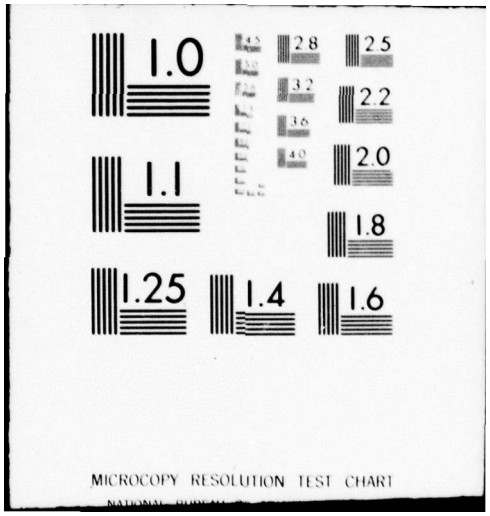
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ASPR requires that the program manager perform a cost analysis to determine which components should be procured as GFE instead of being purchased from the prime contractor as CFE. Many cost factors contribute to the decision to provide an item as CFE or GFE. One cost that must be considered is the cost of managing the item, which includes, for example, personnel costs and government and contractor overhead costs. The authors have identified, defined, and assessed the use of relevant and practical elements of contractor and government management cost that should be considered in the CFE/GFE selection process. The study shows that the cost elements are considered important, but not frequently considered, and generally management cost analysis is inadequate.

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IDENTIFICATION AND DEFINITION OF THE MANAGEMENT COST ELEMENTS FOR CONTRACTOR FURNISHED EQUIPMENT AND GOVERNMENT FURNISHED EQUIPMENT

A Thesis

Presented to the Faculty of the School of Systems and Logistics

of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the Requirements for the

Degree of Master of Science in Logistics Management

By

Billy D. Dillard, BS
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September 1978

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Captain Billy D. Dillard

and

Captain Philip D. Inscoe

has been accepted by the undersigned on behalf of the faculty of the School of Systems and Logistics in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE IN LOGISTICS MANAGEMENT
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DATE: 8 September 1978

Larry L. Smith
COMMITTEE CHAIRMAN

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We dedicate this effort to our wives and families. We recognize that without their support and understanding, the completion of this work would have been impossible.

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Chapter 1

INTRODUCTION

> ASPR (Armed Services Procurement Regulation) requires procuring organizations to identify contract end items that can be obtained directly . . . via government sources as opposed to procurement by the prime contractor. Rationale provided for breakout is that [cost elements such as] prime contractor overhead [and] profit . . . are added to the basic item cost and that monies can be saved if procured directly via government channels. Specific criteria do not exist, however, to assist in identifying items to be broken out. Factors such as manpower limitations, government personnel costs, government overhead, government procurement lead times, and government assumption of liability for GFE, . . . are all subjectively involved in this decision process [12].

The above paragraph is quoted from a letter authored by Colonel Ronald J. Krejci, Chief, Acquisition Policy Division, Air Force Systems Command, addressed to the Air Force Business Research Management Center. The letter specifies the need for research into the decision process of whether to provide equipment to a prime contractor as government furnished equipment (GFE) or to require the prime contractor to develop or procure the equipment as contractor furnished equipment (CFE). There are many considerations such as assumption of risk, technical uncertainties, life cycle costs, and incurrence of management costs which must be assessed in the CFE/GFE procurement decision (13:60). The increasing cost and complexity of weapon systems in the

armed services, combined with decreasing outlays for weapon system procurement, require continued emphasis on cost savings. The purpose of this research is to analyze one segment of cost considerations in the CFE/GFE decision, the process of estimating management costs of CFE and GFE.

PROBLEM STATEMENT

Many cost factors contribute to the decision to provide an item as CFE or GFE. One cost that must be considered is the cost of managing the item, which includes, for example, personnel costs and government and contractor overhead costs. The relevant and practical elements of management cost that should be considered in any CFE/GFE selection process have not been comprehensively identified and defined, nor have standard procedures been developed for conducting management cost analysis (4).

BACKGROUND

What is Government Furnished Equipment?

Air Force Regulation 800-22 defines GFE as

> . . . items in the possession of or acquired directly by the Government and subsequently delivered to or otherwise made available to the contractor for integration into the system or equipment [14:1].

Examples of typical GFE components for an aircraft system are flight instruments, radios, fuel tanks, wheels, brakes, landing gear, navigation systems, and engines. The common

element of each of these items is that they are identifiable subsystems of the aircraft system. Their identity as subsystems allows for independent development, fabrication, and shipment to a contractor for integration into a larger system.

What is Contractor Furnished Equipment?

Contractor Furnished Equipment (CFE) is defined as "items acquired or manufactured directly by the contractor for use in the system or equipment under contract [14:1]." There is no physical or functional difference between CFE and GFE. Often when a component is broken out for government procurement, the same vendor(s) from whom the prime contractor procured the equipment is solicited by the government to provide the item. The process of converting subsystems from CFE to GFE status is merely shifting the responsibility for on-time delivery, functional performance, and technical interface from the contractor to the government (9:2).

The CFE/GFE Selection Process

The CFE/GFE selection process may occur at one of two points in the acquisition process: (1) in the initial determination of system or equipment configuration, or (2) in a follow-on selection process (14:1). The conversion of equipment from CFE to GFE subsequent to the initial

determination of system configuration is known as component breakout (10:449). The objective of the CFE/GFE selection process is the intention " . . . to assure that selected equipment is acquired by that acquisition method [CFE or GFE] which promises the most benefit to the government [14:1]."

Responsibilities for CFE and GFE Management

Simplified descriptions of management responsibilities for CFE and GFE are provided below as background for later discussions of costs incurred by organizations in the CFE/GFE process. Figure 1.1 is a pictorial representation of the organizational relationships present in CFE and GFE management.

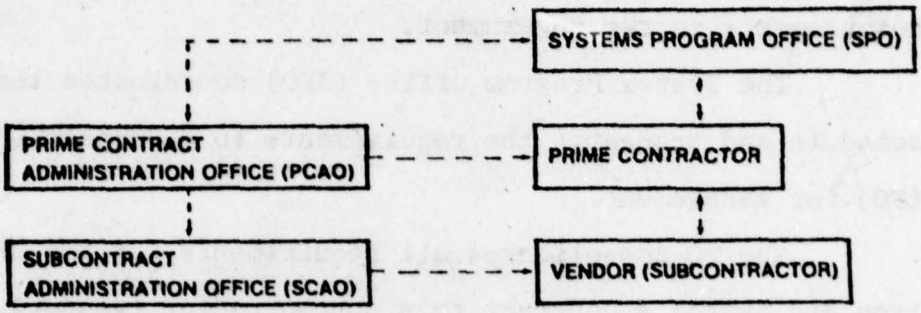
CFE. The prime contractor determines the requirements for CFE subsystems and either produces the subsystem or contracts with another vendor (subcontractor) for production of the equipment. The prime contractor is responsible for incorporating the subsystems into the overall system. Problems of quantity, quality, schedule, or performance are managed by the prime contractor with "exception reporting" to the SPO.

The SPO makes configuration management decisions and monitors systems integration.

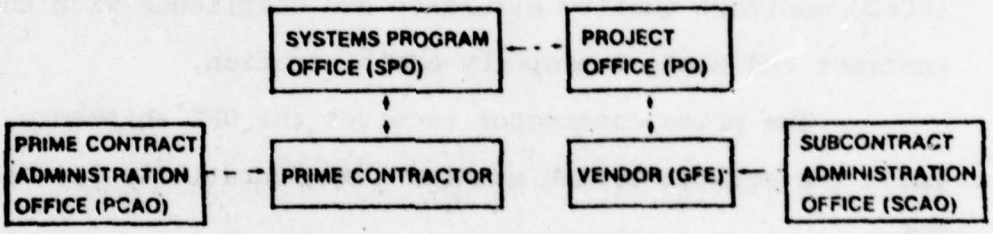
The PCAO performs the functions of contract administration required by regulation and as specified in any

CFE/GFE ORGANIZATIONAL RELATIONSHIPS'

CONTRACTOR FURNISHED EQUIPMENT: CFE



GOVERNMENT FURNISHED EQUIPMENT: GFE



'DEFINITIONS OF THE ORGANIZATIONS ARE LOCATED AT APPENDIX A

FIGURE 1.1

working agreements with the SPO. At the request of the PCAO, the performance of the subcontractor can be monitored by a SCAO (7).

GFE. The prime contractor determines the quantity and schedule required for GFE components and submits these requirements to the government.

The System Program Office (SPO) coordinates the schedule and transmits the requirements to a Project Office (PO) for management.

The PO consolidates all requirements for the GFE item and awards a contract to a subcontractor (vendor). The PO then monitors the quality and delivery of the items and manages the data and configuration efforts.

The subcontractor contract administration office (SCAO) monitors quality assurance and compliance with the contract and manages property administration.

The prime contractor receives the GFE shipments, tests the equipment, and maintains accountability for the GFE.

The prime contractor contract administration office (PCAO) monitors the performance of the prime contractor. Specifically, the PCAO monitors the quality of GFE and issues Unsatisfactory Material Reports (UMR) for all failed GFE items (7).

Advantages of GFE

Cost savings are the primary reason for the conversion of equipment from CFE to GFE. There are several ways that the acquisition of subsystems by the government can provide cost savings. Price breaks resulting from quantity purchases, increased potential for equipment standardization, and avoidance of prime contractor overhead charges are the principal reasons for GFE acquisition. Achieving cost savings through larger quantity purchases and standardization are suggested in the ASPR as the main advantages of CFE to GFE conversion (13:61).

When a component is identified for government acquisition, it is normally assigned to a specific project office for management and procurement. This office can gain visibility across the wide spectrum of possible users of the equipment to accumulate all requirements for the item. Larger quantity contracts usually contain lower prices (13:61).

The horizontal visibility afforded by use of a central management office also provides ideal circumstances for standardization. If given the opportunity to advise a new SPO regarding selection of subsystems for the initial configuration of a system, a central subsystems office can give primary consideration to components which are common to other systems. Standardization complements the quantity discount principle discussed earlier.

An excellent example of an organization that has succeeded in furthering the ideas of quantity purchases and standardization is the Instrument Systems Division, Avionics and Aircraft Accessories Systems Program Office, Aeronautical Systems Division. Just a few examples of the common items this office manages are a common altimeter for the F-5, F-16, and A-10, a common two-gyro platform for the C-141 and A-10, and a common airspeed indicator for the F-5 and F-16 (6).

One area of savings which is not discussed in the ASPR clause is the avoidance of prime contractor overhead charges. An overhead charge is an element of the purchase price for CFE. The charge varies by contractor and by item but a figure of twenty percent of unit price and upwards is generally accepted (1). Theoretically, the government can save part or all of this overhead charge by providing components as GFE.

The benefits inherent in GFE are not enjoyed without costs. The additional performance and schedule obligations assumed by the government when GFE management is undertaken present some disadvantages of GFE (9:2).

Disadvantages of GFE

As previously discussed, the responsibility for on-time delivery, functional performance, and technical interface with the prime system is shifted to the government when equipment is provided as GFE in lieu of CFE. Within these

three elements of responsibility, the main objections about GFE are centered.

The delivery obligation incurred by the government is particularly critical when the GFE item must be installed within narrow "windows" of time. If the equipment is not available when needed, the government is liable for "out-of-station installation" charges by the prime contractor (9:6).

Excessive rejection rates during incoming inspections and line acceptance testing also contribute to the schedule problems discussed above. The costs of transporting rejected units and of managing a material tracking system to maintain accountability of returned components should be considered (7).

The government's failure to accurately predict and adequately manage the problems discussed above contributes to erosion of the savings attainable by GFE procurement.

Current State of CFE/GFE Management

Official recognition of CFE/GFE problems has emerged in recent years at high levels within DOD. The Honorable William Clements, (then) Deputy Secretary of Defense, stated his concern for CFE/GFE management problems in a 20 January 1976 memorandum for the Secretary of the Navy.

> I would like the Navy to take steps to increase the management emphasis devoted to GFE, including cost estimation, procurement management and management information systems and revision of program manager charters to improve their control with respect to GFE [9:4-5].

The lack of sufficient policy and guidance for a component breakout program in the United States Army Aviation Systems Command (AVSCOM) was reported by the United States Army Audit Agency (2:3). A resulting study reported that AVSCOM had no " . . . active component breakout program [2:6]." The study went on to suggest a management structure for a proposed component breakout system and estimated gross savings (based on certain assumptions and no calculation of government expense) of 22.7 million dollars per fiscal year (2:12).

Emphasis on improved selection and management of CFE/GFE within the Air Force is manifested in Air Force Regulation 800-22, dated 30 August 1976. In a 22 February 1977 letter to the Vice Commanders of Air Force Logistics Command (AFLC) and Air Force Systems Command (AFSC), General Alton D. Slay, (then) HQ, AF/RD, voiced his support for an improved CFE/GFE selection process (11).

To provide AFSC support to the improvement of the CFE/GFE selection and management process, Lieutenant General Robert T. Marsh, (then) AFSC Vice Commander, tasked Aeronautical Systems Division with the following:

1. Preparation of a plan for publishing a listing of standard and preferred equipments for new systems.

2. Development of standardized methodology for the CFE/GFE selection process.

3. Review of the overall CFE/GFE process and identification of areas requiring improvements (8).

As a result of this effort, ASD recently released ASD Regulation 800-9 entitled, "GFE/CFE Selection Process, GFE Acquisition, and GFE Management." The process described in the document formerly was covered in thirty different regulations. The new regulation provides, in a single document, an integrated systematic approach to ASD management of CFE and GFE (16:1-2).

The new regulation is consistent with the ASPR in that it dictates that the program manager is responsible for the CFE/GFE decision and that he should justify the decision on a least cost basis (13:61; 16:A2-11).

In this determination, the program manager must answer the following question:

> Which method is the more cost effective, for example, how does the contractor overhead cost compare with the cost of any additional Government resources (for example, test facilities, manpower, additional test data, etc.) that would be needed if the item were supplied as GFE [16:A2-11]?

