concept of fairness, which was the controller's basis of contention for recovering the material costs.

The general approach of BODE auditors for determining acceptable contract costs was, as would be expected, a strict adherence to procurement regulations and specific contract terms. Yet, procurement regulations did not provide sufficient guidance in many areas, and auditors were required to exercise personal judgment in ascertaining acceptable contract costs. Lack of guidance in procurement regulations

and reliance on individual judgment were evident in examining correspondence related to disagreements on disallowed costs. In some instances, specific regulation sections were quoted as the basis for a disallowance; yet, in many instances, a specific regulation could not be given and auditors' judgments were the sole basis for the disallowances.

When exercising personal judgment in costing matters, the term "fairness" did not appear in the auditors' correspondence or workpapers. However, a fairness concept was clearly practiced under the disguise of other accounting jargon. Informal conversation with each BODE auditor resulted in unanimous agreement that fairness was a viable accounting concept in applying individual judgment to determining costs of defense contracts. When asked what fairness meant, representative comments were:

> Consistency of application that does not prejudice either party to the contract.
>
> A system resulting in equitable treatment to both parties.
>
> A concept whereby neither party to the contract obtains undue advantage over the other.
>
> Relates to a uniform or consistent treatment of any element of cost without consideration for the effect it may have on the net results to any specific project.
>
> Mutual agreement between the buyer and supplier for the allocation of charges.
>
> Treating like charges to different projects in the same manner.

Fairness was found to be a significant objective of

both Electro and BODE during contract performance, especially in attempting to settle disputes in areas not adequately covered by procurement regulations. A primary problem was encountered in specifically identifying the existence of a fairness concept due to the use of other terms, i.e., reasonable, equitable, mutual benefit, etc. A workable definition of fairness for contract costing would be difficult to prescribe. Yet, the partial surrogates for fairness suggested in this study--accuracy, comparability, objectivity, and verifiability--collectively possess the essential elements of a fairness concept, and each is capable of implementation via cost accounting standards.

Accuracy

Electro's accounting system placed minimal emphasis on the cost accounting function. For example, job order costing was required on BODE contracts, but was not utilized for any other work. Also, except for BODE contracts, time distributions were not maintained in the cost system. Electro's lack of emphasis on the costing function was likely a contributing factor to the many inaccuracies found in the system.

To BODE auditors, accuracy was a primary criterion for evaluating results of Electro's costing process. Accuracy in recording and assigning costs was considered to be of utmost importance since recorded costs and their ultimate allocation serve as a basis for arriving at the

consideration to be paid Electro. Without accuracy throughout the costing system, the use of cost-reimbursement contracts is seriously impeded.

During the course of BODE's audit, which utilized various tests of the accounting records, numerous accounting errors were detected. Of these, some could be classified as clerical or procedural while others were by-products of an incomplete or inadequate system for utilizing cost-reimbursement contracts. Thus, the degree of accuracy within Electro's overall system was difficult to assess, especially in attempting an overall evaluation of the fairness of the total costing process.

In Electro's accounting system, accuracy was lacking in two primary areas. First, the cost system itself was not sufficiently detailed and complete to produce accurate results. Second, within the system utilized, the accounting function was not carried out in a manner contributing to accurate results. Consequently, the general lack of accuracy in the costing system (1) made the auditing effort more difficult and time consuming; (2) aroused suspicion of costs charged to specific contracts; and (3) created serious difficulties in making an overall evaluation of the fairness of results produced by the accounting system.

The case revealed two aspects of an accuracy concept significant in costing defense contracts. First, a costing system must be sufficiently complete to produce factual data and designed with intentions of producing mutually fair

results. Second, regardless of the cost system, its functional aspects must be carried out substantially error free in order to gain reliability in its output. An adequate cost system is of utmost importance in producing accurate cost data, and the importance of recommendations for a cost system made in Appendix D are strengthened by the Electro case.

Comparability

Comparability, as set forth in the conceptual framework in Chapter III, pertains to comparing cost data between companies and within a single company. Comparison of cost data between companies has primary significance in determining if the data is derived on the basis of similar cost concepts and procedures. Comparability of cost data within a single firm relates principally to methods used for deriving data submitted in a cost proposal for contract negotiations and their subsequent comparison with methods actually used in costing the contracts.

The Electro Case presented a limited opportunity to evaluate the comparability concept in terms of its presence or absence as it existed among contractors, because there was no opportunity to determine if cost data submitted by Electro was comparable (in an accounting sense) with cost data submitted by other contractors. Based upon conversations between the writer and BODE auditors and buyers, substantial comparability of cost data submitted by different

contractors was never very likely. The primary reason given was the divergencies in methods of accounting for indirect costs; however, substantial differences were also encountered in accounting for direct materials and labor.

Comparability of cost data submitted by Electro in the contract proposal and subsequent costing of contracts existed but with some notable exceptions. After establishing a second plant location, Electro attempted to combine manufacturing overhead for both plants and establish one indirect manufacturing cost rate that could be applied to direct labor for work performed at either plant. Such a procedure can result in work performed at one of the plant locations absorbing a disproportionate share of indirect manufacturing costs--especially if one plant is working near full capacity and the other plant contains substantial idle capacity. Also, due to Electro's lack of utilizing similar cost accounting procedures and records for both cost-type and commercial work, it was difficult to compare costing results of the two different classes of work.

Comparability was found to be a desirable and necessary ingredient to the total contracting and costing processes. The existence of comparability among contractors would have been beneficial to the purchasing function by permitting the buyer to compare price quotes from different contractors followed by a subsequent comparison of audited costs with the accepted price quote. Whenever comparability of cost data was present, especially between defense and commercial

work, it facilitated the audit function in comparing costing methods for different classes of work.

Objectivity

Instances of both the existence and absence of objectivity in the costing and subsequent audit of BODE's contracts were evident. For the most part, results of the audit substantiated the existence of objectivity in assigning direct costs to contracts. This situation would normally be expected as direct costs are supported by documented evidence.

An exception to the existence of objectivity in this case was the disallowance of excess material costs by the auditors. The manner in which certain materials were charged and subsequently adjusted indicated the existence of personal bias on the part of both Electro and BODE. Electro's assignment of certain materials costs to CPFF contracts at $5.45 per unit while charging fixed-price contracts for the same material at $.83 per unit was an obvious attempt to assign excess costs to cost-type contracts. On the other hand, BODE's auditors arrived at an acceptable cost of $1 per unit, the amount at which material was quoted in Electro's proposal, when information in the hands of the auditors indicated Electro's actual cost was in excess of $1 per unit. Since the contracts were of a cost-reimbursement type, BODE was exercising a bias in disallowing all costs in excess of $1 per unit.

In the area of indirect costs Electro did not appear to be objective in establishing overhead pools and allocation bases. Their primary concern seemed to be a search for a method whereby the maximum amount of costs could be charged against cost-type contracts. BODE's auditors took a more objective approach in attempting to establish indirect cost rates that would reflect the facts of the situation and result in Electro's recovering a fair share of its indirect costs on cost-type contracts. Yet, the imprecise nature in which indirect cost pools and allocation bases were selected made an overall objectivity evaluation of indirect cost assignments difficult. That is, reasoning for the selections were judgmental and not empricial.

During the course of the case study, objectivity was found to exist in varying degrees on the part of both BODE and Electro. Yet, neither party referred directly to the term throughout the processes of costing, auditing, or negotiating differences. Instead, objectivity was often viewed in a negative sense. For example, statements were made by both parties accusing the other of being biased, prejudiced, etc., instead of accusations that a party was not objective.

One of the problems in evaluating objectivity was that the concept tends to connote "total" objectivity. As a practical matter, when determining an amount to pay or be paid, "total" objectivity is not likely to exist. At the same time, without "substantial" objectivity, it would be

difficult for contract parties to mutually agree on cost determinations. "Substantial" objectivity can be achieved by demonstrating a desire to achieve fairness to the contract parties and developing and implementing costing methods as free of personal biases as is possible.

Verifiability

Verifiability problems were encountered in varying degrees throughout the audit of costs assigned to BODE contracts. Direct costs, which are expected to be readily verifiable by the examination of supporting source documents, lacked supportive evidence in several instances. Some direct labor costs were either not documented or considerable difficulties were encountered in locating all the time cards. This type of condition necessitates time consuming auditing effort which might even result in disallowances of legitimate contract costs. Material costs were readily verifiable except for the one situation involving a change in the supply source for a component part from an outside vendor to an Electro plant at a distant location. In this situation, the contractor simply could not submit sufficient verifiable data supporting the material costs claimed. Whenever direct costs cannot be readily verified by examining supporting evidence, they are likely to be disallowed as a contract charge.

The verification procedure for indirect costs was much more subjective than that followed for direct costs.

Verifiability of indirect costs involved not only determining the validity of costs contained in the various cost pools, but also involved the reasoning supporting the selection of the various pools and their related allocation bases. Personal judgment was a primary factor in the selection of indirect cost pools, their content, and their allocation bases. No reasons were given by Electro for the pool selections used nor were the selections questioned by BODE auditors, other than the adjustments shown in Exhibit V. Verifiability of indirect cost charges was largely limited to determining the content of the pools in a broad sense and the accuracy of the allocation bases.

Verifiability of costs under cost-type contracts was found to have meaningful applications in several areas. First, it is a requisite for cost-type contracts as it provides the means by which costs can be accepted on the contracts. Second, it provides an avenue for both the contractor and procuring agency to gain assurance that all detailed activities of the contractor have been accounted for in performing the contracts. Third, it provides a medium for gaining confidence in the fairness of cost data and their disposition by supplying a technique for judging the accuracy and objectivity with which the data were derived.

Case Evaluation of the Cost Measurement and Allocation Concepts of the Framework

Business Continuity

For the most part questions of business continuity did not arise in the case study, and the concept was generally adhered to throughout the accounting function. For example, fixed assets were depreciated and other outlays benefiting more than one accounting period were amortized over their expected useful lives. Yet, there were two exceptions to a continuity assumption noted during the course of the case study.

The first involved the current expensing of a capital expenditure for tooling. The type of tooling involved was expected to benefit more than one type of contract over a several year period, and its cost should have been capitalized and depreciated over its expected useful life. The second involved the closing of Plant 2 and the move to Plant 1. The costs directly incurred in the move, all down-time costs incurred during the move, and set-up costs at the new location were charged to overhead and allocated to all work during the fiscal year of the move. Questions could have been raised relative to the long-term benefits of the move and the capital nature of the moving costs. These two exceptions point out the significance of a strict adherence

to the business continuity assumption and the ease with which it can be violated.

The case study revealed that business continuity was a valid concept in costing defense contracts and received its primary application in two areas. The first concerned current expensing of long-lived assets, which required giving consideration to physical and economic lives, special conditions shortening or prolonging assets' lives, rapid tax write-offs, etc. The second involved the effect of fluctuations in business activity on periodic costs. In applying a continuity assumption for current cost determinations, a firm's past and future intentions with respect to business volume, products, product lines, etc., must be viewed within a time frame greater than a single accounting period. Otherwise, indirect cost rates might fluctuate widely over relatively short periods of time. This situation could result in disparate contract charges for indirect costs when individual contracts are performed in different time frames.

Accounting Period

In most instances, Electro closely followed an accounting period concept. There was, however, one notable exception. Plant 2 was closed during Electro's fiscal period, but a separate manufacturing overhead rate was not calculated for the period Plant 2 was in operation. If undetected, Electro's procedure would have resulted in a substantial difference in charges to BODE contracts for

manufacturing overhead.

The approach used by Electro illustrates why an accounting period concept must take on a meaning that departs from a normal fiscal period if the circumstances dictate that a departure is necessary. In Electro's situation, its management attempted to combine the overhead pools and direct labor bases of both Plants 1 and 2 for fiscal year 1971. BODE auditors disapproved of the procedure and forced Electro to change its practice before submitting a 1971 cost claim. Had such a procedure been permitted, the manufacturing overhead cost rate for 1971 would have been 110.629% for all work instead of 114.324% for Plant 1 and 100.375% for Plant 2, a difference of 10.254% for Plant 2 work.

Using the above data, it becomes obvious that work performed and completed in Plant 2 before its closing should absorb a lower manufacturing overhead rate than work performed in Plant 1. The combined single rate for the fiscal year was a function of the work mix between Plants 1 and 2. The appropriate accounting period for Plant 2 ran from the beginning of the year to the time Plant 2 was closed. In this particular instance, two accounting periods were appropriate for the same contractor--a period shorter than the firm's fiscal year for Plant 2 and its regular fiscal year for all other work.

The case study showed that an accounting period concept comprises a significant element in an overall contract

costing framework. The accounting period selected can create wide fluctuations in indirect cost rates over relatively short periods of time. For example, if a very large contract were performed in a short time, a large increase in the allocation base could cause a substantial drop in the indirect cost rate over the period of contract performance. Accounting periods were found to exist for (1) the contractor's fiscal year; (2) the period of contract performance during a fiscal year; and (3) the period of contract performance with no regard for fiscal years. Normally, a contractor's fiscal year can be expected to yield accurate and fair results, but cognizance should be given to situations that call for accounting periods over time frames other than a normal fiscal year.

Singularity

During the 1971 fiscal year, the singularity concept was violated by Electro in its method of treating travel expenses, part-time labor, and special direct charges resulting from a prior agreement with BODE. In each instance, the results were to charge BODE contracts twice for the same types of costs.

The nature of the violations was to include in indirect cost pools those types of costs already being charged directly to BODE contracts. Failure to remove the types of costs charged directly to contracts from all indirect cost

pools in which the contracts participated resulted in double charges to BODE's contracts.

Reasons for the existence of double charging were difficult to determine. Whether they were by error or design could not be readily determined from the accounting data examined. When costs normally treated as indirect charges are charged directly, it becomes necessary for contractors to make adjustments for the changes. A normal procedure is to use work sheet adjustments for removing the types of indirect costs charged directly from appropriate indirect cost pools. This approach prevents contractors from having to alter their overall system of cost accumulations and classifications. If contractors fail to make the necessary adjustments for deviations from their normal system, a violation of the singularity concept is likely to occur. In other words, contractors must make a special effort to prevent double charging whenever cost treatments are altered for only a part of their overall system.

Singularity in assigning costs to its contracts was a primary concern of BODE auditors. The concept is one which must be closely adhered to throughout the costing process if fairness is to be achieved. Awareness of the double-charging problem and the ease with which it can occur was a significant factor in detecting its presence. Likewise, consideration of a singularity concept in developing costing guidelines would be a major factor in its prevention.

Consistency

During the case development, exceptions to the consistency concept were noted in the classification of direct and indirect costs, pooling of indirect costs, and charging of costs to fixed-price and cost-reimbursement contracts. Loss in accuracy of cost data was the usual result of inconsistent costing practices. Furthermore, comparability and verifiability of the data were made more difficult since cost accumulations and allocations were not carried out for all functions on the same basis.

No exceptions were noted to interperiod consistency, but the examination of costing data for only one fiscal year, as was done in this case, would not likely detect nonconformance to interperiod consistency even if it existed. The exceptions noted involved intraperiod consistency, both intraproject and interproject.

Intraproject consistency was violated by (1) inconsistent direct-indirect classifications of labor charges within the same lines of work; (2) classification of the same types of expenses differently among indirect cost pools; and (3) inconsistent classification of labor fringe costs within a single cost pool. Interproject consistency was violated by not using the same methods for determining material costs charged to different classes of work, e.g., CPFF and fixed-price contracts.

The case study upheld consistency as an essential concept throughout the contract costing process. Also, the

concept was found to have serious implications for auditing contract costs. Whenever inconsistent costing methods were used, analyses of cost data were made with increased difficulty. In addition, consistency violations made it hard for auditors to gain confidence in the contractor's cost data in terms of its fairness as valid contract charges. Therefore, consistency in cost determinations, classifications, summarizations, and allocations must be considered an essential ingredient for an overall costing framework.

Direct Costs

In addition to the types of costs ordinarily considered direct in a manufacturing process, e.g., labor and materials, Electro charged other costs directly to BODE's contracts. Prior approval was secured from BODE to treat overtime on direct labor as direct charges as well as certain travel and capital equipment purchases used exclusively for work on BODE's contracts. No specific criteria for determining a direct charge were apparent other than to charge as many costs directly as possible.

No attempts were made by Electro to charge labor fringe costs or material overhead directly to contracts. Actually, there was little need for such procedures in this particular case since Plant 2 was used entirely for BODE work prior to the move to Plant 1. Subsequent to the move to Plant 1, a change in direct-indirect cost classifications would have been difficult to accomplish during the fiscal year due to

commercial and other contract work already performed in Plant 1 prior to closing Plant 2.

Although Electro attempted to charge as many costs directly as possible, problems were created in doing so. Whenever a particular type cost is charged directly to a contract, all like costs must be (1) charged directly to other cost objectives or (2) work sheet adjustments prepared removing the like costs from indirect cost pools and including them in appropriate allocation bases. In this case, a costing problem was created when BODE agreed to accept certain equipment costs as a direct charge then refused to allow depreciation on other equipment to be included in the manufacturing overhead pool. By accepting what were normally indirect expenses as direct charges, adjustments to the appropriate overhead pools were necessary to prevent double charging, but Electro failed to make the adjustments prior to submitting a cost claim for 1971.

Within practical limitations, benefits from direct assignment of costs were numerous in terms of accuracy and overall fairness achieved. However, the case study also revealed that deviations from an accounting system for only some of the cost objectives, especially where a defense-commercial production mix existed, created serious problems and inaccuracies in the overall accounting results. For example, charging specific types of costs directly to defense contracts without treating all like costs as direct charges throughout the system can result in double charges

to defense work. This type of problem could have been prevented by treating all costs consistently throughout the system or preplanning exceptions so that appropriate work sheet adjustments could have been made prior to calculating indirect cost rates.

Within practical limitations, associating as many costs as possible with specific objectives is a desirable attribute in costing defense contracts. In Electro's situation, adherence to the framework components of direct cost, consistency, and singularity, coupled with the system requirements set forth in Appendix D, would have eliminated a substantial number of the costing problems and errors encountered in their system.