The regulation, however, does not provide the program manager with specific guidance or direction about how to perform the required cost analysis.

JUSTIFICATION FOR RESEARCH

Increasing weapon system costs coupled with declining availability of funds for systems procurement require

continued emphasis on cost savings. Additionally, severe manpower shortages are projected in the research and development (R&D) career fields. Air Force Military Personnel Center has predicted at least a twenty percent manpower deficit in R&D manning by Fiscal Year 1980 (15:11). As a result of this "manning shortfall," the Air Force must use available R&D personnel and funds to manage programs and projects with the greatest potential benefit and cost savings (5).

ASPR states that equipment purchased by the government should result in substantial cost savings in the procurement process (13:60), and that a valid CFE/GFE selection decision must incorporate analysis of all relevant elements of cost (13:61). As previously stated, the program manager is required to compare the management costs of CFE and GFE as a portion of the overall cost analysis.

OBJECTIVE OF THE RESEARCH

The objectives of the research are: (1) to identify and define the relevant and practical elements of contractor and government management cost that should be considered in the CFE/GFE selection process, and (2) to assess the use of these cost elements in the CFE/GFE decision. To satisfy these objectives, four research questions are set forth.

RESEARCH QUESTIONS

1. What are the relevant elements of CFE/GFE management cost and what organizations incur these costs?

2. Are management costs adequately analyzed as a part of the CFE/GFE decision process?

3. Can the cost elements, as defined, be used on a practical basis by the people who make the CFE/GFE decisions?

4. Do sufficient data currently exist to enable development of a standard procedure for analyzing CFE/GFE management costs?

Chapter 2

RESEARCH METHODOLOGY

The objective of this chapter is to outline the methodology used to identify, define, and assess the use of the relevant and practical elements of management cost that should be considered in the CFE/GFE selection process. The research objective was accomplished in two phases. First, a proposed list of management cost elements with associated definitions was developed from a study of the literature and by interviewing three individuals experienced in systems management or contracting. In the second phase, the list was provided to a sample of individuals currently responsible for making CFE/GFE decisions. These persons were surveyed concerning the comprehensiveness, practicality, relevance, and use of the initial list of cost elements.

OPERATIONAL DEFINITIONS

The following definitions apply to this research:

Basic Unit Price--

For CFE: Unit price that the prime contractor pays the vendor for a piece of hardware or unit price charged to the government when the prime contractor makes an item.

For GFE: Unit price that the government pays the vendor for a piece of hardware.

Management Cost--Any cost in addition to the basic unit price which is incurred in CFE/GFE management.

Relevant Elements of Management Cost--Elements of cost which can be incurred as a result of any CFE/GFE decision.

Practical Elements of Management Cost--An element of cost which meets the following three criteria:

1. The cost is measurable.
2. The cost data are available.
3. The cost to obtain the data is less than the magnitude of the cost element itself.

CFE/GFE Decision Maker--A person who makes or supports a CFE/GFE decision.

CONCEPTUAL FRAMEWORK FOR RESEARCH

As discussed in Chapter 1, there are costs for both the contractor and the government in each of the contracting approaches, CFE and GFE. In the process of identifying the elements of cost, it is necessary to categorize the costs into a clear, conceptual framework for ease of understanding. The structure of the framework was developed by partitioning the elements of cost by organization. For purposes of illustration, examples of the partitioned elements of cost that may apply if a subsystem is procured as CFE or GFE are depicted in Figure 2.1. For example, Profit and Mission Support are management costs as defined in this research. Because of the definition for "basic unit price" in this research, profit as a cost is incurred only by the prime contractor for CFE. Conversely, mission support costs such

CFE

Contractor		Government			
Prime Contractor	Subcontractor	Systems Program Office	Project Office	Prime Contract Administration Office	Subcontract Administration Office
-Receiving and Handling -Profit		-Mission Support -Procurement Manpower		-Quality Assurance Manpower -Contract Administration Manpower	-Quality Assurance Manpower -Contract Administration Manpower

GFE

Contractor		Government			
Prime Contractor	Subcontractor	Systems Program Office	Project Office	Prime Contract Administration Office	Subcontract Administration Office
-Receiving and Handling -Inspection and Test	-Repair Charge (Nonwarranty Items)	-Mission Support -Procurement Manpower	-Mission Support -Transportation	-Quality Assurance Manpower -Contract Administration Manpower	-Quality Assurance Manpower -Contract Administration Manpower

Figure 2.1. Conceptual Framework: Management Costs of CFE/GFE

as travel and per diem are incurred by the SPO for CFE and both the SPO and Project Office for GFE.

RESEARCH DESIGN

The first task accomplished was the identification of an initial list of management cost elements. The list of elements and their corresponding definitions were developed through the combination of a literature review and personal interviews with three experts in systems acquisition and contracting. These experts are Major Lyle W. Lockwood, Research Associate, Air Force Business Research Management Center; Mr. Jack Barnaby, Assistant Professor, Department of Functional Management, Air Force Institute of Technology (AFIT) School of Systems and Logistics; and Major Ken Hughes, Assistant Professor, Department of Procurement and Production, AFIT School of Systems and Logistics.

The resulting list of cost elements and definitions formed the basis of a structured interview and questionnaire. The structured interview consisted of the following: (a) an explanation of the problem and research objectives, (b) open dialogue with the respondents regarding the current state of CFE/GFE management cost analysis, and, (c) an explanation of instructions for completing a questionnaire regarding management cost elements. An outline of the structured interview is located at Appendix B.

Each person interviewed was given a questionnaire to assess the comprehensiveness, relevance, and practicality of the list of the cost elements identified in the first phase. The questionnaire is found at Appendix C. Each respondent was also asked to include elements of management cost he or she had knowledge of which were not identified on the questionnaire.

Question One (Q1) of the questionnaire, which determines the frequency of use of the element, provided data to assess the current state and adequacy of CFE/GFE management cost analysis (Research Question Two). Question Two (Q2), which measures the ability to accurately estimate cost elements, was designed to provide data concerning the practicality of cost elements (Research Question Three). Question Three (Q3), which determines the importance of the cost element, has a two-fold purpose. First, the data were used in conjunction with the results of Question One of the questionnaire to evaluate the current state and adequacy of CFE/GFE cost analysis. Secondly, the data were used to assess the importance of considering each of the management cost elements in the CFE/GFE selection process. Question Four (Q4) allows the questionnaire respondent to agree or disagree with the organizational placement of the cost elements.

Allowing the respondent to identify additional elements of management cost aided in developing a

comprehensive list of management elements (Research Question One). Finally, each respondent was asked several general application questions concerning the overall CFE/GFE selection process.

In addition to the questionnaire provided to each person identified in the CFE/GFE decision making process, a one-sheet supplemental questionnaire was given to each program manager. The purpose of this supplemental questionnaire was to provide more information concerning the current state of CFE/GFE management cost analysis. The first question asks if a systematic management cost analysis is employed by the program manager's organization. If the organization uses a systematic management cost analysis, the program manager was asked to identify the functions within the organization that accomplish or support the management cost analysis. Finally, each organization was asked to attach any operating instructions, policy guidance, or other directives used to guide the CFE/GFE management cost analysis.

The questionnaire was administered to a small sample of CFE/GFE decision makers in the Aeronautical Systems Division (ASD) of the Air Force Systems Command. This trial run allowed for correction of problem areas such as ambiguous questions or confusing instructions.

SAMPLE AND POPULATION

Description of Universe, Population, and Sample

The universe of consideration was all CFE/GFE decision makers within ASD. ASD was chosen as a sample of convenience. The population studied in this research effort was the opinions of these same decision makers regarding the management cost elements which should be considered in a CFE/GFE decision. To accomplish the task of management cost element identification, a sample was taken of the opinions of ASD CFE/GFE decision makers regarding the use, relevance, and practicality of management cost elements.

Sample Plan

Eleven ASD organizations involved in systems acquisition were asked to identify one CFE/GFE decision maker for their organization in each of the functional areas of project management, procurement, engineering, and program control. The organizations from which the individuals were selected are listed in Appendix D. Most individuals who were interviewed and asked to complete the questionnaire were selected by the organizations based on their participation in the CFE/GFE decision process. Additionally, other individuals were selected by their organizations because they possessed expertise with a particular cost element such as transportation and packaging, quality assurance, or engineering. Thirty-seven

individuals were interviewed and asked to complete the questionnaire.

CHARACTERISTICS OF THE DATA

Validity

To assure the validity of the questionnaire and structured interview, two CFE/GFE decision makers in ASD were interviewed and surveyed prior to commencement of the formal survey. These individuals were asked to provide feedback concerning the clarity and appropriateness of the questionnaire and the ability of the instrument to measure the relevant and practical elements of CFE/GFE management cost.

Finally, the questionnaire was completed by a sample of experts in CFE/GFE management. The respondents were asked to answer only the questions of which they had a personal knowledge. The last question on the questionnaire asks the experts to assess how well the questionnaire allows the respondent to identify and discuss relevant and practical elements of CFE/GFE management cost.

Reliability

An assumption of this research effort is that the opinions of the CFE/GFE decision makers regarding the relevance and practicality of the cost elements would not change significantly over the time span of the thesis effort. A

follow-up survey of the same respondents was not deemed necessary.

SUMMARY LIST OF ASSUMPTIONS AND LIMITATIONS

Assumptions

1. Survey respondents who were chosen by their organizations are CFE/GFE decision makers as defined in this research.

2. There was no collusion between respondents in completing the surveys.

3. Chosen respondents were the most appropriate decision makers to determine relevance and practicality of cost elements.

4. The opinions of the CFE/GFE decision makers regarding the relevance and practicality of the cost elements did not change significantly over the time span of the thesis effort.

Limitation

Due to the time restrictions of this thesis effort, the respondents will not be re-surveyed regarding the cost elements which are added to the list during the questionnaire phase of the research. This limitation may restrict the ability to make inferences about cost elements for which few decision makers responded.

Chapter 3

ANALYSIS METHODOLOGY

The purpose of this chapter is to explain how the data from the interviews and questionnaire are analyzed to answer each of the Research Questions posed in Chapter 1. Specific methods of analysis that are used and the criteria for judging the results of the data are presented. The steps described in this discussion also serve as a guide for the presentation of the research results in Chapter 4.

DATA LEVELS

The questionnaire is designed to record opinions and to measure subjective evaluations of the respondents. The questionnaire responses contain nominal and ordinal levels of data. Analysis of the data is limited to descriptive statistics. The results are examined and presented by organization to identify trends and anomalies in the data.

RESEARCH QUESTION ONE

Research Question One is as follows:

What are the relevant elements of CFE/GFE management cost and what organizations incur these costs?

In order to develop a comprehensive list of CFE/GFE management elements, any cost element identified by either

the researchers during the literature review, the three contracting and acquisition experts, or the survey respondents is considered relevant to CFE/GFE management cost analysis. The only exception to these criteria is an additional cost element identified by a survey respondent which, in the judgment of the research team, differs only in semantics from an element of management cost previously identified.

Data from Question Four (Q4) of the questionnaire are used to answer the second portion of the research question " . . . what organizations incur these costs?" Q4 is repeated below:

> Question 4 (Q4): If you do not agree with the organizational placement of this cost element, please indicate the organization which you think incurs the cost. If you do agree with the organizational placement, mark response G.
>
> A Prime Contractor
> B Subcontractor
> C Systems Program Office
> D Project Office
> E Prime Contract Administration Office
> F Subcontract Administration Office
> G Agree with organizational placement as is

If a majority of the respondents agreed with the organizational placement of the cost element and marked response "G," then the placement by the researchers is considered to be valid. If a majority of respondents indicated that some other organization incurred the cost, then the organization picked by the respondents will become the revised organization of cost incurrence. If no

organization was selected by a majority of the respondents, then this result will be reported accordingly.

RESEARCH QUESTION TWO

Research Question Two is as follows:

Are management costs adequately analyzed as a part of the CFE/GFE decision process?

The analysis of an individual cost element is considered adequate if: (1) the element is considered important and has had a high frequency of consideration in past decisions, or (2) the element is considered unimportant and has had a low frequency of consideration in past decisions.

The analysis of a cost element is considered inadequate if: (1) the element is considered important and has had a low frequency of consideration in past decisions, and, (2) the element is considered unimportant and has had a high frequency of consideration in past decisions.

The definition of adequacy is graphically portrayed in Figure 3.1.

	Not Important	Important
Low Frequency of Consideration	Adequate	Inadequate
High Frequency of Consideration	Inadequate	Adequate

Figure 3.1. Adequacy of CFE/GFE Management Cost Analysis

There are four sources of data used to assess the adequacy of CFE/GFE management cost analysis. They are: the answers to questions Q1 and Q3 on the questionnaire, the one-page supplemental questionnaire which each program management representative was asked to complete, the general application questions located at the end of the questionnaire, and the interviews or open dialogue with the survey participants.

Question Three (Q3) on the questionnaire is used to screen the cost elements to determine which elements the respondents thought should be considered. For this screening, the researchers restructured the response categories as follows:

Question 3 (Q3): How important should this element of cost be in making a CFE/GFE decision?

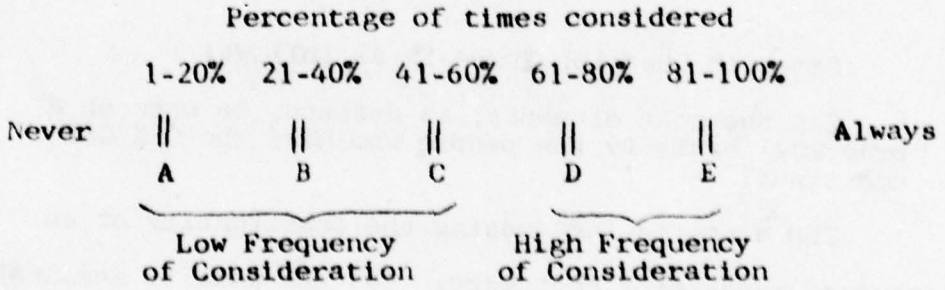
Not Important	Nice to have	Need to have	Very Important	Vital
A	B	C	D	E
Not Important		Important		

In other words, if a respondent marked response A or B (Not Important or Nice to have), the cost element is judged to be unimportant to the CFE/GFE cost analysis. If a respondent marked C, D, or E, the cost element is judged to be "Important" in making a CFE/GFE decision. If a majority of the respondents who answered the questions regarding a particular cost element thought that the element was

important as defined above, then the cost element is considered important on an aggregate basis. The product of this screening is a list of elements which the respondents deem to be important.