Indirect Costs

The approach utilized by Electro for determining and accumulating indirect costs followed a traditional approach of assigning all costs not classified as direct into various indirect cost pools. Little effort was expended in determining the general behavior of indirect costs and their specific relationships along functional lines such as engineering, research, and different manufacturing functions. Indirect costs, even though significant in relation to total costs, tended to be viewed as necessary costs that must ultimately be assigned somewhere by the most expedient means available.

Homogeneity of Cost Groupings

Electro's indirect costs were accumulated in broadly based pools with little or no regard to the homogeneity of the costs making up the pools. For example, final indirect cost pools were (1) manufacturing overhead; (2) engineering overhead; (3) field engineering; (4) general and administrative; and (5) independent research and development. The only intermediate level cost pool utilized for accumulating indirect costs to be subsequently allocated to final indirect cost pools was for occupancy costs. Included in the occupancy pool were charges for building depreciation, property taxes, insurance, repairs and maintenance to the building, and security. Occupancy charges were allocated to final indirect cost pools on the basis of floor space occupied.

The cost pools utilized were sufficiently broad to enhance the likelihood that they contained many heterogeneous costs. Subsequent to the closing of Plant 2, greater homogeneity in the pools and increased accuracy of indirect cost assignments could have been enhanced by separating the cost pools for (1) commercial work only; (2) defense work only; and (3) mix of commercial-defense work.

On the basis of the data available, no determination could be made as to the degree of homogeneity that did or did not exist. But it was evident from examining the limited number of pools utilized that greater accuracy could be

achieved by breaking the pools down into smaller components along functional lines. However, the benefits gained in terms of accuracy and fairness to final cost objectives would have to be weighed against increased accounting costs.

The case study disclosed that homogeneity might be satisfied at the operating level without a strict theoretical interpretation of the concept. Some cost pools can contain elements of costs not homogeneous in nature yet possess a common relationship to a single allocation base. An example would be in the area of occupancy costs. An occupancy pool might contain maintenance labor (a form of indirect labor), janitorial supplies (outside purchased materials), building depreciation (amortization of a capital expendtiture), and subcontracted repairs (outside purchased services). The pool would contain individual cost elements somewhat diverse in nature that could be properly grouped and allocated on a square footage occupied basis. Homogeneity would be satisfied in this situation since each element in the pool would have a common relationship to the allocation base although not to each other. Therefore, homogeneity in cost pools must be judged in relation to the allocation base to be used and not as an isolated pool of costs.

Proper Allocation Base

Indirect cost pool allocation bases utilized by Electro were (1) direct labor for manufacturing overhead; (2)

engineering labor for engineering overhead; and (3) cost of goods manufactured for G & A and I R & D. The bases were chosen, not because they were necessarily the primary causal determinants for the various indirect cost pools, but because they were the most readily available. No attempts were made to utilize regression analysis or other quantitative techniques for demonstrating what the relationships between the cost pools and allocation bases were. Instead, it was assumed, through judgment or casual observation, that the bases chosen were sufficiently related to the cost pools to produce fair and accurate results.

The allocation bases utilized for manufacturing and engineering overhead were neither specifically supported by Electro nor questioned by BODE auditors. The bases were commonly used throughout the industry and Electro used them even though the bases could produce inaccurate results in specific situations. In Electro's case, numerous adjustments to direct labor costs were necessary before total labor bases could be determined. Required adjustments were attributed to some departments including fringes and overtime in their direct labor costs while other departments excluded those items from direct labor.

Only with proper testing and experimentation would it be possible to determine if an allocation base produced the most accurate results in a given situation. For example, when a particular operation or department has high machine costs, e.g., computer time, and relatively low labor costs,

a machine hours allocation base would likely yield more accurate results than a labor base. To undertake this type of analysis, it is necessary to have all the relevant data for arriving at alternative bases. The work papers and files related to the Electro Case did not contain sufficient data for determining alternative bases. From available case information, it appeared that primary attention was focused on the contents of the pools and bases with little attention directed toward the relationships between them. This condition signifies a need to place more emphasis on the selection of allocation bases and their relationships to indirect cost pools if benefits from restructuring cost pools and allocation bases are to be known.

Summary

In general, the Electro Case provides a valid illustration of the types of problems encountered in costing defense contracts, and the difficulties of procuring agencies in determining costs to be accepted on cost-type contracts. A primary factor contributing to many of the problems in this case was the inadequacy of Electro's cost accounting system, especially where defense and commercial production was mixed. Another significant factor contributing to problems encountered in assigning costs to individual contracts was the lack of sufficient guidance in the procurement regulations--a condition that might have encouraged Electro to assign costs benefiting its best interest. Likewise,

BODE auditors often tended to follow a procedure of interpreting the regulations to the Government's advantage. The final outcome produced many disagreements between the parties with no discernible basis for negotiating the differences.

Cost accounting standards developed according to the framework suggested in this study would rectify many of the problems noted in the case study. Costing standards developed with objectives in mind, as proposed by the qualitative objectives in the framework, would provide direction and cohesion in costing guidelines currently lacking in procurement regulations. Cost measurement and allocation concepts proposed in the framework provide the reasoning upon which individual detailed cost accounting standards can be founded.

Improvement or solutions to most of the problems noted in Electro's case would be eliminated by adhering to the proposed costing framework. Although many of the framework components can be directly related to individual problems encountered by Electro in costing, or BODE in auditing the costs, most of Electro's problems would have been rectified by conforming to standards developed within the proposed framework. Specifically, primary problems detected involved the following areas: (1) objectivity; (2) verifiability; (3) singularity; (4) direct-indirect distinctions; (5) allocation base; (6) consistency; and (7) cost system deficiencies. Each of the forenamed problem areas, except

for cost system deficiencies, received special attention in the costing framework developed in Chapter III. Although requirements for a cost system were not made a part of the framework, the subject is included as a part of Appendix D.

CHAPTER V

SUMMARY AND CONCLUSION

Summary of the Study

Purpose

This study was undertaken to develop concepts useful for assigning costs to defense contracts then structuring the concepts into a framework that can provide guidance during the formulative stages of developing cost accounting standards. Past approaches to internal costing problems involving defense contracts have largely taken a pragmatic viewpoint with little attention focused on the conceptual aspects of the problems. The primary objective of this study was to identify those concepts necessary for assigning costs to defense contracts then organize them into a logical framework.

Approach

A literature review and field study were undertaken to ascertain concepts for inclusion in the framework. The literature was first examined to determine past and current practices in costing defense contracts, types of problems encountered, and expectations for the future. The

literature was then searched for accounting principles, procedures, and concepts that could be formulated into a generalized framework for assigning costs to specific cost objectives--namely defense contracts. Elements vital to the framework were extracted from the literature and later supplanted, modified, or supplemented by a field study. The final framework is the product of the literature review, the field study, and the author's own experiences in the defense contract costing field.

From the contract cases reviewed in the field study, one representative case was selected and written up as a case study. The case write-up provided a real-world depiction of contract costing problems encountered by both a procuring agency and a defense contractor. In addition, the case write-up supplied a means of demonstrating the soundness of the costing framework.

Summary of the Framework Components

Fairness

An objective of any contractual arrangement between the Government and a firm in private industry should be fairness to both parties. Fairness is an especially important objective in defense procurement because of the Government's desire to maintain a broad industrial base to supply its needs and industry's desire to supply defense goods and services.

Procurement by way of cost-type contracts places special emphasis on an attitude of fairness by both contract parties. The price for these types of contracts is ultimately determined by those costs properly assignable to them. To prevent excess contractor profits, the Government wants assurance that it is accepting only its fair share of contractor costs. At the same time, contractors must recover all reasonable costs of contract performance and earn a profit in order to remain in business. A uniform guideline for determining costs assignable to cost-type contracts is likely to receive acceptance from both the Government and contractors only if an attitude of fairness from each party prevails.

It is difficult to define fairness in contract costing with a great deal of preciseness. Its accomplishment is largely dependent upon successfully achieving the partial surrogates of accuracy, comparability, objectivity, and verifiability in contract costing matters. Accomplishing these objectives via cost accounting standards will make significant contributions toward assuring fairness in assigning costs to contracts.

Accuracy

Accuracy in the accounting processes is a requisite to accomplishing fairness in assigning costs to individual contracts and is of two dimensions. First, an accounting system must be designed to produce accurate results within the

purposes for which the system is designed. That is, the accounting processes must be formulated in a manner that will encourage eventual assignment of costs to their rightful places. Second, the system must be operated in a manner that yields accurate and reliable data free from mistakes and errors.

Comparability

Comparability of cost data is an essential requirement for achieving an overall goal of fairness. In placing negotiated contracts, comparability of data among suppliers is necessary in making placement decisions; however, comparability receives its greatest application in matters related to internal costing practices used by each contractor.

It is necessary that costs assigned to contracts be determined by methods comparable to data derived for contract negotiations. Otherwise, there is no basis to compare costs assigned with methods utilized for negotiation purposes. Comparability of this type can best be achieved by requiring a disclosure statement from each contractor which sets forth his proposed costing methods then demanding use of the same methods in subsequent costing practices.

Objectivity

Cost systems employed for costing defense contracts must be designed and operated in an unbiased manner if

fairness in contract costing is to be achieved. Personal biases on the part of either contract party will likely lead to unfair treatment to one of the parties.

Where costs are matters of empirical fact and the relationship between a cost and a cost objective is known, e.g., direct labor, personal biases are easily detected. But when indirect cost allocations are made or nonhistorical costs are used, personal judgments are necessary and empirical facts might be inadequate or missing altogether. In such instances, objectivity is a product of decisions made in light of existing economic circumstances and may need to be substantiated by an independent group of observers.

Verifiability

Verifiability relates to the process of examining evidence supporting a given course of action. It provides an essential ingredient to a fairness determination in specific situations. Evidence provides a means of support for taking an action whether it is making a direct charge for material or formulating judgments for pools to be used in indirect cost accumulation and allocation. Verifying contract charges through examination of supporting evidence provides one means of judging the fairness of the charges and also fulfills the statutory requirements for accepting costs assigned to individual contracts.

Business Continuity

Business continuity is a normal assumption for most accounting entities and is also valid for costing defense contracts. It serves as the basis for allocating costs among accounting periods as well as their allocation to various objectives within a single period.

There are, however, exceptions to a continuity assumption as it is normally applicable to a firm as a whole. The amount of work to be performed under defense contracts is often uncertain and terminations can occur within a short period of time. Under conditions of contract termination a view of business cessation is appropriate for determining total costs of the terminated contracts. The preferred approach is to follow the concepts of venture accounting where all costs incurred for the benefit of the venture, i.e., a terminated contract, are charged to it without conforming to a continuity assumption.

Accounting Period

An accounting period concept comprises a significant element in the overall contract costing process. For most firms, a calendar or fiscal year is the normal accounting period for determining costs and revenues from operations. It is also the normal period for making internal cost allocations to specific accounting objectives, such as defense contracts.

The uniqueness and uncertainties permeating many contract costing situations often call for approaches to an accounting period differing from a contractor's normal fiscal period. Individual circumstances might dictate an accounting period longer than a normal accounting year or comprise only part of the year. It is important to select a period that accurately reflects existing circumstances and conditions in order that allocation bases and other cost determination and allocation methods can be properly applied.

Singularity

It is unfair to charge a single cost objective twice for the same type of cost, and the procedure should not be an accepted costing practice. The concept of singularity in contract costing dictates that a type of cost charged directly to a contract must be removed from an indirect cost pool in which the direct-charged contract will participate. Such a procedure will prevent double charges to contracts that often occur when contractors' systems are altered to meet special contractual requirements.

Consistency

The need for consistency throughout contract bidding, negotiation, and costing is prevalent throughout cost-type contract procurement. Consistency provides the means for

evaluating the adequacy of most cost estimating and actual costing procedures.

Interperiod consistency is necessary for providing comparability of costs on a period-to-period basis. Interproject consistency is essential for determining if costs are assigned to all internal projects on the same basis and, if not, whether the methods used produce accurate and fair results.

Direct Costs

Capability of charging as many costs as possible directly to cost objectives increases the efficiency and accuracy of most cost systems. A primary requisite to determining direct costs is a detailed explanation of each cost objective within the total costing system. It is then possible to charge certain costs directly according to the traceability characteristics of the costs and their identification with individual cost objectives.

In addition to costs normally charged directly because of their traceability characteristics, e.g., labor and material, costs related to labor and material should also be charged directly. These would include labor fringe and material related costs. Such a procedure increases the overall accuracy in cost assignments and lessens the amount of costs in the indirect pools.

Indirect Costs

Indirect costs are normally a substantial part of contractors' total costs, and many costing problems are created in the accumulation and allocation of these costs. After all costs with traceability characteristics sufficient to do so are charged directly, the residual costs are of an indirect nature and produce a jointness of benefits to two or more cost objectives. Assigning indirect costs to the various cost objectives requires pooling and allocating the costs according to the concepts of homogeneity and proper allocation base.

Homogeneity of Cost Groupings

Pooling and allocating indirect costs are essentially averaging processes. Aggregating the costs into pools normally requires a process whereby costs included in each pool are highly correlated with the base over which they are to be allocated.

A normal expectation is that costs homogeneous in nature can be properly allocated using a single allocation base. However, costs not homogeneous in nature might be related to a common determinant to an extent that also permits their allocation over a single base. Relationships of costs to their determinants and the pools to be used can be determined by observation, judgment, or statistical analysis, depending upon the complexity of each situation.

Proper Allocation Base

The processes of pooling indirect costs and selecting a base for their allocation are closely related functions. The allocation base is the medium whereby indirect costs are assigned to individual cost objectives. The major goal in selecting a base is to assign indirect costs on the basis of their most causative factor.

Criteria for selecting allocation bases have not been well established. Many companies separate fixed and variable costs to assist in selecting better allocation bases while other companies do not find such a separation useful. The result is that readily available bases are often chosen without complete knowledge of their relationship to the pools they are to allocate.

Allocation bases must be selected within each firm according to its organization structure and cost behavior patterns. The number of pools, allocation bases, causative relationships, etc., can only be determined by research and experimentation with those factors affecting each firm's production mixes and cost structure.

Conclusion

The concepts developed in this study are intended to fulfill the requirements needed for developing cost accounting standards. To be useful, the concepts must be utilized in the formulative stages of cost accounting standards.

Collectively, the concepts comprise a framework that can be useful in providing guidance for developing standards with a goal of accomplishing intended objectives.

The historical development of guidelines for costing defense contracts has lacked conceptual considerations for either the purposes of the guidelines or their content. Much of the writing in the contract costing area has been directed at individual problems viewed in isolation. Research in the contract costing field has been practially nonexistent, especially from the standpoint of the accounting concepts involved.

The framework should prove useful for developing cost accounting standards in two primary areas. First, it provides broad qualitative objectives to which the standards can be directed. Second, the framework provides the costing concepts that should be considered in formulating the standards. Utilization of a framework setting forth the objectives of contract costing and concepts for their accomplishment should lead to the development of a set of cohesive contract costing standards.

The great diversity in defense products and services procured by the Government coupled with the varied characteristics of supplier firms creates numerous difficulties in developing a single set of costing guidelines. Yet, such guidelines are being developed by CASB and will be applicable to a broad range of industries and types of business units. The value of the conceptual framework developed in

this study rests with its implementation through cost accounting standards developed by CASB in accordance with the framework's provisions. In this way, desired objectives in costing defense contracts will be accomplished as the standards are implemented.

Suggestions for Further Research

During the course of this study, several areas in which further research is needed were noted. Primary among them are:

(1) Study of the results of incorporating price-level changes into cost determinations for cost-type defense contracts. Included would be methods of determining capital utilized for contract performance and appropriate rates to be applied to the derived capital base.

(2) Determining the effect, if any, on the cost behavior patterns of firms performing cost-reimbursement contracts as opposed to comparable firms not doing cost-type work.

(3) Further study into more clearly defined notions of profits on defense contracts and the effect of unallowable costs on contractor profits.

(4) Examination of the various indirect cost pools and allocation bases currently utilized. Such

a study would include the effects of fragmenting the pools and bases as opposed to broadly based pools, or possibly one combined indirect cost rate including G & A costs.

(5) Related to item (4), the possibility of costing defense contracts by assigning direct costs plus a fixed percent developed along industry lines should be explored.

(6) The role of research and development as well as bid and proposal costs and methods for their recovery in defense contracts should be studied.

(7) Further testing of the generalized framework should take place via in-depth case studies of individual contractors to determine if the framework is lacking in any essential element.

(8) Additional study and development of individual framework components as they are applicable to the field of cost accounting.

(9) Further study of contractors' cost systems, their differences, and similarities in order to determine the possibility of any degree of standardization.

(10) A study of current procurement regulations dealing with costing matters. Such a study would place primary emphasis on developing more explicit contractor guidelines and

consolidating all agency requirements into one regulation.

(11) A study of defense contractors to determine if internal behavioral problems are encountered in developing and implementing procedures for costing defense contracts that are not in agreement with contractors' regular costing practices for commercial work.

(12) The framework components should be tested against cost accounting standards already put into force by CASB as well as standards in the proposal (draft) stage.

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APPENDIX A

CASE STUDIES SUMMARY

The purpose of this appendix is to provide a documentation of both published and field cases reviewed in detail during the course of this study. A categorical classification of topic areas taken from the cases testifies to the repetitive nature of cost accounting "trouble areas" in defense contract costing. Accordingly, this writer concluded that the write-up and analysis of one case study in Chapter IV is sufficient to adequately demonstrate the findings of the case reviews.