Comparing the importance of each management cost element with its frequency of consideration in past CFE/GFE decisions provides an indication of the adequacy of management cost analysis. Question One (Q1) of the questionnaire measures the frequency of consideration of the management cost element. Consideration of a cost element more than sixty percent of the time in past decisions is judged a "high" frequency of consideration as shown below.

Question 1 (Q1): How often has this cost element been considered in past CFE/GFE selection decisions of which you have personal knowledge?



The comparison of importance and frequency of consideration is accomplished for each of the management cost elements by summarizing and grouping the questionnaire responses into frequency tables generated by the Statistical Package for the Social Sciences (SPSS). If more than twenty-five percent of the cost elements that are important are

given a low frequency of consideration, then management cost analysis is judged to be inadequate on an aggregate basis.

The "measured" adequacy of management cost analysis obtained through comparison of responses on the questionnaire is combined with the responses concerning management cost analysis obtained in the supplemental questionnaires, the general application questions, and the interviews. These additional sources of data are subjectively evaluated to determine if the responses and ideas correlate with the data obtained from the questionnaire. The combined information provides the basis for the findings concerning the adequacy of current management cost analysis.

RESEARCH QUESTION THREE

Research Question Three is as follows:

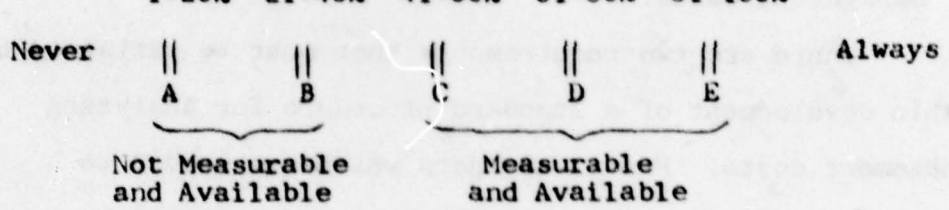
> Can the cost elements, as defined, be used on a practical basis by the people who make the CFE/GFE decisions?

The criteria for judging the practicality of an element of management cost were: (a) the cost is measurable, (b) the cost data are available, and (c) the cost to obtain the data is less than the magnitude of the cost element. Data obtained from Question Two (Q2) of the questionnaire provides information concerning the measurability and availability of management cost data, the first and second criteria for practicality.

In the analysis of the data from Q2, the question responses are partitioned as shown below:

Question 2 (Q2): How often are the data for estimating this cost element measurable and available?

Percentage of times measurable and available



If a simple majority (50% or more) of the survey participants gave a response of C, D, or E, meaning that a cost element is measurable and available forty-one or greater percent of the time, then the first two criteria of practicality are considered to be satisfied.

The third criterion of practicality, the magnitude of the cost element, must be evaluated on an individual basis by any decision maker who attempts to use the list. Individual evaluation is required because the magnitude of the cost element and the magnitude of estimating the cost for that element will likely vary for each CFE/GFE decision. Therefore, this portion of the research question cannot be answered by this research.

RESEARCH QUESTION FOUR

Research Question Four is as follows:

> Do sufficient data currently exist to enable development of a standard procedure for analyzing CFE/GFE management costs?

There are two requirements that must be satisfied to enable development of a standard procedure for analyzing management costs. First, the data which are needed to facilitate analysis must be measurable and available. Secondly, the implementation of the standard procedure must be directed from a sufficiently high position to insure compliance. This research will address only the first of these requirements.

Two products of this research which are used to answer this research question are a list of those cost elements that the respondents considered as important and a list of cost elements, which in the opinion of the respondents, are measurable and available. First, the cost elements categorized as "Important" are examined to determine if they have been judged as measurable and available. If a cost element termed "Important" is also categorized as "Not Measurable and Available," then a standard procedure for cost analysis cannot include this cost element unless someone acts to estimate or accumulate the cost information. This method for categorizing these results is displayed in Figure 3.2.

	Not Important	Important
Not Measurable and Available	No Data Needed	Data Needed
Measurable and Available	No Data Needed	No Data Needed

Figure 3.2. Data Generation Requirements

If more than twenty-five percent of the "Important" cost elements are deemed to be "Not Measurable and Available," then a standard procedure cannot currently be developed without a significant amount of data estimation or accumulation. If less than twenty-five percent of the cost elements require data estimation or accumulation, then a standard procedure can be developed to guide the CFE/GFE management cost analysis.

Chapter 4

RESULTS OF DATA ANALYSIS

This chapter presents the data obtained from the interviews and questionnaire. The data results and general conclusions for each research question are individually addressed using the methods established in Chapter 3.

DESCRIPTION OF RESEARCH DATA

Thirty-seven CFE/GFE decision makers from eleven ASD acquisition organizations were interviewed as a part of the research. Thirty persons completed the questionnaire. Since each respondent did not answer every question, there are approximately twenty-five to twenty-seven responses for each question. The list of cost elements for which the respondents were requested to provide data is shown in Figures 4.1 and 4.2. The cost elements are identified by the organization which incurs the cost as explained in Chapter 3.

RESEARCH QUESTION ONE

Research Question One is restated as follows:

What are the relevant elements of CFE/GFE management cost and what organizations incur these costs?

Contractor	
Prime Contractor	Subcontractor
1. Receiving and Handling 2. Inspection and Test 3. Labor, Engineering, Materials, Manufacturing 4. Mission Support 5. Plant Overhead 6. Labor Overhead 7. Engineering Overhead 8. Manufacturing Overhead 9. Materials Overhead 10. General and Administrative Expense 11. Profit	

Figure 4.1. CFE Management Cost Elements

Government

Systems Program Office	Project Office	Prime Contract Administration Office	Subcontract Administration Office
12. Mission Support 13. Procurement Manpower 14. Project Division Manpower 15. Manufacturing Operations Manpower 16. Configuration Management Manpower 17. Data Management Manpower 18. Engineering Manpower 19. Building Maintenance, Clerical		20. Quality Assurance 21. Contract Administration 22. Property Administration 23. Rent 24. General and Administrative Expenses	25. Quality Assurance 26. Contract Administration 27. Property Administration 28. Rent 29. General and Administrative Expenses

Figure 4.1. (continued)

Contractor

Prime Contractor	Subcontractor
30. Receiving and Handling	40. Repair Charges
31. Inspection and Test	
32. Labor, Engineering, Materials, and Manufacturing	
33. Installation	
34. Plant Overhead	
35. Labor Overhead	
36. Engineering Overhead	
37. Manufacturing Overhead	
38. Materials Overhead	
39. General and Administrative Expense	

Figure 4.2. GFE Management Cost Elements

Government

Systems Program Office	Project Office	Prime Contract Administration Office	Subcontract Administration Office
41. Mission Support	49. Mission Support	56. Quality Assurance Manpower	61. Quality Assurance Manpower
42. Procurement Manpower	50. Transportation	57. Contract Administration Manpower	62. Contract Administration Manpower
43. Project Division Manpower	51. Project Management Manpower	58. Property Administration Manpower	63. Property Administration Manpower
44. Manufacturing Operations Manpower	52. Procurement Manpower	59. Rent	64. Rent
45. Configuration Management Manpower	53. Engineering Manpower	60. General and Administrative Expense	65. General and Administrative Expense
46. Data Management Manpower	54. Configuration Management and Data Management Manpower		
47. Engineering Manpower	55. Building Maintenance, Clerical, etc.		
48. Building Maintenance, Clerical			

Figure 4.2. (continued)

The comprehensive list of CFE/GFE management cost elements was compiled through the combined inputs of a literature review, perusal by three acquisition or contracting experts, and the survey respondents. Question Four (Q4) on the questionnaire measures agreement of the organizational placement of the cost elements.

No cost elements were added to the list by the respondents. No cost elements are judged sufficiently low in importance to warrant removal from the list.

The responses to Question Four (Q4) on the questionnaire reveal predominant agreement with the organizational placement of the cost elements. Seventy-five percent or more of the respondents agreed with the placement of sixty-three of the sixty-five cost elements. Seventy and seventy-four percent of the respondents agreed with the organizational placement of the remaining two elements. A detailed presentation of the cost elements and the associated responses to Question Four (Q4) is located in Tables 3 and 4 in Appendix H.

Conclusion

There were no elements added to or taken off the list, and the respondents overwhelmingly agreed with the organizational placement of the cost elements; therefore, the conceptual framework of cost elements and the identification of the organizations that incur the costs as

depicted in Figures 4.1 and 4.2 are considered valid by the researchers.

RESEARCH QUESTION TWO

Research Question Two is restated as follows:

Are management costs adequately analyzed as part of the CFE/GFE decision process?

Adequacy, as defined in Chapter 3, is composed of two factors: (1) importance in the CFE/GFE decision, and (2) frequency of consideration in past CFE/GFE decisions. The definition of adequacy is portrayed pictorially in Figure 3.1.

Sixty-five management cost elements were presented to each of the survey respondents. Question Three (Q3) of the questionnaire measures the importance of each management cost element and Question One (Q1) measures the frequency of consideration of each cost element.

General Results

The general results for importance, frequency of consideration, and adequacy of management cost analysis are presented in Figure 4.3. For example, forty-eight out of the sixty-five cost elements (seventy-four percent) are judged as "Important" and having a "Low Frequency of Consideration." These findings indicate that existing management cost analysis is generally inadequate.

	Not Important	Important
Low Frequency of Consideration	Adequate 16/65 = 25%	Inadequate 48/65 = 74%
High Frequency of Consideration	Inadequate 0/65 = 0	Adequate 1/65 = 1%

Figure 4.3. Assessment for Adequacy of Management Cost Analysis

The data obtained from the one-page supplemental questionnaire completed by program managers contradicts the results regarding adequacy of the cost analysis presented above. Each of the program managers indicated that a systematic management cost analysis is performed; however, none of the respondents provided the researchers with a description of the analysis methodology or policy guidance used by the organization as requested on the questionnaire. Specific comments obtained on the supplemental questionnaire are contained in Appendix E.

Although the general application questions were not intended to measure adequacy of management cost analysis, the results of the second and third questions revealed that there is no consistency in the manner in which organizations perform and support the cost analysis. The individual responses to the general application questions are listed verbatim in Appendix F.

The data obtained from the dialogue with the CFE/GFE decision makers introduces another deficiency in the

cost analysis. Factors such as "grandfather" coverage for follow-on procurements, excessive government procurement lead times, individual prejudice for or against GFE, and political considerations caused the absence of a cost analysis or directly influenced the results of any cost analysis performed. A detailed discussion of the issues that surfaced during the interview is located at Appendix G.

Detailed Results

This section displays the specific results which support the general conclusions concerning the importance, frequency of consideration, and adequacy of cost elements presented previously. Forty-nine cost elements out of the sixty-five elements presented to the respondents are classified as "Important" as defined in Chapter 3. A ratio of cost elements classified as "Important" to the total number of elements for each organization is shown in Figure 4.4 below:

	CFE	GFE
Prime Contractor	11/11	10/10
Subcontractor	---	1/1
SPO	7/8	7/8
PO	---	6/7
PCAO	1/5	2/5
SCAO	2/5	2/5

Figure 4.4. Important Cost Elements by Organization

Classification of importance for each cost element is shown in Tables 5 and 6 in Appendix H.

Consideration of a cost element in more than sixty percent (60%) of past decisions is judged by the researchers as a "high frequency" of consideration. One cost element out of sixty-five elements in the questionnaire is classified as having a high frequency of consideration. A ratio of the number of elements categorized as having a "high frequency" to the total number of elements for each organization is shown in Figure 4.5 below:

	CFE	GFE
Prime Contractor	1/11	0/10
Subcontractor	---	0/1
SPO	0/8	0/8
PO	---	0/7
PCAO	0/5	0/5
SCAO	0/5	0/5

Figure 4.5. Frequently Considered Cost Elements by Organization

Frequency of consideration for each individual cost element is shown by organization in Tables 7 and 8 in Appendix H. The interesting result of this analysis is that the only element frequently considered (seventeen out of twenty-seven respondents) was profit.

The cost analysis associated with seventeen out of sixty-five cost elements is judged adequate as previously

defined. A ratio of the number of elements classified as "Adequate" to the total number of elements for each organization is shown in Figure 4.6 below:

	CFE	GFE
Prime Contractor	1/11	0/10
Subcontractor	---	0/1
SPO	1/8	1/8
PO	---	1/7
PCAO	4/5	3/5
SCAO	3/5	3/5

Figure 4.6. Adequate Cost Elements by Organization

A classification of adequacy for each cost element is in Tables 9 and 10 in Appendix H.

Interpretation of Results

The results indicate the respondents consider the cost elements associated with the contract administration offices as "Not Important." Thirteen of a total of sixteen "Not Important" elements are Prime Contractor Contract Administration Office (PCAO) or Subcontractor Contract Administration Office (SCAO) cost elements. Because all the respondents belong to SPOs and project offices, they are not required to budget or expend funds for work performed by PCAOs or SCAOs. The researchers, therefore, conclude that the respondents are not fully aware of the importance of costs incurred by contract administration offices.

The results concerning the importance of the cost elements directly affect the determination of adequacy using this research design. This research design is a conservative approach. The predominance of "Not Important" cost elements, coupled with low consideration of these elements, may lead one to conclude that the analysis performed for PCAO and SCAO cost elements is adequate. However, if any of these thirteen cost elements are in fact important, then the conclusion is further supported that management cost analysis is inadequate.