Published cases reviewed were taken from Board of Contract Appeals (BCA), Volumes 1965-1 thorugh 1972-1, published by Commerce Clearing House. These volumes consist primarily of the Armed Services Board of Contract Appeals (ASBCA) cases but also include the following:

Interior Department Board of Contract Appeals (IDBCA)
National Aeronautics and Space Administration Board of Contract Appeals (NASABCA)
General Services Administration Board of Contract Appeals (GSABCA)
Atomic Energy Commission Board of Contract Appeals (AECBCA)
Corps of Engineers Board of Contract Appeals (COEBCA)
Post Office Department Board of Contract Appeals (PODBCA)
Department of Transportation Contract Appeals Board (DOTCAB)
Department of Agriculture Board of Contract Appeals (DOABCA)
Veterans Administration Contract Appeals Board (VACAB)

Primary emphasis was directed toward ASBCA cases, but other Boards' decisions were reviewed whenever the cases were pertinent to internal contract costing problems.

Since BCA cases covered numerous topics, an attempt was made to limit the case reviews to areas concerned with

costing problems. To do so, the topical index of each volume was scrutinized in order to select cases pertinent to this study. A categorization of the published cases examined is provided later in this appendix.

Data for the field cases were taken directly from company files of the field study firm. Annual reports of all the firm's supplier audits for the 1968-1972 period were reviewed in order to select cases for a detailed examination. For each of the cases selected from the initial review of audit reports, a follow-up conference was held with the auditor in charge of the engagement and the Auditing Department manager. The purposes of the conferences were to determine (1) if the cases selected by this writer were representative of the types of costing issues and problems indicated in the audit report and (2) if there were other cases which had not been selected that should be reviewed as representative examples of contract costing problem areas. Over the term of the field study, conferences were held with all auditors in a managerial position (Department Manager, Division Managers, and Senior Auditors) as well as most audit staff personnel.

The cases reviewed, both published and live, are categorized according to topic areas which comprise the majority of contract costing problems. While most of these topics relate specifically to costs and their allocation, some involve issues of a qualitative nature that can affect costing practices in individual circumstances. Each category is

assigned an index letter to provide a cross-reference from each case to the categorical listing. Case category classifications used are:

(A) Equitable considerations in cost assignments, e.g., fairness, reasonableness, benefits, etc.

(B) Accounting Period

(C) Double Charging (Singularity)

(D) Consistency

(E) Direct-Indirect Cost Distinctions

(F) Indirect Cost Pools
- (F-1) Manufacturing
- (F-2) Engineering
- (F-3) General & Administrative
- (F-4) Bid & Proposal
- (F-5) Independent Research & Development
- (F-6) Other

(G) Allocation Bases

(H) Unallowable Costs

(I) Capital-Expense Distinction

(J) Depreciation Amounts and Methods of Computing including Lease v. Ownership Costs

(K) Prior Agreements and Contractual Interpretations affecting Costing Methods

Published Cases

Published cases reviewed are listed below in alphabetical order. The sequence of each listing is (1) the categorical classification(s); (2) the name of the case; (3) the BCA volume in which the case appears; (4) the docket number; and (5) the date of the decision. The cases are:

(J) Aerojet General Corp.; 70-1; ASBCA No. 13930; 9-29-70.

(B) American Scientific Corp.; 67-2; IDBCA No. 576-666; 10-31-67.

(B) Associated Aero Service Laboratories, Inc.; 67-2; ASBCA No. 12139; 10-4-67.

(H) AVCO Corp.; 66-1; ASBCA No. 10858; 1-22-66.

(A,F,G) The Boeing Co.; 69-2; ASBCA No. 11866; 9-5-69.

(D,G) The Boeing Co.; 70-1; ASBCA No. 11866; 5-26-70.

(D,E,F-2) Coleman Engineering Co.; 65-1; ASBCA No. 9478; 2-26-65.

(F-3,G) Curtiss-Wright Corp., Wright Aeronautical Division; 65-2; ASBCA No. 9032; 7-9-65.

(A) Fairchild Hiller Corp., Republic Aviation Division; 68-1; ASBCA No. 12538; 4-25-68.

(D,E,K) General Precision Inc., Librascope Division; 67-2; ASBCA No. 11968; 11-16-67.

(C,D,E) Hurd-Darbee, Inc.; 68-2; ASBCA No. 12928; 11-26-68.

(B,D) Johnston Laboratories; 70-2; AECBCA No. 79-5-70; 10-15-70.

(A,G) Litton Systems, Inc.; 66-1; ASBCA No. 10395; 5-18-66.

(C,D,E) Maney Aircraft Parts, Inc.; 67-2; ASBCA No. 12123; 8-1-67.

(J) Manlabs, Inc.; 69-1; ASBCA No. 12389; 1-23-69.

(E,F-3,G,H) Martin Marietta Corp.; 71-1; ASBCA No. 14159; 3-16-71.

(A,F-2,G) McDonnell Douglas Corp.; 69-2; ASBCA No. 12639; 12-19-69.

(A) Merritt-Chapman & Scott Corp.; 68-1; VACAB No. 610; 4-29-68.

(I,J) Mite Corp; 66-2; ASBCA Nos. 10021, 100232, 100233; 12-21-66.

(B) Nash-Hammond, Inc.; 71-2; ASBCA No. 15563; 11-15-71.

(D) Peninsular Chemresearch, Inc.; 71-2; ASBCA No. 14384; 8-30-71.

(K) Royson Engineering Co.; 70-2; ASBCA No. 13926; 11-30-70.

(C,E) Sherkade Construction Corp.; 68-2; DOTCAB No. 68-29; 10-30-68.

(D,F,G) E. B. Steele Co., Inc.; 66-1; ASBCA No. 10785; 6-28-66.

(G) Univac Division, Sperry Rand Corporation; 70-2; ASBCA No. 13588; 10-29-70.

(H) Arthur Venneri Co.; 70-2; DOTCAB No. 67-30; 9-15-70.

(C,E,F) Webster-Martin, Inc.; 70-1; IDBCA No. 778-5-69; 2-11-70.

(J) Lowell O. West Lumber Sales; 67-1; ASBCA No. 10879; 1-18-67.

(D,G,H) Wolf Research & Development Corp.; 68-2; ASBCA No. 10913; 8-30-68.

(G) Zero Manufacturing Co.; 70-2; ASBCA No. 14558; 9-25-70.

Field Study Cases

From the audit cases reviewed during the field study, in consultation with BODE's Auditing Department management and staff, this writer selected the cases listed below and subjected them to a detailed review. Based upon the observed areas in which costing problems appeared in the cases they were classified according to the same categories as the published cases. The sequence of each case listing is (1) the categorical classification(s); (2) the name of

the contractor; and (3) the fiscal period(s) examined. The field study cases examined are:

(H,J)	Arnold Engineering Co.; 1969, 1970
(G,F-1, F-3)	Bunker Ramo Corp.; 1969, 1970.
(C,F-1, F-6, G,K)	Bendix Corporation, Electronics Components Division; 1970, 1971, 1972.
(D,F-1,F-3, F-5,G)	Catalyst Research Corp.; 1969.
(F-1,F-4)	Cornell Aeronautical Labs, Inc.; 1971.
(A,B,C,D,E, F-1,G,H)	Deutsch Co., Filtors Division; 1969, 1970, 1971.
(F-1,F-3, F,H)	EG&G, Inc.,; 1969.
(F-1,F-3,G)	Eagle-Picher Industries, Inc.; 1969.
(F-1,F-3)	Fansteel Metallurgical Corp.; 1968, 1969.
(C,F-4,F-5, H)	Gulton Industries, Inc.; 1970, 1971, 1972.
(F-5,G)	Hamilton Watch Co.; 1970.
(F-3,F-4,G)	Honeywell, Inc., Ordnance Division; 1970, 1971.
(F-4,F-5,G)	Kaiser Aerospace & Electronics; 1968, 1969.
(A,C,D,E F-1,F-2,G)	Melabs, Inc.; 1970.
(C,F-2,F-3,G)	Raymond Engineering Lab., Inc.; 1970, 1971, 1972.
(F-4)	Raytheon Co.; 1970.
(F-1,F-3,H)	Systrom-Donner Corp.; 1970.
(F-1,F-6,G)	Texas Instruments; 1969.
(F-1,G)	Western Gear Corp.; 1970.
(F-2,F-4, F-5,G)	Xerox Corp., Electro Optical Systems Division; 1968, 1969.

From the above listing, one case was selected and developed into a case study in Chapter IV. The case selected, given the fictitious name of Electro in Chapter IV in order to maintain anonymity, was picked on the basis of its completeness and representation of the other cases reviewed. Also, in the opinion of BODE's auditors, the Electro case provides a fair depiction of the overall character of the modus operandi in costing defense contracts. Although numerous cases could be utilized to depict individual areas of contract costing, the primary problems and issues are brought forth in the Electro case. In the opinion of this writer, gains to be made in additional case write-ups are more than offset by the duplications that would arise.

APPENDIX B

PUBLIC LAW 91-379

Public Law 91-379
91st Congress, S. 3302
August 15, 1970

An Act

To amend the Defense Production Act of 1950, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Defense Production Act of 1950, amendment.

TITLE I — DEFENSE PRODUCTION ACT AMENDMENTS

§ 101. Extension of Act

The first sentence of section 717(a) of the Defense Production Act of 1950 (50 U.S.C. App. 2166(a)) is amended—

Ante, p. 694.

(1) by striking out "August 15, 1970" and inserting in lieu thereof "June 30, 1972"; and

(2) by striking out "section 714" and inserting in lieu thereof "sections 714 and 719".

Infra.

§ 102. Definitions

Section 702 of the Defense Production Act of 1950 (50 U.S.C. App. 2152) is amended—

64 Stat. 815; 67 Stat. 130.

(1) by inserting "space," after "stockpiling," in subsection (d); and

(2) by adding at the end thereof a new subsection as follows:

"(f) The term 'defense contractor' means any person who enters into a contract with the United States for the production of material or the performance of services for the national defense."

"Defense contractor."

§ 103. Uniform cost-accounting standards

Title VII of the Defense Production Act of 1950 is amended by adding at the end thereof a new section as follows:

82 Stat. 279. 50 USC app. 2151-2167.

"COST-ACCOUNTING STANDARDS BOARD

"Sec. 719. (a) There is established, as an agent of the Congress, a Cost-Accounting Standards Board which shall be independent of the executive departments and shall consist of the Comptroller General of the United States who shall serve as Chairman of the Board and four members to be appointed by the Comptroller General. Of the members appointed to the Board, two, of whom one shall be particularly knowledgeable about the cost accounting problems of small business, shall be from the accounting profession, one shall be representative of industry, and one shall be from a department or agency of the Federal Government who shall be appointed with the consent of the head of the department or agency concerned. The term of office of each of the appointed members of the Board shall be four years, except that any member appointed to fill a vacancy in the Board shall

84 Stat. 796
84 Stat. 797

serve for the remainder of the term for which his predecessor was appointed. Each member of the Board appointed from private life shall receive compensation at the rate of one two-hundred-sixtieth of the rate prescribed for level IV of the Federal Executive Salary Schedule for each day (including traveltime) in which he is engaged in the actual performance of duties vested in the Board.

80 Stat. 461; 83 Stat. 864. 5 USC 5315 and note.

"(b) The Board shall have the power to appoint, fix the compensation of, and remove an executive secretary and two additional staff members without regard to chapter 51, subchapters III and VI of chapter 53, and chapter 75 of title 5, United States Code, and those provisions of such title relating to appointment in the competitive service. The executive secretary and the two additional staff members may be paid compensation at rates not to exceed the rates prescribed for levels IV and V of the Federal Executive Salary Schedule, respectively.

5 USC 5101, 5361, 7501; 35 F. R. 6247.

"(c) The Board is authorized to appoint and fix the compensation of such other personnel as the Board deems necessary to carry out its functions.

"(d) The Board may utilize personnel from the Federal Government (with the consent of the head of the agency concerned) or appoint personnel from private life without regard to chapter 51, subchapters III and VI of chapter 53, and chapter 75 of title 5, United States Code, and those provisions of such title relating to appointment in the competitive service, to serve on advisory committees and task forces to assist the Board in carrying out its functions and responsibilities under this section.

5 USC 5101, 5361, 7501; 35 F. R. 6247.

"(e) Except as otherwise provided in subsection (a), members of the Board and officers or employees of other agencies of the Federal Government utilized under this section shall receive no compensation for their services as such but shall continue to receive the compensation of their regular positions. Appointees under subsection (d) from private life shall receive compensation at rates fixed by the Board, not to exceed one two-hundred-sixtieth of the rate prescribed for level V in the Federal Executive Salary Schedule for each day (including traveltime) in which they are engaged in the actual performance of their duties as prescribed by the Board. While serving away from their homes or regular place of business, Board members and other appointees serving on an intermittent basis under this section shall be allowed travel expenses in accordance with section 5703 of title 5, United States Code.

80 Stat. 463; 83 Stat. 864. 5 USC 5316 and note.

"(f) All departments and agencies of the Government are authorized to cooperate with the Board and to furnish information, appropriate personnel with or without reimbursement, and such financial and other assistance as may be agreed to between the Board and the department or agency concerned.

80 Stat. 499; 83 Stat. 190.

"(g) The Board shall from time to time promulgate cost-accounting standards designed to achieve uniformity and consistency in the cost-accounting principles followed by defense contractors and subcontractors under Federal contracts. Such promulgated standards shall be used by all relevant Federal agencies and by defense contractors and subcontractors in estimating, accumulating, and reporting costs in connection with the

Standards, promulgation.

84 Stat. 797
84 Stat. 798

pricing, administration and settlement of all negotiated prime contract and subcontract national defense procurements with the United States in excess of $100,000, other than contracts or subcontracts where the price negotiated is based on (1) established catalog or market prices of commercial items sold in substantial quantities to the general public, or (2) prices set by law or regulation. In promulgating such standards the Board shall take into account the probable costs of implementation compared to the probable benefits.

Cost-accounting methods, advance disclosure by defense contractors.

"(h)(1) The Board is authorized to make, promulgate, amend, and rescind rules and regulations for the implementation of cost-accounting standards promulgated under subsection (g). Such regulations shall require defense contractors and subcontractors as a condition of contracting to disclose in writing their cost-accounting principles, including methods of distinguishing direct costs from indirect costs and the basis used for allocating indirect costs, and to agree to a contract price adjustment, with interest, for any increased costs paid to the defense contractor by the United States because of the defense contractor's failure to comply with duly promulgated cost-accounting standards or to follow consistently his disclosed cost-accounting practices in pricing contract proposals and in accumulating and reporting contract performance cost data. Such interest shall not exceed 7 per centum per annum measured from the time such payments were made to the contractor or subcontractor to the time such price adjustment is effected. If the parties fail to agree as to whether the defense contractor or subcontractor has complied with cost-accounting standards, the rules and regulations relating thereto, and cost adjustments demanded by the United States, such disagreement will constitute a dispute under the contract dispute clause.

Interest ceiling.

Exemption.

"(2) The Board is authorized, as soon as practicable after the date of enactment of this section, to prescribe rules and regulations exempting from the requirements of this section such classes or categories of defense contractors or subcontractors under contracts negotiated in connection with national defense procurements as it determines, on the basis of the size of the contracts involved or otherwise, are appropriate and consistent with the purposes sought to be achieved by this section.

Proposed standards, transmittal to Congress.

"(3) Cost-accounting standards promulgated under subsection (g) and rules and regulations prescribed under this subsection shall take effect not earlier than the expiration of the first period of sixty calendar days of continuous session of the Congress following the date on which a copy of the proposed standards, rules, or regulations is transmitted to the Congress; if, between the date of transmittal and the expiration of such sixty-day period, there is not passed by the two Houses a concurrent resolution stating in substance that the Congress does not favor the proposed standards, rules, or regulations. For the purposes of this subparagraph, in the computation of the sixty-day period there shall be excluded the days on which either House is not in session because of adjournment of more than three days to a day certain or an adjournment of the Congress sine die. The provisions of this paragraph do not apply to modifications of cost accounting standards, rules, or regulations which have become effective in conformity with those provisions.

Publication in Federal Register.

"(i)(A) Prior to the promulgation under this section of rules, regulations, cost-accounting standards, and modifications thereof, notice of the action proposed to be taken, including a description of the terms and substance thereof, shall be published in the Federal Register. All parties affected thereby shall be afforded a period of not less than thirty days after such publication in which to submit their views and comments with respect to the action proposed to be taken. After full consideration of the views and comments so submitted the Board may promulgate rules, regulations, cost-accounting standards, and modifications thereof which shall have the full force and effect of law and shall become effective not later than the start of the second fiscal quarter beginning after the expiration of not less than thirty days after publication in the Federal Register.

84 Stat. 798.
84 Stat. 799.

"(B) The functions exercised under this section are excluded from the operation of sections 551, 553-559, and 701-706 of title 5, United States Code.

80 Stat. 381, 392.

"(C) The provisions of paragraph (A) of this subsection shall not be applicable to rules and regulations prescribed by the Board pursuant to subsection (h)(2).

Records, availability.

"(j) For the purpose of determining whether a defense contractor or subcontractor has complied with duly promulgated cost-accounting standards and has followed consistently his disclosed cost-accounting practices, any authorized representative of the head of the agency concerned, of the Board, or of the Comptroller General of the United States shall have the right to examine and make copies of any documents, papers, or records of such contractor or subcontractor relating to compliance with such cost-accounting standards and principles.

Report to Congress.

"(k) The Board shall report to the Congress, not later than twenty-four months after the date of enactment of this section, concerning its progress in promulgating cost-accounting standards under subsection (g) and rules and regulations under subsection (h). Thereafter, the Board shall make an annual report to the Congress with respect to its activities and operations, together with such recommendations as it deems appropriate.

Appropriation.

"(l) There are authorized to be appropriated such sums as may be necessary to carry out the provisions of this section."

APPENDIX C

CONCEPT OF COST FOR DEFENSE CONTRACT COSTING PURPOSES

Cost is a generic term and often has meaning only when related to qualifying adjectives such as historical, imputed, decision, standard, etc. Little preciseness can be attached to the term except when reference is made to a specific circumstance. The term is often used, however, as though some uniform agreement exists as to its meaning. A brief review of the literature clearly illustrates an obvious lack of total agreement on a definition.