Conclusion

The cost elements presented to the respondents were generally categorized as "Important" and "Not Frequently Considered" in the CFE/GFE decision. Therefore, the conclusion is that CFE/GFE management cost analysis is currently inadequate.

RESEARCH QUESTION THREE

Research Question Three is stated below:

> Can the cost elements, as defined, be used on a practical basis by the people who make the CFE/GFE decisions?

Question Two (Q2) of the questionnaire asked the respondents to classify the measurability and availability of data to support cost analysis. If a simple majority (50% or more) of the respondents who answered the question

about a given cost element judged the data to be measurable and available as defined in Chapter 3, then the cost element is classified as measurable and available on an aggregate basis.

Results

Sixteen of the sixty-five cost elements were found to be measurable and available. The ratios of measurable and available cost elements to the total number of elements for each organization are depicted in Figure 4.7 below:

	CFE	GFE
Prime Contractor	8/11	5/10
Subcontractor	---	0/1
SPO	2/8	0/8
PO	---	1/7
PCAO	0/5	0/5
SCAO	0/5	0/5

Figure 4.7. Measurable and Available Cost Elements by Organization

The specific results for each management cost element are found in Tables 11 and 12 in Appendix H.

Interpretation of Results

The results show that generally the data required to support CFE/GFE management cost analysis are not measurable and available. Thirteen of the sixteen elements categorized as "Measurable and Available" are associated with the prime

contractor (eight for CFE and five for GFE). The measurability and availability of prime contractor data might be explained by the fact that these cost elements are normally required in a cost proposal submitted by a contractor.

Of the forty-nine cost elements not measurable and available, the researchers cannot determine whether these cost elements are not measurable, not available, or both. For example, a cost element may be measurable but not available or if the cost element is not measurable it obviously cannot be available.

Conclusion

The questionnaire respondents generally classified the management cost elements presented to them as either "Not Measurable" or "Not Available."

RESEARCH QUESTION FOUR

Research Question Four is restated as follows:

> Do sufficient data currently exist to enable development of a standard procedure for analyzing CFE/GFE management costs?

To answer this question, the cost elements categorized as "Important" were examined to determine if the data for those cost elements had been judged as measurable and available. If more than twenty-five percent of the "Important" cost elements are deemed to be "Not Measurable and Available," then a standard management cost analysis

procedure cannot currently be developed without a significant amount of data estimation. If this criterion is not satisfied, then the researchers judge that there is no major impediment to establishment of a standard procedure for management cost analysis.

Results

Thirty-four out of the forty-nine cost elements that were judged to be "Important" were determined to be "Not Measurable and Available." Specific results by organization are presented in Figure 4.8 below:

	CFE	GFE
Prime Contractor	3/11	5/10
Subcontractor	---	1/1
SPO	6/7	7/7
PO	---	5/6
PCAO	1/1	2/2
SCAO	2/2	2/2

Figure 4.8. Important, Not Measurable and Available Cost Elements by Organization

Detailed results for each cost element are located in Tables 13 and 14 in Appendix H.

Interpretation of Results

A conclusion in Research Question One that the respondents are not fully aware of the importance of contract administration office costs directly effects the results of

Research Question Four. If the PCAO and SCAO cost elements had been judged "Important" and "Not Measurable and Available," then more data generation would be required.

Conclusion

Sixty-nine percent of the cost elements that are deemed to be "Important" are also categorized as "Not Measurable and Available." The conclusion is that a standard management cost analysis procedure cannot be developed at this time because significant data estimation or accumulation is required.

SUMMARY OF QUESTIONNAIRE RESULTS

A summary of the questionnaire results is found in Tables 1 and 2.

Table 1

Summary of Questionnaire Results: CFE

Contractor		Government				
Prime Contractor	Subcontractor	SPO	PO	Prime CAO	Sub CAO	Total
Research Question One: Organizational Placement of Elements (# of agrees/total elements)						
11/11	---	8/8	---	5/5	5/5	29/29
Research Question Two: Adequacy of CFE/GFE Management Cost Analysis Importance (# important/total # of elements)						
11/11	---	7/8	---	1/5	2/5	21/29
Frequency of Consideration (# of high frequency considerations/total elements)						
1/11	---	0/8	---	0/5	0/5	1/29
Adequacy (# of elements adequate/total # of elements)						
1/11	---	1/8	---	4/5	3/5	9/29
Research Question Three: Practicality of use (# of measurable and available elements/total elements)						
8/11	---	1/8	---	0/5	0/5	9/29
Research Question Four: Important Elements Requiring Data Generation (# of not measurable and available elements/# of important elements)						
3/11	---	6/7	---	1/1	2/2	12/21

Table 2

Summary of Questionnaire Results: GFE

Contractor		Government				
Prime Contractor	Subcontractor	SPO	PO	Prime CAO	Sub CAO	Total
Research Question One: Organizational Placement of Elements (# of agrees/total elements)						
10/10	1/1	8/8	7/7	5/5	5/5	36/36
Research Question Two: Adequacy of CFE/GFE Management Cost Analysis Importance (# important/total # of elements)						
10/10	1/1	7/8	6/7	2/5	2/5	28/36
Frequency of Consideration (# of high frequency considerations/total elements)						
0/10	0/1	0/8	0/7	0/5	0/5	0/36
Adequacy (# of elements adequate/total # of elements)						
0/10	0/1	1/8	1/7	3/5	3/5	8/36
Research Question Three: Practicality of Use (# of measurable and available elements/total elements)						
5/10	0/1	0/8	1/7	5/5	5/5	16/36
Research Question Four: Important Elements Requiring Data Generation (# of not measurable and available elements/# of important elements)						
5/10	1/1	7/7	5/6	2/2	2/2	22/28

Chapter 5

FINDINGS AND RECOMMENDATIONS

The purpose of this research is to identify, define, and assess the use of the practical and relevant elements of management cost that should be considered in the CFE/GFE selection process. Four research questions were posed to achieve the research objectives. The conclusions reached in answering the four research questions are summarized below.

SUMMARY OF FINDINGS AND CONCLUSIONS

The research identified and defined sixty-five elements of management cost (Figures 4.1 and 4.2). The sample of CFE/GFE decision makers agreed with the existence and organizational placement of the cost elements. This list of cost elements as structured provides a baseline for potential development of a systematic cost analysis procedure.

Although the cost elements presented to the respondents are strongly considered as important, the elements are seldom used in CFE/GFE decisions. Forty-nine (seventy-five percent) of the cost elements are judged to be important to a CFE/GFE decision (Tables 5 and 6). Only one of the

forty-nine important elements (profit) has been frequently used in past cost analyses. The conclusion is that CFE/GFE management cost analysis is currently inadequate.

A principal concern of the researchers was the development of a list of practical management cost elements. A cost element is practical if it is measurable, available, and cost effective. The respondents indicated that forty of the sixty-five cost elements (sixty-two percent) are not measurable and available. The conclusion is that a majority of the cost elements cannot currently be used on a practical basis.

Because sufficient data do not exist for the majority of the cost elements, the researchers conclude that an effective standard procedure for management cost analysis cannot be developed at this time.

COROLLARY FINDINGS

Several issues not directly related to the research objective were identified during the conduct of the survey. These corollary findings are discussed individually below.

Importance of PCAO and SCAO Cost Elements

As discussed in Chapter 4, only seven of the twenty cost elements associated with the contract administration offices were categorized as "Important." The researchers are of the opinion that this apparent low degree of

importance is caused by the perceptions of the respondents. The respondents are either unaware of or not concerned with PCAO and SCAO costs.

One may infer from these data results that there is a less than ideal relationship between buying activities and contract administration offices. Given that expenditures for personnel are the major portion of the DOD budget, failure of the buying activities to consider personnel costs in developing acquisition strategies can result in suboptimal use of government resources.

"Sunk" Cost of Government Personnel and Facilities

Several respondents in both the interview and questionnaire revealed that they had been directed not to consider the costs of government facilities and manpower in CFE/GFE cost analysis (Appendices E and F). This direction was given because there was a feeling that the facilities and personnel costs would be incurred whether a component was acquired as CFE or GFE. Another respondent did indicate that engineering manpower was considered in the "breakout" decision, but only when there was a shortage of engineers for support of the program. Based upon specific comments from the interviewees and their general attitudes reflected during the research, the researchers subjectively conclude that CFE/GFE decision makers in general think that government facilities and personnel expenses are "sunk" costs. For the

reasons discussed in the preceding section, personnel costs must be considered as important variables by CFE/GFE decision makers.

Moderating Factors

Throughout the research many factors other than cost that influence CFE/GFE decisions were brought to the attention of the researchers. Among these moderating factors are excessive government procurement lead times, standardization advantages of GFE, increased risk of GFE, and political considerations of Foreign Military Sales. For example, some Foreign Military Sales cases are accepted with less than normal procurement lead time available to satisfy the demands of the customer. Because of this inadequate lead time, components that had been previously "broken out" as GFE were converted to CFE with little or no consideration of costs. Discussion of other moderating factors is found in Appendices F and G. The researchers acknowledge the existence and effect of these moderating factors on CFE/GFE decisions. However, the researchers have the opinion that CFE/GFE decision makers use the moderating factors as reasons for not performing an objective cost analysis.

Individual Bias

The researchers perceived during the interviews that there is personal bias regarding CFE and GFE. Most of the decision makers in GFE management offices tended to favor

GFE as the preferred acquisition strategy. Conversely, CFE/GFE decision makers in the major system acquisition offices were skeptical of GFE because of past technical and schedule problems. The presence of personal bias probably distorts the objectiveness of CFE/GFE decisions.

Ranking of Cost Elements by Importance

As an additional effort, the researchers attempted to rank the cost elements according to their relative order of importance within each organizational grouping. To accomplish the ranking, the importance categories of Question Three (Q3) on the questionnaire were converted to a one-hundred point scale. For example, "Not Important" was converted to 1-20, "Nice to have" converted to 21-40, and so forth. Using the data from the frequency tables for each cost element, the median for grouped data was then computed using the approach suggested by Clark and Schkade (3:67-68). The computed medians were then used to rank the cost elements according to importance. The results of the computations are that the medians were not significantly different enough to allow a ranking of importance with any confidence.

RECOMMENDATIONS

The objective of this research, to identify and define the relevant and practical elements of CFE/GFE management cost, and to assess the adequacy of their use is

accomplished. The results of this research show (1) that CFE/GFE management cost analysis is generally inadequate, and (2) that the absence of data regarding most cost elements precludes the immediate development of an objective management cost analysis procedure.

The following recommendations are provided to assist in alleviating the inadequacy of CFE/GFE management cost analysis.

1. Air Force Systems Command (AFSC) personnel should perform a study of CFE/GFE management cost analysis within each product division of the command. The purpose of this study should be to determine if CFE/GFE management cost analysis is adequate within SAMSO, ESD, and ADTC and to verify the results of this research regarding ASD. The researchers believe that the research design used here will provide a valid assessment of the adequacy of CFE/GFE management cost analysis throughout AFSC.

2. The study should include questions to ascertain why individual cost elements appear to be not measurable or available. The researchers have identified three reasons why cost data are not measurable or available.

a. The element is not measurable.

b. The element is measurable but no action has been taken to estimate or accumulate the cost data.

c. The element is measurable, it is being estimated

or accumulated, but the data is not being provided to the CFE/GFE decision makers.

If the element of cost is not measurable, little action can be taken. If the element is measurable, but data are not being estimated or accumulated, then action should be taken by the AFSC product divisions to gather the data for the important and practical cost elements. An idea to consider in this regard is the establishment of government overhead pools to which costs such as building expenses, maintenance, utilities, and general and administrative expenses could be allocated. The successful establishment of this type of government overhead pool could provide specific cost data to be used in a CFE/GFE management cost analysis.

If the element is currently measurable and available but not being provided to CFE/GFE decision makers, then AFSC and the product divisions should insure that the data are provided to the SPOs and project offices by the organizations that control the data.

3. If a determination is made by AFSC personnel that improvement in management cost analysis is required at one or more of the product divisions and sufficient data are generated, then a standard procedure should be developed to aid in performing the analysis. The conceptual framework and the cost elements identified in this research could be used as a basis for the procedure.

4. No attempt was made during this research to determine if the structure of the contractor cost portion of the conceptual framework correlated with the cost and pricing data submitted by defense contractors. Additional study may be required to determine if the contractor cost sections of the analysis framework can be adapted to match the format in which contractors submit cost data.

5. AFSC should issue policy guidance concerning the effect of moderating factors on objective cost analyses. If a CFE or GFE acquisition strategy has been predetermined because of a dominant moderating factor such as shortened procurement lead time or the desire for standardization, then a cost analysis should still be performed. The difference in cost between the CFE and GFE approach is an approximate indicator of the "cost" of the moderating factor. If the cost of the moderating factor is excessive, then the predetermined acquisition approach should be reconsidered.

APPENDIX A

DEFINITION OF TERMS

Prime Contractor--Contractor responsible for production of the overall system.

Subcontractor (Vendor)--Contractor responsible for production of the CFE or GFE subsystem.

System Program Office (SPO)--The government organization responsible for management of the overall system production.

Project Office (PO)--The organization responsible for management of the GFE subsystem.

Prime Contractor Contract Administration Office (PCAO)--The government organization responsible for the administration of the contract for the overall system.

Subcontractor Contract Administration Office (SCAO)--The government organization responsible for administration of the contract for the CFE or GFE subsystem.