Some of the more notable cost definitions include the following:

> Broadly defined, cost is the amount of bargained-price of goods or services reviewed or of securities issued in transactions between indpendent parties.[1]
>
> Cost is a foregoing, a sacrifice made to secure benefits, and is measured by an exchange price.[2]
>
> Cost is the amount, measured in money, or cash expended or other property transferred, capital stock issued, services performed, or a liability incurred, in consideration of goods or services received or to be received.[3]
>
> For business purposes, cost is a general term for a measured amount of value purposefully released or to be released in the acquisition or creation of economic resources, either tangible or intangible. Normally it is measured in terms of a monetary sacrifice involved. There is, however,

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[1]W. A. Paton and A. C. Littleton, An Introduction to Corporate Accounting Standards (Evanston, Ill., 1970), p. 24.

[2]Robert T. Sprouse and Maurice Moonitz, "A Tentative Set of Broad Accounting Principles for Business Enterprises," Accounting Research Study No. 3 (New York, 1962), p. 8.

[3]Paul Grady, "Inventory of Generally Accepted Accounting Principles," Accounting Research Study No. 7 (New York, 1965), p. 228.

> nothing to prevent its measurement in other terms nor to prevent the adjustment of monetary sacrifices to common units of purchasing power.[4]
>
> Basically, cost is measured by the current value of the economic resources given up or to be given up in obtaining the goods and services to be used in operations; this is the value in exchange.[5]
>
> Cost can be defined in several ways--for example, as the amount of money that would be required to acquire assets currently (replacement cost) or as the return from alternative uses of assets, such as selling them (opportunity cost). However, "cost" at which assets are carried and expenses are measured in financial accounting today usually means historical or acquisition cost because of the conventions of initially recording assets at acquisition cost and of ignoring increases in assets until they are exchanged (the realization convention). The term cost is also commonly used in financial accounting to refer to the amount at which assets are initially recorded, regardless of how the amount is determined.[6]

For the most part, the above definitions are consistent with an interpretation of "cost" as "historical cost." The lack of a specific definition of cost is not due so much to disagreements among members of the accounting profession as it is to economic realities. A specific concept of cost is necessarily dependent upon all the surrounding circumstances within which cost is to be measured, and the specific

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[4]Committee on Cost Concepts and Standards, "Tentative Statement of Cost Concepts Underlying Reports for Management Purposes," The Accounting Review, XXXI (April, 1956), p. 182.

[5]Elden S. Hendriksen, Accounting Theory, Rev. ed. (Homewood, 1970), p. 181.

[6]American Institute of Certified Public Accountants, "Basic Concepts and Accounting Principles Underlying Financial Statements of Business Enterprises," Statement of the Accounting Principles Board No. 4 (New York, 1970), p. 64.

purpose for which the measurement is required.

Without a specific definition of cost or criteria for determining its meaning in different situations, problems encountered in accounting for cost-reimbursement defense contracts lead directly to the question "What is Cost"? When one party is to reimburse another party on the basis of cost, it is imperative that some definitional agreement exist between them. Otherwide, it is difficult to see how a meeting of the minds can take place in negotiationg a contract or how disputes on costing matters can be settled without often resorting to litigation.

Due to different cost constructions for different purposes, a single concept of cost does not and probably cannot exist. Such a condition necessitates different cost constructions for different purposes. Costing defense contracts is one area where a specific concept of cost is needed. Current ASPR regulations infer the use of historically incurred costs for contract costing, but as noted in Chapter II, limited uses of imputed costs in special situations are also permitted. One can only conclude that no single concept of cost can be extracted from current ASPR costing guidelines.

The contention in this study is that a workable concept of cost for defense contracting purposes can be set forth. Basically, the concept consists of historical costs modified by (A) Imputed Costs and (B) Adjustments for Price-Level

changes. Each of these modifications to historical costs is discussed below.

(A) Imputed Costs. Historically, accountants have omitted imputed costs from the accounts and closely adhered to practices of recording only costs actually incurred. The contention here is not that imputed costs should be included in the accounts--only that they be considered a valid defense contract cost. Current ASPR regulations permit contractors' recognition of certain imputed costs, e.g., costs for fully depreciated assets and entrepreneurial salaries, but omit the significant area of imputed interest.

Accountants have argued the question of imputed interest for many years without resolving the issue. In discussing this controversial area, Neuner stated:

> . . . it must be pointed out here that interest on investments is one of those doubtful items which must be omitted from cost for some purposes and must be included in cost for other purposes. The items to be included in or excluded from cost depend entirely upon the purpose for which the cost figure is to be used.[7]

Imputed interest on capital assets is commonly considered a cost in pricing situations. The same viewpoint can be taken in costing defense contracts. For example, in assigning costs to cost-reimbursement contracts all costs charged to the contract are a part of the contract price, i.e., total contract price includes total costs plus a negotiated

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[7]John J. W. Neuner, Cost Accounting Principles and Practices, 8th ed. (Homewood, 1973), p. 358.

fee. Imputed interest on a contractor's investment in capital assets committed to a contract can be thought of as an opportunity cost of these assets--a valid and necessary cost for pricing purposes.

Capital assets represented by debt have an explicit cost in interest paid; capital assets represented by leases have an explicit lease cost that often includes an implicit interest charge in the lease payment; capital assets represented by equity capital have no explicit cost but are just as valuable to the performance of a contract as other sources of capital assets. Imputed interest is the means whereby proper costs can be assigned to uses of capital assets arising from contractors' own investment.

The purpose of this discussion is to present a concept of cost that includes imputed interest. It is beyond the scope of this paper to present arguments for arriving at an interest rate or capital asset base to which the rate should be applied. These are areas that will require a significant amount of research effort before substantial agreement is likely to be reached. The details of implementation can be worked out by the CASB. Also, as more research is done in the imputed interest area, it is expected that the problems might not be insurmountable as many have thought.[8]

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[8]Some of the more current works in this area are available in the following sources: Arthur Andersen & Co., Cost Accounting Standards for Defense Contracts (Chicago, 1972), pp. 52-56; George J. Staubus, Activity Costing and Input-Output Accounting (Homewood, 1970), pp. 34-49.

(B) Price-Level Changes. For contract costing purposes, historical costs do not always reflect economic realities. For example, during periods of rapid price-level increases, basing contract charges for fixed asset usage on historical cost produces unfair results to contractors. A better measure of the release of economic values for fixed asset usage would be historical cost adjusted for price-level changes occurring subsequent to acquiring the assets.

Price-level changes warrant consideration for defense contract costing for much the same reasons as imputed interest on contractors' investments in capital assets. Determining contract costs is part of an overall determination of contract price. As a result, recognition given to the costs of asset usage should be more in line with their replacement values than historical cost. Price-level changes applied to historical costs do not yield replacement values--only approximate them. Yet price-level changes are more administratively feasible than determining replacement values for either individual or groups of fixed assets.

The details of applying price-level changes would have to be worked out by the CASB. The primary problems are likely to be determination of those assets to which price-level changes are applicable and arriving at appropriate price-level indexes. The capital asset base utilized for imputing interest would be a useful starting point for solving the first problem, and one firm has already

suggested the Government's Gross National Product Implicit Price Deflator as an appropriate price-level index.[9]

Summary

The concept of cost for defense contracts should be historically incurred cost adjusted for price-level changes plus recognition of certain imputed costs. Questions of cost allowability are ignored since "cost" should encompass all contractor costs necessary for performing a contract. Concepts of cost presented in this paper are expected to provide more meaningful cost data for costing purposes in addition to providing better measurement of the real costs of defense procurement.

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[9]Arthur Andersen & Co., Cost Accounting Standards for Defense Contracts (Chicago, 1972), p. 23.

APPENDIX D

OPERATING REQUIREMENTS ESSENTIAL FOR IMPLEMENTING THE CONCEPTUAL FRAMEWORK

Concepts for cost measurement and allocation developed in Chapter III are to be implemented through properly developed cost accounting standards. In order for cost accounting standards to be implemented in a cohesive set of costing guidelines that are free of numerous exceptions and alterations, certain requirements at the operational level of contract costing are essential. The first two, the contract and the cost system, are related to conditions necessary prior to implementing a set of costing guidelines. The third, materiality, is a necessary concept for applying costing guidelines in an operational environment. Each of these requirements is discussed in the sections that follow.

Contract

Many aspects of defense procurement are unique and encompass a wide variety of products and programs. Numerous items procured are highly complex and require advances in "the state of the art" while others involve nothing more than purchasing a standard production item. Due to the wide range in the types of procurement, a contract between the buyer (Government) and seller (contractor) is essential for properly stating the will of the parties.

Various types of Government contracts have been designed to meet the many different pricing problems encountered in defense procurement. For example, commonly used fixed-price contracts include (1) firm fixed price; (2) fixed price with escalation; and (3) fixed price incentive.

Cost-reimbursement contracts often used are (1) simple cost reimbursement; (2) cost-sharing; (3) cost-plus-fixed-fee; and (4) cost-plus-incentive-fee. In addition to setting forth the work to be performed and basic ground rules for contract performance, the type contract utilized is an important determinant of accounting requirements. From an accounting point of view, special significance is given to contracting situations where cost-reimbursement type contracts are used. These contracts place the greatest demands on an accounting system because the buyer must compensate the seller on the basis of cost.

Where a buyer is to reimburse a seller on the basis of cost, an agreement should exist between them setting forth those goods and services subject to separate cost determination and how costs are to be determined. Many terms and conditions of a contract are crucial to its performance, e.g., work changes, payments, property rights, terminations, etc. The most crucial contract terms for accounting requirements are those setting forth the manner in which costs are to be determined and assigned to the contract.

Methods of cost determination and allocation can best be accomplished by including a comprehensive set of contract costing guidelines as part of the contract between the parties. This approach will permit the development of costing guidelines, i.e., cost accounting standards, suitable for all defense procurement agencies.

It is recognized, however, that a uniform set of costing guidelines might not be appropriate for all contracting situations. Special contracting conditions can necessitate exceptions to a uniform set of costing guidelines. When exceptions are necessary, they should be treated as pricing adjustments and not alterations to costing procedures. Most exceptions to an existing set of costing guidelines can be handled through special contract clauses. This approach should accomplish two objectives. First, it should permit the development of a cohesive set of costing guidelines, free of numerous exceptions. Second, it should create a climate whereby all defense agencies could procure under one basic set of costing principles, yet maintain the flexibility needed in procuring diversified products and services.

Cost System

Due to unique requirements of each accounting entity, no uniform prescription for a cost system can be written, nor should an attempt be made to do so. Each cost system should meet the requirements of the organizational, product, and project structure of the accounting entity it is to serve. Each business unit must design and implement a cost system capable of providing management with the records, controls, and reports essential for decision making and other managerial functions. Whnever defense contracts are

being performed, a cost system must also be capable of meeting contract costing requirements.

Uniqueness in cost systems is necessary if the systems are to adequately fulfill the intended purposes for which they are designed. However, all cost systems should possess certain common characteristics. The diversity found in cost systems does not mean they are or should be basically different; in fact, many systems possess numerous similiarities in their fundamental make-up and can be considered basically alike. It is the special modifications and customized flexibilities built into basic characteristics of costing systems that make them unique.

A cost system is an integral part of the total accounting system and not something set apart from it. Cost accounts are related to and controlled by the general books of account. Therefore, to the extent generally accepted principles of financial accounting determine costs flowing through the general books of account, cost accounts are affected by the same principles. These principles do not, however, determine how the costs are internally allocated--only the amounts flowing through the cost accounts.

All cost systems should contain common elements commensurate with the complexities and requirements of the individual system. Appropriate cost accounts are necessary for adequately summarizing results of the costing process. Various business papers and forms are essential for providing evidence of transactions and the nature of the

transactions. A system of journals is needed for summarizing various functions in the costing process such as payrolls, materials requisitioned, etc. Cost ledgers are necessary to provide an organized listing of accounts and final summarization of data from journals. Various reports for communicating results of the costing process to the proper parties are basic to all cost systems. All these characteristics should be considered fundamental to costing systems and essential to the contract costing process.

In an ordinary commercial operation, a cost system is expected to produce data needed by management for proper planning, control, and decision making. When defense contract costing is included in the costing process, it becomes necessary to accumulate cost data by products and programs. In addition to those characteristics previously mentioned, the following requirements should be an essential part of a contractor's cost system:

(1) Maintaining the capability of accumulating costs on a contract-by-contract basis. This requirement could mean that costs are first determined according to some project with costs per contract being a further subdivision of cost accumulations. On the other hand, a contract might be broken down into different tasks with cost first determined by tasks then accumulated by contract. In either case, the final result would be to determine the total costs for each contract.

(2) Contract costs should be accumulated in total as well as for a single accounting period. This requirement is necessary for preventing overruns, providing useful data for future bidding, etc.

(3) Direct costs must be readily identified and charged to specific cost objectives.

(4) Indirect costs must be accumulated in predetermined pools and the cost system must then have the capability of providing the data necessary for developing bases for indirect cost allocations.

(5) The cost system must be internally consistent, i.e., different methods are not used to assign costs to different cost objectives.

(6) Costs must be accumulated in a manner that will permit comparisons of actual cost and performances with budgeted (planned) costs and performances.

(7) The cost system must produce results that are readily auditable by procuring agency or independent auditors.

(8) The system should be highly mechanized so data can be efficiently rearranged as needed.

(9) A high degree of accuracy should be maintained throughout the system in order to maintain a high reliability factor in the data produced.

As previously mentioned, uniform prescriptions for cost systems cannot be written, nor should attempts be made to do so. Certainly a small business with simple operations and only a few products would not require the same degree of sophistication in its cost system that might be required of a larger, more complex enterprise. The more sophisticated and precise a system becomes, the greater the cost of operating it. As one writer stated, ". . . the system must be of reasonable cost consistent with its output. . . ."[1] For

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[1] Hector R. Anton, "Activity Analysis of the Firm: A Theoretical Approach to Accounting (Systems) Development," in Contemporary Issues in Cost Accounting, ed. by Hector R. Anton and Peter A. Firmin (Boston, 1966), p. 516.

defense contract costing purposes, the cost system should enable both the procuring agency and the contractor to determine the amount of costs assigned to a contract and whether or not the results are in accordance with established procurement regulations and cost accounting standards.

Materiality

Materiality, as the term is used by accountants, has been referred to as "one of the most pervasive concepts in accounting practice."[2] By actual count, in Auditing Standards and Procedures, Accounting Research Bulletins of the AICPA, and Regulation S-X of the Securities Exchange Commission, Rappaport found more than one hundred references to items such as: material and significant; immaterial; of little or no consequence; so inconsequential as to be immaterial; inconsiderable in amount; of substantial importance; of significance; material; not so significant; substantial; materially distorting, etc.[3]

Although materiality is usually recognized as an important accounting concept, it has not been defined in a manner receiving substantial agreement throughout the accounting

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[2]Editorial, "Materiality," The Journal of Accountancy, CXVII (April, 1964), p. 35.

[3]Donald Rappaport, "Materiality," The Journal of Accountancy, CXVII (April, 1964), p. 42.

profession. According to the literature, most accountants interpret materiality as the process of distinguishing between information that is unimportant and does not matter, and information considered to be significant. To differentiate between the unimportant and the significant, the accountant exercises his professional judgment. Kohler's definition of materiality makes reference to the relative importance of any item, and that relative importance is often determinable only by exercising value judgments.[4] Grady takes a similar approach to the meaning of materiality and states that the definition problem ". . . is largely a matter of judgment to be exercised in the light of all the then-existing circumstances."[5]

Exercising professional judgment permeates all accounting practices. The expertise attained by accountants places them in a position to examine both qualitative and quantitative factors existing within a particular set of circumstances and make decisions based upon formulated judgements. The fact that judgment itself cannot be specifically defined for all situations does not matter as long as two parties to a contract can reach workable agreements whenever personal judgment is necessary for determining questions of

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[4]Eric L. Kohler, A Dictionary for Accountants (Englewood Cliffs, 1970), p. 278.

[5]Paul Grady, "Inventory of Generally accepted Accounting Principles for Business Enterprises," Accounting Research Study No. 7 (New York, 1965), p. 39.

materiality in contract costing. Professional judgment is closely related to interpretations of materiality. Placing limits or ranges on data in determining its materiality or immateriality could take away the judgment factor in many situations. If quantitative approaches to materiality determinations tend to deny what the facts would indicate in a given situation, then professional judgment should take precedence over quantitative approaches.

A concept of materiality has two important applications in defense contract costing. First, the concept should apply to the costing process itself. Costing methods that deal with small amounts of costs often take many different forms. Utilization of different methods for dealing with small costs are likely to produce substantially the same results. Attempts to increase the accuracy in these areas, such as absolute accuracy in direct-indirect cost classifications, should be judged on the basis of the materiality of results produced. Where two or more costing methods produce substantially the same results, the least costly should be used. Attention should be focused upon objectives of the costing process and how they are being met rather than upon detailed matters of costs that produce relatively insignificant costing results.

A second application of materiality includes the area of cost accounting standards. Cost accounting standards should be concerned with those costing areas where significant results are likely rather than dealing with trivial matters.

Once cost accounting standards are developed, problems of adhering to the standards will be encountered. When questions of departures from promulgated standards are encountered, the departures should be evaluated in terms of the significance of the differences. Whenever the differences between adhering to or departing from specific cost accounting standards are immaterial, strict adherence should not be required. The differences should be evaluated in terms of their significance to the costing process in general, the effect on a specific cost objective, and the cost of implementing available alternatives.

The existence of a materiality concept should not serve as an outlet for errors; however, errors should be judged according to the results they produce, both individually and collectively. If small errors do not result in significant losses in accuracy, they can be judged immaterial. The significant point is that materiality is primarily a question of professional judgment. At the practical level of application, professional judgments can be supplemented by appropriate guidelines in distinguishing between what is material and immaterial. Such guidelines might be provided through cost accounting standards in the form of quantitative ranges applicable to different circumstances. Guidelines of this type could be quite useful in supplementing professional judgments but should not supplant them. Professional judgment must remain as the primary determining factor in materiality decisions.

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