APPENDIX B

STRUCTURED INTERVIEW OUTLINE

I. Personal Introduction

II. Overview of Thesis Effort--Briefing

A. Background regarding requirement for CFE/GFE cost analysis

1. ASPR
2. ASDR 800-9

B. Objective of the research

C. Purpose of the interview and questionnaire

III. Open dialogue between researchers and interviewees

IV. Explanation of mechanics of questionnaire

APPENDIX C

CFE/GFE MANAGEMENT COST QUESTIONNAIRE

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (AU)
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433

REPLY TO ATTN OF: LSGR (LSSR 22-78B/1st Lt B. Dillard/1st Lt P. Inscoe/ AUTOVON 785-6513)

JUN 1 9 1978

SUBJECT: Contractor Furnished Equipment (CFE)/Covernment Furnished Equipment (GFE) Management Cost Questionnaire

TO:

1. The attached questionnaire was prepared by a research team at the Air Force Institute of Technology, Wright-Patterson AFB, OH. The purpose of the questionnaire is to identify and define the relevant and practical elements of management cost that should be considered in the selection and management of CFE and GFE.

2. You are requested to provide an answer or comment for each question. Headquarters USAF Survey Control Number 78-126 has been assigned to this questionnaire. Your participation in this research is voluntary.

3. Your responses to the questions will be held confidential. Please remove this cover sheet before returning the completed questionnaire. Your cooperation in providing this data will be appreciated and will be very beneficial in improving the CFE/GFE decision-making process.

Henry W. Parlett

HENRY W. PARLETT, Colonel, USAF
Associate Dean for Graduate Education
School of Systems and Logistics

2 Atch
1. Questionnaire
2. Return Envelope

PRIVACY STATEMENT

In accordance with paragraph 30, AFR 12-35, the following information is provided as required by the Privacy Act of 1974:

a. Authority:

(1) 5 U.S.C. 301, Departmental Regulations; and/or

(2) 10 U.S.C. 8012, Secretary of the Air Force, Powers, Duties, Delegation by Compensation; and/or

(3) DOD Instruction 1100.13, 17 Apr 68, Surveys of Department of Defense Personnel; and/or

(4) AFR 30-23, 22 Sep 76, Air Force Personnel Survey Program.

b. Principal Purposes. The survey is being conducted to collect information to be used in research aimed at illuminating and providing inputs to the solutions of problems of interest to the Air Force and/or DOD.

c. Routine Uses. The survey data will be converted to information for use in research of management related problems. Results of the research, based on the data provided, will be included in written master's theses and may also be included in published articles, reports, or texts. Distribution of the results of the research, based on the survey data, whether in written form or presented orally, will be unlimited.

d. Participation in this survey is entirely voluntary.

e. No adverse action of any kind may be taken against any individual who elects not to participate in any or all of this survey.

are of the opinion that this apparent low degree of

CFE/GFE MANAGEMENT COST QUESTIONNAIRE

The purpose of this questionnaire is to identify and define the relevant and practical elements of management cost that should be considered in the selection and management of either Contractor Furnished Equipment (CFE) or Government Furnished Equipment (GFE). The research is conducted by an AFIT thesis team for the Air Force Business Research Management Center. To this point, approximately 25 management cost elements have been identified by the available literature and a panel of experts in systems acquisition and contracting. Additionally, these management cost elements have been classified into the organizations involved with CFE/GFE management cost elements.

Instructions

1. Detach the five computer response sheets provided. Note the page numbers in the upper left hand corner (1,2,3,4, and 5). It is important that you begin with page one, complete the front side (62 questions) and then begin page two. You will notice in the questionnaire that renumbering occurs after 62 questions starting again with question one. This question one corresponds with question one on the second (page 2) of the computer response sheets. Repeat this process with each response sheet. Again, COMPLETE ONLY THE FRONT SIDE OF THE RESPONSE SHEETS.

2. Do not enter your social security account number (SSAN).

3. The first half of the questionnaire deals with CFE management cost elements. The second half of the questionnaire deals with GFE management cost elements. The management cost elements are categorized by the organization which incurs the cost.

For each management cost element, you are asked to answer four questions. For example, in the management of CFE, the prime contractor incurs a management cost for inspection and testing of a CFE item. Questions 5 through 8 in the questionnaire ask the following four questions concerning management cost of inspection and testing CFE:

5. How often has this cost element (inspection and testing of CFE) been considered in past CFE/GFE selection decisions of which you have personal knowledge?

Percentage of times considered

Never					Always
A	B	C	D	E	
1-20%	21-40%	41-60%	61-80%	81-100%	

6. How often are the data for estimating this cost element (inspection and testing of CFE equipment) measurable and available?

Percentage of times available and measurable

Never					Always
A	B	C	D	E	
1-20%	21-40%	41-60%	61-80%	81-100%	

7. How important should this element of cost (inspection and testing of CFE equipment) be in making a CFE/GFE decision?

A	B	C	D	E
Not Important	Nice To Have	Need To Have	Very Important	Vital

8. If you do not agree with the organizational placement (Prime Contractor) of this cost element (inspection and testing of CFE), please indicate the organization which you think incurs the cost. If you do agree with the organizational placement, mark sense response G.

A	B	C	D	E	F	G
Prime Contr	Sub-Contr	SPO	Project Office	Prime Contr Admin Office	Sub-Contr Admin Office	Agree as is

The above four questions have been standardized as questions Q1 through Q4 as shown on the last page of the questionnaire. Detach this page of standard questions from

the questionnaire. These four questions are to be applied to each management cost element. For example, in the questionnaire itself, questions 5 through 8 shown above are listed as:

CONTRACTOR FURNISHED EQUIPMENT

Prime Contractor

A. Element of Cost: (Definition)

1. Q1 2. Q2 3. Q3 4. Q4

B. Inspection and Test: (Definition)

5. Q1 6. Q2 7. Q3 8. Q4

In completing the questionnaire, apply the questions on the detached page to each management cost element as indicated by the questionnaire. To complete the example, question 5 of the questionnaire is question Q1 applied to inspection and testing of CFE by the Prime Contractor. Should your answer be that inspection and testing of CFE has been considered 50% of the time in past CFE/GFE decisions, mark sense response C for question 5 on the computer coding sheet.

4. There may be questions concerning elements of management cost of which you have no personal knowledge. In this instance, please leave such questions blank.

5. If you are knowledgeable of a management cost element not listed, add it to the list at the end of the questionnaire and answer questions 1 through 4 regarding this added cost element.

6. At the end of the questionnaire are three general application questions pertaining to CFE/GFE selection decisions. Please use the space provided to answer these questions.

7. Upon completing the questionnaire, please place all materials in the return envelope provided and place in the base distribution system.

CFE/GFE MANAGEMENT COST QUESTIONNAIRE

CONTRACTOR FURNISHED EQUIPMENT: CFE

Contractor Cost Elements

Prime Contractor: contractor responsible for production of the overall system.

Direct Costs: costs which can be attributed to a specific item of CFE.

A. Receiving and Handling: any labor, material, or equipment cost associated with receiving, repair, re-work, repackaging, storage, and transportation to place of assembly.

1. Q1 2. Q2 3. Q3 4. Q4

B. Inspection and Test: any labor, material, or equipment cost incurred while visually or functionally inspecting or testing the CFE item.

5. Q1 6. Q2 7. Q3 8. Q4

C. Labor, Engineering, Materials, and Manufacturing: costs incurred when the prime contractor performs modifications to the CFE or does work that adds value to the piece of equipment.

9. Q1 10. Q2 11. Q3 12. Q4

D. Mission Support: costs such as travel and direct management support for a specific CFE item.

13. Q1 14. Q2 15. Q3 16. Q4

Indirect Costs: commonly referred to as overhead or burden. Includes a wide variety of expenses which are incurred for the benefit of two or more items of CFE.

A. Plant Overhead: costs such as maintenance of physical facilities, depreciation, and rent.

17. Q1 18. Q2 19. Q3 20. Q4

B. Labor Overhead: costs for auxiliary work performed in connection with product manufacture not identifiable with the cost of a specific item of CFE.

21. Q1 22. Q2 23. Q3 24. Q4

C. Engineering Overhead: costs for auxiliary work by engineering or equivalent personnel performed in connection with product manufacture not identifiable with the cost of a specific item of CFE.

25. Q1 26. Q2 27. Q3 28. Q4

D. Manufacturing Overhead: includes all production costs except direct labor and direct materials costs. It cannot be traced to a specific unit of CFE.

29. Q1 30. Q2 31. Q3 32. Q4

E. Materials Overhead: cost of factory materials which cannot be assigned to any specific unit of CFE.

33. Q1 34. Q2 35. Q3 36. Q4

F. General and Administrative Expense: cost of running the business such as purchasing, marketing, legal fees, and clerical support.

37. Q1 38. Q2 39. Q3 40. Q4

G. Profit:

41. Q1 42. Q2 43. Q3 44. Q4

Subcontractor: (Vendor) contractor responsible for production of the CFE subsystem.

As defined in this study, there is no subcontractor management cost for CFE that is not accounted for in the basic unit price.

Government Cost Elements

Systems Program Office: (SPO) the government organization responsible for management of the overall system production.

Direct Costs: costs which can be attributed to the specific CFE item.

A. Mission Support: costs such as travel and direct management support for a specific CFE item.

45. Q1 46. Q2 47. Q3 48. Q4

Manpower: (Direct Labor) costs for salaries and benefits of the personnel who perform the following functions for a specific CFE item:

B. Procurement Manpower:

49. Q1 50. Q2 51. Q3 52. Q4

C. Projects Division Manpower:

53. Q1 54. Q2 55. Q3 56. Q4

D. Manufacturing Operations Manpower:

57. Q1 58. Q2 59. Q3 60. Q4

E. Configuration Management Manpower: (Question 1: Begin Page 2)

61. Q1 62. Q2 1. Q3 2. Q4

F. Data Management Manpower:

3. Q1 4. Q2 5. Q3 6. Q4

G. Engineering Manpower:

7. Q1 8. Q2 9. Q3 10. Q4

Indirect Costs: commonly referred to as overhead or burden. Includes a wide variety of expenses which are incurred for the benefit of two or more items of CFE. These costs include such items as:

A. Building maintenance, utilities, and clerical support:

11. Q1 12. Q2 13. Q3 14. Q4

Project Office: the government organization responsible for management of the overall system production.

There are no project office costs (as defined in the context of this study) for the management of CFE.

Prime Contract Administration Office: the government organization responsible for the administration of the contract for the overall system.

Direct Costs: costs which can be attributed to a specific item of CFE.

Manpower: (Direct Labor) costs for salaries and benefits of the personnel who perform the following functions for a specific CFE item:

A. Quality Assurance:

15. Q1 16. Q2 17. Q3 18. Q4

B. Contract Administration:

19. Q1 20. Q2 21. Q3 22. Q4

C. Property Administration:

23. Q1 24. Q2 25. Q3 26. Q4

Indirect Costs: commonly referred to as overhead or burden. Includes a wide variety of expenses which are incurred for the benefit of two or more items of CFE.

A. Rent on Contractor Facility:

27. Q1 28. Q2 29. Q3 30. Q4

B. General and administrative expenses such as clerical support, supplies, etc.

31. Q1 32. Q2 33. Q3 34. Q4

Subcontract Administration Office: the government organization responsible for administration of the contract for the CFE subsystem.

Direct Costs: costs which can be attributed to a specific item of CFE.

Manpower: (Direct Labor) costs for salaries and benefits of the personnel who perform the following functions for a specific CFE item:

A. Quality Assurance:

35. Q1 36. Q2 37. Q3 38. Q4

B. Contract Administration:

39. Q1 40. Q2 41. Q3 42. Q4

C. Property Administration:

43. Q1 44. Q2 45. Q3 46. Q4

Indirect Costs: commonly referred to as overhead or burden. Includes a wide variety of expenses which are incurred for the benefit of two or more items of CFE.

A. Rent on Contractor Facility:

47. Q1 48. Q2 49. Q3 50. Q4

B. General and administrative expenses such as clerical support, supplies, etc.

51. Q1 52. Q2 53. Q3 54. Q4

GOVERNMENT FURNISHED EQUIPMENT: GFE

Contractor Cost Elements

Prime Contractor:

Direct Costs: costs which can be attributed to a specific item of GFE.

A. Receiving and Handling: any labor, material, or equipment cost associated with receiving, repair, rework, repackaging, storage, and transportation to place of assembly.

55. Q1 56. Q2 57. Q3 58. Q4

B. Inspection and Testing: any labor, material, or equipment cost incurred while visually or functionally inspecting or testing the GFE item.

59. Q1 60. Q2 61. Q3 62. Q4

(GO TO COMPUTER RESPONSE SHEET PAGE 3)

C. Labor, engineering, materials and manufacturing: costs incurred when the prime contractor performs modifications to the GFE or does work that adds value to the piece of GFE equipment.

1. Q1 2. Q2 3. Q3 4. Q4

D. Installation: any labor, material or equipment cost associated with installing the GFE equipment in the aircraft/end-item.

5. Q1 6. Q2 7. Q3 8. Q4

Indirect Costs: commonly referred to as overhead or burden. It includes a wide variety of expenses which are incurred for the benefit of two or more items of GFE.

A. Plant Overhead: costs such as maintenance of physical facilities, depreciation, and rent.

9. Q1 10. Q2 11. Q3 12. Q4

B. Labor Overhead: costs for auxiliary work performed in connection with product manufacture not identifiable with the cost of a specific item of GFE.

13. Q1 14. Q2 15. Q3 16. Q4

C. Engineering Overhead: costs for auxiliary work by engineering or equivalent personnel performed in connection with product manufacture not identifiable with the cost of a specific item of GFE.

17. Q1 18. Q2 19. Q3 20. Q4

D. Manufacturing Overhead: includes all production costs except direct labor and direct materials costs. It cannot be traced to a specific unit of GFE.

21. Q1 22. Q2 23. Q3 24. Q4

E. Materials Overhead: cost of factory materials which cannot be assigned to any specific unit of GFE.

25. Q1 26. Q2 27. Q3 28. Q4

F. General and Administrative Expense: costs of running the business such as purchasing, marketing, legal fees, and clerical support.

29. Q1 30. Q2 31. Q3 32. Q4

Subcontractor: (Vendor) contractor responsible for production of the GFE subsystem.

A. Repair Charges: costs incurred for repair of items damaged subsequent to subcontractor delivery and not covered by warranty.

33. Q1 34. Q2 35. Q3 36. Q4

Government Cost Elements

Systems Program Office: (SPO) the government organization responsible for management of the overall system production.

Direct Costs: costs which can be attributed to the specific GFE item.

A. Mission Support: costs such as travel and direct management support for a specific GFE item.

37. Q1 38. Q2 39. Q3 40. Q4

Manpower: (Direct Labor) costs for salaries and benefits of the personnel who perform the following functions for a specific GFE item:

B. Procurement Manpower:

41. Q1 42. Q2 43. Q3 44. Q4

C. Projects Division Manpower:

45. Q1 46. Q2 47. Q3 48. Q4

D. Manufacturing Operations Manpower: this cost element includes the costs of requirements computation, purchase request processing, and financial management.

49. Q1 50. Q2 51. Q3 52. Q4

E. Configuration Management Manpower:

53. Q1 54. Q2 55. Q3 56. Q4

F. Data Management Manpower:

57. Q1 58. Q2 59. Q3 60. Q4

G. Engineering Manpower:

61. Q1 62. Q2 1. Q3* 2. Q4

*(GO TO COMPUTER RESPONSE SHEET PAGE 4)

Indirect Costs: commonly referred to as overhead or burden. Includes a wide variety of expenses which are incurred for the benefit of two or more items of GFE. These costs include such items as:

A. Building Maintenance, utilities, and clerical support. General Administrative expenses.

3. Q1 4. Q2 5. Q3 6. Q4

Project Office: the government organization responsible for management of the GFE subsystem.

Direct Costs: costs which can be attributed to a specific item of GFE.

A. Mission Support: costs such as travel and direct management support for a specific GFE item.

7. Q1 8. Q2 9. Q3 10. Q4

B. Transportation: Government Bill-of-Lading (GBL) charges for movement of equipment from vendor to prime contractor or government facility (Air Logistics Center)

11. Q1 12. Q2 13. Q3 14. Q4

Manpower: (Direct Labor) costs for salaries and benefits of the personnel who perform the following functions for a specific GFE item:

C. Project Management Manpower:

15. Q1 16. Q2 17. Q3 18. Q4

D. Procurement Manpower:

19. Q1 20. Q2 21. Q3 22. Q4

E. Engineering Manpower:

23. Q1 24. Q2 25. Q3 26. Q4

F. Configuration and Data Management Manpower:

27. Q1 28. Q2 29. Q3 30. Q4

Indirect Costs: commonly referred to as overhead or burden. Includes a wide variety of expenses which are incurred for the benefit of two or more items of GFE. These costs include such items as:

A. Building Maintenance, utilities, and clerical support. General Administrative expenses.

31. Q1 32. Q2 33. Q3 34. Q4

Prime Contract Administration Office: the government organization responsible for the administration of the contract for the overall end-item/system.

Direct Costs: costs which can be attributed to a specific item of GFE.

Manpower: (Direct Labor) costs for salaries and benefits of the personnel who perform the following functions for a specific GFE item:

A. Quality Assurance:

35. Q1 36. Q2 37. Q3 38. Q4

B. Contract Administration:

39. Q1 40. Q2 41. Q3 42. Q4

C. Property Administration:

43. Q1 44. Q2 45. Q3 46. Q4

Indirect Costs: commonly referred to as overhead or burden. Includes a wide variety of expenses which are incurred for the benefit of two or more items of GFE.

A. Rent on Contractor Facility

47. Q1 48. Q2 49. Q3 50. Q4

B. General and administrative expenses such as clerical support, supplies, etc.

51. Q1 52. Q2 53. Q3 54. Q4

Subcontract Administration Office: the government organization responsible for administration of the contract for the GFE subsystem.

Direct Costs: costs which can be attributed to a specific item of GFE.

Manpower: (Direct Labor) costs for salaries and benefits of the personnel who perform the following functions for a specific GFE item:

A. Quality Assurance:

55. Q1 56. Q2 57. Q3 58. Q4

B. Contract Administration:

59. Q1 60. Q2 61. Q3 62. Q4

(GO TO COMPUTER RESPONSE SHEET PAGE 5)

C. Property Administration:

1. Q1 2. Q2 3. Q3 4. Q4

Indirect Costs: commonly referred to as overhead or burden. Includes a wide variety of expenses which are incurred for the benefit of two or more items of GFE.

A. Rent on Contractor Facility:

5. Q1 6. Q2 7. Q3 8. Q4

B. General and administrative expenses such as clerical support, supplies, etc.

9. Q1 10. Q2 11. Q3 12. Q4

GENERAL APPLICATION QUESTIONS

1. Are there any special or unique characteristics of the equipment for which you are responsible that would cause a systematic consideration of any or all of these cost elements to be particularly favorable or unfavorable? If so, please explain. Try to be specific when identifying elements of cost.

2. What individual or organization is responsible for the cost analysis involved in CFE/GFE decisions for which you are responsible or for which you support?

3. To the best of your knowledge, what organization(s) support the cost analysis involved in CFE/GFE decisions?

Please use the remaining space for candid remarks regarding this research effort and questionnaire.

REMOVE THIS PAGE FOR REFERENCE

QUESTIONS

Question 1 (Q1): How often has this cost element been considered in past CFE/GFE selection decisions of which you have personal knowledge?

Percentage of times considered

	1-20%	21-40%	41-60%	61-80%	81-100%	
Never	||	||	||	||	||	Always
	A	B	C	D	E	

Question 2 (Q2): How often are the data for estimating this cost element measurable and available?

Percentage of times measurable and available

	1-20%	21-40%	41-60%	61-80%	81-100%	
Never	||	||	||	||	||	Always
	A	B	C	D	E	

Question 3 (Q3): How important should this element of cost be in making a CFE/GFE decision?

Not Important	Nice to have	Need to have	Very Important	Vital
||	||	||	||	||
A	B	C	D	E

Question 4 (Q4): If you do not agree with the organizational placement of this cost element, please indicate the organization which you think incurs the cost. If you do agree with the organizational placement, mark sense response G.

A Prime Contractor
B Subcontractor
C Systems Program Office
D Project Office
E Prime Contract Administration Office
F Subcontractor Administration Office
G Agree with organizational placement as is

A	B	C	D	E	F	G
||	||	||	||	||	||	||

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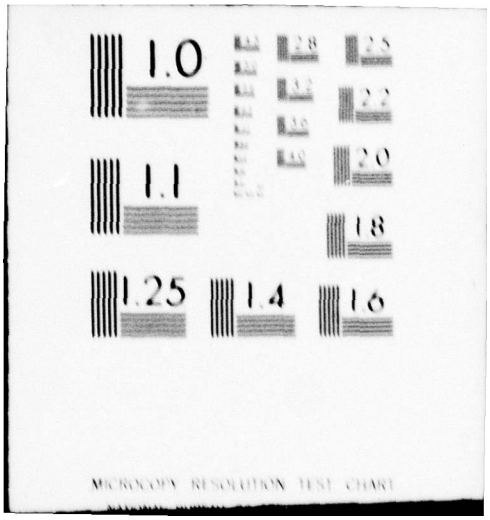
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APPENDIX D

ORGANIZATIONS WHICH WERE SAMPLED

Office Symbol	Name of Organization
AEA	Avionics and Aircraft Accessories SPO
AEG	Support Equipment SPO
AEL	Life Support SPO
AEP	Directorate of Program Control
AER	Reconnaissance/Strike SPO
AEW	Electronic Warfare SPO
SD25	EF-111A Tactical Jamming System SPO
SD29	Advanced Medium STOL Transport SPO
SD30	Fighter/Attack SPO
YF	Deputy for F-15
YM *	Deputy for Remotely Piloted Vehicles
YP *	Deputy for F-16
YX	Deputy for A-10
YZ *	Deputy for Propulsion

*These organizations either did not respond to the request for interviews or scheduled the interviews after the research had been terminated.

APPENDIX E

SUPPLEMENTAL QUESTIONNAIRE RESPONSES

_____
Organization

1. Is a systematic management cost analysis performed for CFE/GFE decisions?

2. Who participates in the cost analysis? (Circle as appropriate)

   Management Procurement Engineering Program Support

   Other: _____
   (Specify)

3. If Project Office (PO) performs cost analysis, does major system SPO assist? Does the SPO review analysis of PO?

4. If SPO performs cost analysis, does PO assist? Does the PO review analysis of SPO?

5. Describe the cost analysis used in CFE/GFE decisions in your organization:

Attach any applicable OIs, policy statements, or cost models used in CFE/GFE cost analysis.

Program Managers of the organizations sampled were asked to complete the supplemental questionnaire shown on the previous page (page 84). Four program managers completed the questionnaire. The results are listed by organization (Organization 1, Organization 2, etc.) below:

Question 1: Is a systematic management cost analysis performed for CFE/GFE decisions?

Organization (Org) 1: Yes
Org 2: I have been told "yes."
Org 3: Yes
Org 4: Yes, during component breakout planning cycle--limited unless sufficiently available data is obtainable!

Question 2: Who participates in the cost analysis? (Circle as appropriate)

Management Procurement Engineering Program Support

Other: _____
(Specify)

Org 1: Management, Procurement, Engineering, Program Control
Org 2: Procurement, Engineering, Logistics
Org 3: Procurement, Program Support, Manufacturing
Org 4: Procurement, Engineering, Program Support, Manufacturing (technical feasibility)

Question 3: If Project Office (PO) performs cost analysis, does major system SPO assist? Does the SPO review analysis of PO?

Org 1: No project office involved with (our aircraft).
Org 2: They (PO) have not performed analysis; the SPO did. (SPO review of analysis is) not applicable.
Org 3: Yes, Yes
Org 4: The major system SPO completes all cost review for the SPO as a key input to final decision on CFE/GFE.

Question 4: If SPO performs cost analysis, does PO assist? Does the PO review analysis of SPO?

Org 1: Not applicable.
Org 2: Yes, No. SPO does analysis . . . asks PO to get quote (price).
Org 3: No, No.
Org 4: No, only informally if requested. Not formally, but it is assumed this review is completed.

Question 5: Describe the cost analysis used in CFE/GFE decisions in your organization:

Org 1: Acquisition cost only. Life cycle costs were not considered because of time constraints.
Org 2: Unknown. Production division does this.
Org 3: Cost analysis is performed by the Program Control Office using factors such as subsystem cost to (subcontractor) and its cost of GFE management by the Government as an offset to (subcontractor's) price to the SPO.
Org 4:
- CFE cost is analyzed for outyears.
- Source for GFE procurement is quantified.
- Formal cost analysis is completed.
- Item analyzed: Money commitment, technical review, feasibility of available delivery vs. requirement, financial review completed.
- Decision is made.

Attach any applicable OIs, policy statements, or cost models used in CFE/GFE cost analysis.

None received.

APPENDIX F

GENERAL APPLICATION QUESTIONS

1. Are there any special or unique characteristics of the equipment for which you are responsible that would cause a systematic consideration of any or all of these cost elements to be particularly favorable or unfavorable? If so, please explain. Try to be specific when identifying elements of cost.

2. What individual or organization is responsible for the cost analysis involved in CFE/GFE decisions for which you are responsible or for which you support?

3. To the best of your knowledge, what organization(s) support the cost analysis involved in CFE/GFE decisions?

Please use the remaining space for candid remarks regarding this research effort and questionnaire.

Question 1: Are there any special or unique characteristics of the equipment for which you are responsible that would cause a systematic consideration of any or all of these cost elements to be particularly favorable or unfavorable? If so, please explain. Try to be specific when identifying elements of cost.

Listed below are all responses to General Application Question One:

1. Direct charge all government activities.

2. This is a FMS SPO. Many, if not most, of the decisions are based on political issues involved in country to country agreements.

3. The late approval of FMS programs by the countries and long government procurement lead time has forced most of the formerly GFE items to be procured as CFE. Cost is not a factor considered.

4. Offices C and D are same.

5. I do not manage any GFE at this time.

6. The rapid advance of technology in electronics generally bars use of reprocurement data per se in effecting breakout for avionics equipment. Such breakouts may be done using performance specs which may lead to different equipment, which forces resort to Life Cycle Costing.

7. One element of cost would be interest cost. This element could become significant if the contractor submitted a claim to the Government for delay in receipt of GFE which, in turn, caused a delivery slippage. The interest cost would be a function of the claimed amount.

8. No, unless transportation and packaging is included, in which case see supplemental sheet.

9. All costs for Government facilities and manpower for SPO, PO, DCAS, etc. were specifically not considered by direction. The explanation being given that those items would be there and paid for whether or not they

were used on these programs. The availability of manpower (specifically engineering) was considered when availability was limited.

10. Since GFE varies broadly--from an inexpensive flight instrument to an aircraft engine--there must be a systematic approach to evaluating costs. It appears that the process differences in treating GFE vs. CFE must be identified first--and then the differences costed.

11. Electronic jamming--more advanced than any operational equipment or systems. Baseline is from either Navy or AEW equipments.

12. All cost elements are important to provide a good analysis, especially as to cost of Government management. In the case of the F-15, the only charge on subcontracted items is McAir profit. This makes identification of the many contractor costs unidentifiable to a particular piece of CFE.

13. Looking at it basically from position of GFE supplier.

14. No equipment involved in relatively a low cost product line.

15. Detailed cost increments which make up larger cost groups such as G&A, Burden, etc, are not considered individually by the SPO but are by the NAVPRO or AFPRO in their audits. The larger cost groups (Burden/G&A profit) all making up the contractor's "wrap-around" is considered by the SPO. In answering these questions, I assumed that if the larger cost groups were important, then each detailed cost increment was considered important although not considered individually.

16. The general concensus of the Transportation and Packaging Group is that transportation charges are not always considered, or perhaps not considered soon enough in the acquisition cycle. This group should be in the contract writing coordination cycle to assure that appropriate ASPR clauses are included to assure the government pays a fair charge for movement of material.

    A recent example of using the wrong FOB terms points out our concern for the unnecessary expenditure of program money. The program involved the movement of

two flatbed loads from a point in California to each of three locations. The contractor quoted shipping costs of $10,786 to one point, $10,272 to another, and $8850 to the third point. If it had been an FOB origin contract using government bills of lading the costs would have been $4615 to the first point, $4364 to the second point, and $4364 to the third, or a difference of $16,443. At the time of this writing the contractor is being queried as to the large discrepancy, but the point is, with the proper FOB terms no problem would exist in this area.

General Application Questions Two and Three both relate to the organizations involved in making or supporting the CFE/GFE decision. In order to provide clearer understanding of organizational relationships in the decision, responses to Questions Two and Three by each respondent will be listed together.

Question 2: What individual or organization is responsible for the cost analysis involved in CFE/GFE decisions for which you are responsible or for which you support?

Question 3: To the best of your knowledge, what organization(s) support the cost analysis involved in CFE/GFE decisions?

The response for Questions Two and Three for each respondent are listed below:

1. (2) None done!
   (3) Management, Engineering, Manufacturing, Procurement, Contract Administration Office

2. (2) Manufacturing Operations in Program Office
   (3) I am unaware of cost analysis being performed.

3. (2) Program Control (SPO)
   (3) Program Control (SPO), AFLC/ALC:Prime for item, ASD/AE:as applicable

4. (2) Production
   (3) Logistics, Engineering

5. (2) Manufacturing. In a normal acquisition, it would be a team chaired by the PCO or program manager.

(3) In practice, none. Normally should be the breakout team.

6. (2) Procurement and Manufacturing Division
   (3) Engineering, Configuration Management, Projects Division, Procurement and Manufacturing Division.

7. (2) ASD/AEP
   (3) Elements of ASD/AEL

8. (2) Program Control
   (3) Program Control

9. (2) We are under the matrix, and the cost analysis division is responsible for any cost analysis needed.
   (3) The cost analysis section of program control.

10. (2) Not being in an airframe SPO, I do not know who does it there. In our SPO, a mixture of program management and procurement.
    (3) AFPRO/DCAS

11. (2) Program Manager
    (3) None

12. (2) Program Managers and Engineering
    (3) Program Managers and Engineering

13. (2) Project Office
    (3) Project Office, Procurement Office, and Pricing Division.

14. (2) Unknown
    (3) Unknown

15. (2) SPO effort when accomplished.
    (3) SPO

16. (2) Program Control (Cost Analysis) and Projects Division.
    (3) Basic decision was political due to cost growth and projected potential savings by staff agency (poorly informed, it turns out). Part II specifications were/are not available for the breakout items and, as it turns out, the configurations have not yet stabilized.

17. (2) Directorate of Procurement and Production and Program Control/Resources Management.
    (3) SPO, Contractor, GFE Manager in SPO

18. (2) In my experience there has been little cost analysis, usually a cost analyst is involved, if there is any analysis.
(3) None in particular

19. (2) Deputy Commander of the SPO and Program Control. Decision based upon need for savings-program desire for cost savings driving the risk acceptable.
(3) ASD/SD and ASD/CC

20. (2) SPO Program Control Division
(3) SPO Program Control Division

21. (2) Program Management
(3) SPO has source involvement. Outside of that, none.

22. (2) Program Control Office
(3) Contracts Division

23. (2) SPO Director
(3) Program Manager, Program Control, Procurement

24. (2) ASD/YFP
(3) None

CANDID REMARKS

1. Should have been done long ago--no real guidance on breakout therefore most decisions are made for political reasons not based on detailed analysis (cost or otherwise)!

2. In the area of Mission Support, either GFE or CFE, it would be practically impossible to measure travel and direct management support for a "specific" CFE item. A factor approach may be feasible.

3. Good treatment of the part of the CFE/GFE decision process that is quantifiable. However, much is qualitative that this questionnaire does not address; e.g., if GFE Government (SPO) must perform integration function either with additional manpower (which may not be available) or by contracting the integration task to the prime (which may largely offset the GFE cost advantage).

4. I have answered only Question #3 because I have no knowledge of Questions 1, 2, and 4. Obviously, cost should be a vital concern. Realistically, I know of no life cycle cost method which is used in deciding to go or not to go GFE vs. CFE on items of equipment. Theoretically (academically), in a comparison of costs of GFE vs. CFE for a specific item, all costs should be considered. We know the contractor does charge us for these costs. What the USAF should do is consider the real incremental costs associated with taking on GFE if we are to make valid cost comparisons.

5. Question 55, page 73: these costs are normal indirect charges under Material Handling Overhead.

   This is a confusing questionnaire and I would have serious doubts as to the validity of individual responses, including my own.

6. CFE/GFE is heavily influenced by policy guidance--more so than pure economics.

7. This survey does not accomodate the following:

   1. Disagreement that the cost element is appropriate at all.
   2. Need to add cost elements for an organization.
   3. Subject of cost advantage to procure larger quantities as a result of GFE for several SPOs.

8. Prime and subcontractor costs available via data requirements on contract. No data available from Prime ACO or Sub ACO. Same as below.

   SPO data for manpower costs have never been considered as a part of acquisition costs.

9. Your questionnaire is quantitatively oriented; consequently, it does not consider the subjective legal implications of breaking out a subsystem and basically having the Government assume responsibility for its technical correctness and timeliness of delivery to the prime system contractor.

10. The questionnaire definitions of SPO and Project Office are confusing and not specifically applicable in AE or SD.

11. Much too long!

12. I have provided answers to the best of my knowledge and understanding of the problem. I also appreciate the complexities, broad range, and wide variances inherent in considering the problem--and most sincerely reflect on whether I believe you will attain a reasonable solution the way you have structured your study. Perhaps I do not really know the full details of your effort--but I believe that you must first identify the differences in the process between GFE and CFE and then cost these differences. You do not need to cost aspects which are identical and repetitive for both CFE and GFE. You should also be careful to distinguish between developmental GFE as compared to reprocurement or production GFE.

13. Standards should be established to assure that the cost savings is real, and continuing as a life cycle cost savings.

    Must address all costs involved and maintain realism in the Government resources available and risk assumed.

14. Answers apply to breakout decisions of unique subsystems.

15. A good cost model would be beneficial but the identification of separate costs may take so long that breakout could not be accomplished.

APPENDIX G

SUMMARY OF INTERVIEW ISSUES

Several issues regarding CFE/GFE cost analysis were introduced by the interviewees during the dialogue with the researchers. Each of these issues have a direct influence on the adequacy of management cost analysis and are discussed separately below.

"Grandfather" Coverage

A respondent voiced his opinion that once a CFE/GFE decision is made, the equipment receives "grandfather" coverage for follow-on procurements. The "grandfather" coverage means that some people who make CFE/GFE decisions think that if CFE or GFE is determined to be the optimal acquisition method for a particular component, then the conditions which influenced the decision never change. Stated another way, the belief is that once an item is "broken out" as a GFE component, procurement of the item as GFE remains cost effective for the duration of the major system program.

Excessive Government Procurement Lead Times

Several comments from decision makers in a SPO heavily involved in Foreign Military Sales (FMS) revealed that some CFE/GFE decisions for FMS programs totally ignore costs as a determining factor.

The interviewees stated that many FMS sales are accepted with less than normal procurement lead time available to satisfy the demands of the customer. Because of this inadequate lead time, components that had been previously "broken out" as GFE were converted to CFE. These reversions to CFE were accomplished because the prime contractors could satisfy delivery schedules that the government could not meet because of excessive government procurement lead time.

Individual Prejudice

Several interviewees frankly stated a personal preference for either CFE or GFE. One individual who was the chairman of the component breakout committee for his organization stated openly that he dislikes GFE, but he was compelled by regulation to consider GFE as an acquisition strategy. The presence of personal bias probably distorts the objectiveness of CFE/GFE decisions.

Local Policy

Interviewees in several organizations initiated discussion of organizational policies that preclude accomplishment of an adequate, objective cost analysis. One such policy pertains to consideration of government personnel costs. The interviewees stated that they had been directed not to consider the cost of government personnel because these costs are "sunk." In other words, the feeling has been

that government personnel costs will be incurred whether an item is acquired as CFE or GFE.

APPENDIX H

TABLES OF DATA RESULTS

Table 3

Organizational Placement of Management Cost Elements: CPE

Contractor Costs		Government Costs			
Prime Contractor:		**SPO:**		**Prime CAO:**	
1. Recvg & Handlg	A=23/29*	12. Mission Suppt	A=24/28	20. Qual Assr Manpwr	A=23/27
2. Insp & Test	A=23/28	13. Proc Manpwr	A=24/28	21. Cont Admin Manpwr	A=23/27
3. Labor, Eng, Matls, Mfg	A=19/27**	14. Proj Div Manpwr	A=24/28	22. Prop Admin Manpwr	A=22/27
4. Mission Suppt	A=22/28	15. Mfg Ops Manpwr	A=24/28	23. Rent on Cont Facility	A=21/24
5. Plant Overhd	A=24/28	16. Config Mgt Manpwr	A=23/28	24. Gen & Admin	A=22/25
6. Labor Overhd	A=22/27	17. Data Mgt Manpwr	A=23/28		
7. Eng Overhd	A=23/27	18. Eng Manpwr	A=23/28		
8. Mfg Overhd	A=22/27	19. Bldg maint, Util, Clerical	A=23/28		
9. Matls Overhd	A=22/27				
10. Gen & Admin Ex	A=23/28	**Project Office:**		**Subcontract CAO:**	
11. Profit	A=21/28	None		25. Qual Assr Manpwr	A=20/26
				26. Cont Admin Manpwr	A=19/25
Subcontractor:				27. Prop Admin Manpwr	A=19/25
None				28. Rent on Cont Facility	A=18/24
				29. Gen & Admin	A=19/25

NOTE: Ratio is the number of respondents agreeing to the total number of respondents.

* A = Agree with organizational placement.

** Represents only a 70% agreement rate.

Table 4

Organizational Placement of Management Cost Elements: GFE

Contractor Costs		Government Costs			
Prime Contractor:		**SPO:**		**Prime CAO:**	
30.Recvg & Handlg	A=23/28*	41.Mission Suppt	A=24/28	56.Qual Assr Manpwr	A=22/26
31.Insp & Test	A=21/27	42.Proc Manpwr	A=23/28	57.Cont Admin Manpwr	A=22/26
32.Labor, Eng, Matls, Mfg	A=22/27	43.Proj Div Manpwr	A=24/28	58.Prop Admin Manpwr	A=22/26
33.Installation	A=22/27	44.Mfg Ops Manpwr	A=24/28	59.Rent on Cont Facility	A=22/26
34.Plant Overhd	A=21/27	45.Config Mgt Manpwr	A=22/27	60.Gen & Admin	A=22/26
35.Labor Overhd	A=21/27	46.Data Mgt Manpwr	A=22/27		
36.Eng Overhd	A=21/27	47.Eng Manpwr	A=23/28		
37.Mfg Overhd	A=21/27	48.Bldg maint, Util, Clerical	A=23/28		
38.Matls Overhd	A=20/26				
39.Gen & Admin Ex	A=22/27	**Project Office:**		**Subcontract CAO:**	
		49.Mission Suppt	A=21/26	61.Qual Assr Manpwr	A=21/26
Subcontractor:		50.Transportation	A=20/26	62.Cont Admin Manpwr	A=21/26
40.Repair Charge	A=20/27**	51.Proj Mgt Manpwr	A=21/26	63.Prop Admin Manpwr	A=22/26
		52.Proc Manpwr	A=21/26	64.Rent on Cont Facility	A=22/26
		53.Eng Manpwr	A=21/26	65.Gen & Admin	A=21/25
		54.Config & Data Mgt Manpwr	A=21/26		
		55.Bldg maint, Util, Clerical	A=21/26		

NOTE: Ratio is the number of respondents agreeing to the total number of respondents.

* A = Agree with organizational placement.

** Represents only a 74% agreement rate.

Table 5

Importance of Management Cost Elements: CFE

Contractor Costs		Government Costs			
Prime Contractor:		**SPO:**		**Prime CAO:**	
1. Recvg & Handlg	I=18/30*	12. Mission Suppt	I=19/29	20. Qual Assr Manpwr	N=14/28
2. Insp & Test	I=18/29	13. Proc Manpwr	I=21/28	21. Cont Admin Manpwr	I=16/28
3. Labor, Eng, Matls, Mfg	I=23/28	14. Proj Div Manpwr	I=20/29	22. Prop Admin Manpwr	N=11/27
4. Mission Suppt	I=19/29	15. Mfg Ops Manpwr	I=19/29	23. Rent on Cont Facility	N=12/25
5. Plant Overhd	I=22/29	16. Config Mgt Manpwr	I=21/29	24. Gen & Admin	N=11/26
6. Labor Overhd	I=17/28	17. Data Mgt Manpwr	I=19/29		
7. Eng Overhd	I=20/28	18. Eng Manpwr	I=18/29		
8. Mfg Overhd	I=20/28	19. Bldg maint, Util, Clerical	N=11/29		
9. Matls Overhd	I=21/28				
10. Gen & Admin Ex	I=23/29	**Project Office:**		**Subcontract CAO:**	
11. Profit	I=25/29	None		25. Qual Assr Manpwr	I=14/27
				26. Cont Admin Manpwr	I=14/27
Subcontractor:				27. Prop Admin Manpwr	N=11/26
None				28. Rent on Cont Facility	N=11/25
				29. Gen & Admin	N=12/25

NOTE: Ratio is the number of respondents classifying the element as important to the total number of respondents.

* I = Important; N = Not Important.

Table 6

Importance of Management Cost Elements: GFE

Contractor Costs		Government Costs			
Prime Contractor:		**SPO:**		**Prime CAO:**	
30. Recvg & Handlg	I=21/29*	41. Mission Suppt	I=21/29	56. Qual Assr Manpwr	I=16/27
31. Insp & Test	I=25/28	42. Proc Manpwr	I=20/28	57. Cont Admin Manpwr	I=16/27
32. Labor, Eng, Matls, Mfg	I=25/28	43. Proj Div Manpwr	I=18/29	58. Prop Admin Manpwr	N=11/27
33. Installation	I=25/28	44. Mfg Ops Manpwr	I=19/29	59. Rent on Cont Facility	N=13/27
34. Plant Overhd	I=20/28	45. Config Mgt Manpwr	I=16/27	60. Gen & Admin	N=11/27
35. Labor Overhd	I=21/28	46. Data Mgt Manpwr	I=16/27		
36. Eng Overhd	I=21/28	47. Eng Manpwr	I=22/29		
37. Mfg Overhd	I=21/28	48. Bldg maint, Util, Clerical	N= 9/29		
38. Matls Overhd	I=20/27				
39. Gen & Admin Ex	I=21/28	**Project Office:**		**Subcontract CAO:**	
		49. Mission Suppt	I=20/27	61. Qual Assr Manpwr	I=14/27
Subcontractor:		50. Transportation	I=19/27	62. Cont Admin Manpwr	I=14/27
		51. Proj Mgt Manpwr	I=21/27	63. Prop Admin Manpwr	N=12/27
40. Repair Charge	I=20/28	52. Proc Manpwr	I=21/27	64. Rent on Cont Facility	N=11/27
		53. Eng Manpwr	I=21/27	65. Gen & Admin	N=12/26
		54. Config & Data Mgt Manpwr	I=20/27		
		55. Bldg maint, Util, Clerical	N=12/27		

NOTE: Ratio is the number of respondents classifying the element as important to the total number of respondents.

* I = Important; N = Not Important.

Table 7

Frequency of Consideration for Each Management Cost Element: CFE

Contractor Costs		Government Costs			
Prime Contractor:		**SPO:**		**Prime CAO:**	
1. Recvg & Handlg	L= 7/29*	12. Mission Suppt	L= 5/28	20. Qual Assr Manpwr	L= 3/26
2. Insp & Test	L=10/28	13. Proc Manpwr	L= 5/27	21. Cont Admin Manpwr	L= 4/26
3. Labor, Eng, Matls, Mfg	L=11/27	14. Proj Div Manpwr	L= 7/28	22. Prop Admin Manpwr	L= 2/25
4. Mission Suppt	L= 6/28	15. Mfg Ops Manpwr	L= 7/28	23. Rent on Cont Facility	L= 2/24
5. Plant Overhd	L=11/28	16. Config Mgt Manpwr	L= 7/28	24. Gen & Admin	L= 3/24
6. Labor Overhd	L=10/27	17. Data Mgt Manpwr	L= 5/27		
7. Eng Overhd	L= 9/27	18. Eng Manpwr	L= 8/27		
8. Mfg Overhd	L=10/27	19. Bldg maint, Util, Clerical	L= 1/27		
9. Matls Overhd	L= 8/27				
10. Gen & Admin Ex	L=12/28	**Project Office:**		**Subcontract CAO:**	
11. Profit	H=17/27	None		25. Qual Assr Manpwr	L= 4/25
				26. Cont Admin Manpwr	L= 4/25
Subcontractor:				27. Prop Admin Manpwr	L= 2/24
None				28. Rent on Cont Facility	L= 2/23
				29. Gen & Admin	L= 3/24

NOTE: Ratio is the number of respondents classifying the element as frequently considered to the total number of respondents.

* L = Low frequency of consideration; H = High frequency of consideration.

Table 8

Frequency of Consideration for Each Management Cost Element: GFE

Contractor Costs		Government Costs			
Prime Contractor:		**SPO:**		**Prime CAO:**	
30. Recvg & Handlg	L= 7/27*	41. Mission Suppt	L= 5/27	56. Qual Assr Manpwr	L= 2/25
31. Insp & Test	L= 9/26	42. Proc Manpwr	L= 5/27	57. Cont Admin Manpwr	L= 2/24
32. Labor, Eng, Matls, Mfg	L=11/26	43. Proj Div Manpwr	L= 5/27	58. Prop Admin Manpwr	L= 1/24
33. Installation	L=11/26	44. Mfg Ops Manpwr	L= 5/27	59. Rent on Cont Facility	L= 2/24
34. Plant Overhd	L= 7/26	45. Config Mgt Manpwr	L= 3/27	60. Gen & Admin	L= 0/24
35. Labor Overhd	L= 8/26	46. Data Mgt Manpwr	L= 3/26		
36. Eng Overhd	L= 7/26	47. Eng Manpwr	L= 5/26		
37. Mfg Overhd	L= 7/26	48. Bldg maint, Util, Clerical	L= 1/27		
38. Matls Overhd	L= 8/25				
39. Gen & Admin Ex	L=11/26	**Project Office:**		**Subcontract CAO:**	
		49. Mission Suppt	L= 5/25	61. Qual Assr Manpwr	L= 1/24
Subcontractor:		50. Transportation	L= 4/25	62. Cont Admin Manpwr	L= 1/24
40. Repair Charge	L= 6/26	51. Proj Mgt Manpwr	L= 6/25	63. Prop Admin Manpwr	L= 2/25
		52. Proc Manpwr	L= 5/25	64. Rent on Cont Facility	L= 2/25
		53. Eng Manpwr	L= 4/24	65. Gen & Admin	L= 1/24
		54. Config & Data Mgt Manpwr	L= 4/24		
		55. Bldg maint, Util, Clerical	L= 1/24		

NOTE: Ratio is the number of respondents classifying the element as frequently considered to the total number of respondents.

* L = Low frequency of consideration; H = High frequency of consideration.

Table 9

Adequacy of Analysis of Management Cost Elements: CFE

Contractor Costs		Government Costs			
Prime Contractor:		**SPO:**		**Prime CAO:**	
1. Recvg & Handlg	N	12. Mission Suppt	N	20. Qual Assr Manpwr	A
2. Insp & Test	N	13. Proc Manpwr	N	21. Cont Admin Manpwr	N
3. Labor, Eng, Matls, Mfg	N	14. Proj Div Manpwr	N	22. Prop Admin Manpwr	A
4. Mission Suppt	N	15. Mfg Ops Manpwr	N	23. Rent on Cont Facility	A
5. Plant Overhd	N	16. Config Mgt Manpwr	N	24. Gen & Admin	A
6. Labor Overhd	N	17. Data Mgt Manpwr	N		
7. Eng Overhd	N	18. Eng Manpwr	N	**Subcontract CAO:**	
8. Mfg Overhd	N	19. Bldg maint, Util, Clerical	A	25. Qual Assr Manpwr	N
9. Matls Overhd	N			26. Cont Admin Manpwr	N
10. Gen & Admin Ex	N	**Project Office:**		27. Prop Admin Manpwr	A
11. Profit	A	None		28. Rent on Cont Facility	A
Subcontractor:				29. Gen & Admin	A
None					

NOTE: N = Not Adequately Analyzed; A = Adequately Analyzed.

Table 10

Adequacy of Analysis of Management Cost Elements: GFE

Contractor Costs		Government Costs			
Prime Contractor:		**SPO:**		**Prime CAO:**	
30.Recvg & Handlg	N	41.Mission Suppt	N	56.Qual Assr Manpwr	N
31.Insp & Test	N	42.Proc Manpwr	N	57.Cont Admin Manpwr	N
32.Labor, Eng, Matls, Mfg	N	43.Proj Div Manpwr	N	58.Prop Admin Manpwr	A
33.Installation	N	44.Mfg Ops Manpwr	N	59.Rent on Cont Facility	A
34.Plant Overhd	N	45.Config Mgt Manpwr	N	60.Gen & Admin	A
35.Labor Overhd	N	46.Data Mgt Manpwr	N		
36.Eng Overhd	N	47.Eng Manpwr	N		
37.Mfg Overhd	N	48.Bldg maint, Util, Clerical	A		
38.Matls Overhd	N				
39.Gen & Admin Ex	N	**Project Office:**		**Subcontract CAO:**	
		49.Mission Suppt	N	61.Qual Assr Manpwr	N
Subcontractor:		50.Transportation	N	62.Cont Admin Manpwr	N
		51.Proj Mgt Manpwr	N	63.Prop Admin Manpwr	A
40.Repair Charge	N	52.Proc Manpwr	N	64.Rent on Cont Facility	A
		53.Eng Manpwr	N	65.Gen & Admin	A
		54.Config & Data Mgt Manpwr	N		
		55.Bldg maint, Util, Clerical	A		

NOTE: N = Not Adequately Analyzed; A = Adequately Analyzed.

Table 11

Measurability and Availability of Management Cost Elements: CFE

Contractor Costs		Government Costs			
Prime Contractor:		**SPO:**		**Prime CAO:**	
1. Recvg & Handlg	N=12/29*	12.Mission Suppt	A=15/28	20.Qual Assr Manpwr	N= 8/27
2. Insp & Test	A=14/28	13.Proc Manpwr	N=13/28	21.Cont Admin Manpwr	N= 9/27
3. Labor, Eng, Matls, Mfg	N=13/27	14.Proj Div Manpwr	N=13/28	22.Prop Admin Manpwr	N= 6/26
4. Mission Suppt	N=11/28	15.Mfg Ops Manpwr	N=12/28	23.Rent on Cont Facility	N= 6/23
5. Plant Overhd	A=18/27	16.Config Mgt Manpwr	N=12/28	24.Gen & Admin	N= 5/24
6. Labor Overhd	A=16/26	17.Data Mgt Manpwr	N=11/28		
7. Eng Overhd	A=16/26	18.Eng Manpwr	A=14/28		
8. Mfg Overhd	A=16/26	19.Bldg maint, Util, Clerical	N= 6/27		
9. Matls Overhd	A=14/26				
10.Gen & Admin Ex	A=19/28	**Project Office:**		**Subcontract CAO:**	
11.Profit	A=21/27	None		25.Qual Assr Manpwr	N= 8/25
Subcontractor:				26.Cont Admin Manpwr	N= 8/24
None				27.Prop Admin Manpwr	N= 7/24
				28.Rent on Cont Facility	N= 6/23
				29.Gen & Admin	N= 5/24

NOTE: Ratio is the number of respondents classifying the element as measurable and available to the total number of respondents.

* N = Not measurable and available; A = Measurable and available.

Table 12

Measurability and Availability of Management Cost Elements: GFE

Contractor Costs		Government Costs			
Prime Contractor:		**SPO:**		**Prime CAO:**	
30.Recvg & Handlg	A=14/27*	41.Mission Suppt	N=13/28	56.Qual Assr Manpwr	N= 9/25
31.Insp & Test	A=15/26	42.Proc Manpwr	N=12/27	57.Cont Admin Manpwr	N= 8/25
32.Labor, Eng, Matls, Mfg	A=18/27	43.Proj Div Manpwr	N=11/27	58.Prop Admin Manpwr	N= 8/25
33.Installation	A=18/27	44.Mfg Ops Manpwr	N=11/27	59.Rent on Cont Facility	N=10/25
34.Plant Overhd	N=12/26	45.Config Mgt Manpwr	N= 9/26	60.Gen & Admin	N= 6/25
35.Labor Overhd	N=12/26	46.Data Mgt Manpwr	N= 9/26		
36.Eng Overhd	N=12/26	47.Eng Manpwr	N=11/26		
37.Mfg Overhd	N=12/26	48.Bldg maint, Util, Clerical	N= 3/27		
38.Matls Overhd	N=11/25				
39.Gen & Admin Ex	A=13/26	*Project Office:*		**Subcontract CAO:**	
		49.Mission Suppt	N=11/25	61.Qual Assr Manpwr	N= 8/25
Subcontractor:		50.Transportation	A=13/24	62.Cont Admin Manpwr	N= 9/25
40.Repair Charge	N=10/26	51.Proj Mgt Manpwr	N=11/26	63.Prop Admin Manpwr	N= 7/25
		52.Proc Manpwr	N= 9/26	64.Rent on Cont Facility	N= 8/25
		53.Eng Manpwr	N=12/26	65.Gen & Admin	N= 8/24
		54.Config & Data Mgt Manpwr	N=10/25		
		55.Bldg maint, Util, Clerical	N= 5/25		

NOTE: Ratio is the number of respondents classifying the element as measurable and available to the total number of respondents.

* N = Not measurable and available; A = Measurable and available.

Table 13

Important Management Cost Elements Requiring Data Generation: CPE

Contractor Costs		Government Costs			
Prime Contractor:		**SPO:**		**Prime CAO:**	
1. Recvg & Handlg	R*	12. Mission Suppt	N	20. Qual Assr Manpwr	X
2. Insp & Test	N	13. Proc Manpwr	R	21. Cont Admin Manpwr	R
3. Labor, Eng, Matls, Mfg	R	14. Proj Div Manpwr	R	22. Prop Admin Manpwr	X
4. Mission Suppt	R	15. Mfg Ops Manpwr	R	23. Rent on Cont Facility	X
5. Plant Overhd	N	16. Config Mgt Manpwr	R	24. Gen & Admin	X
6. Labor Overhd	N	17. Data Mgt Manpwr	R		
7. Eng Overhd	N	18. Eng Manpwr	R		
8. Mfg Overhd	N	19. Bldg maint, Util, Clerical	X		
9. Matls Overhd	N				
10. Gen & Admin Ex	N	**Project Office:**		**Subcontract CAO:**	
11. Profit	N				
		None		25. Qual Assr Manpwr	R
Subcontractor:				26. Cont Admin Manpwr	R
				27. Prop Admin Manpwr	X
None				28. Rent on Cont Facility	X
				29. Gen & Admin	X

* R = Data Generation required; N = Data Generation not required; X = Not considered by respondents to be an important cost element.

Table 14

Important Management Cost Elements Requiring Data Generation: GFE

Contractor Costs		Government Costs			
Prime Contractor:		**SPO:**		**Prime CAO:**	
30.Recvg & Handlg	N*	41.Mission Suppt	R	56.Qual Assr Manpwr	R
31.Insp & Test	N	42.Proc Manpwr	R	57.Cont Admin Manpwr	R
32.Labor, Eng, Matls, Mfg	N	43.Proj Div Manpwr	R	58.Prop Admin Manpwr	X
33.Installation	N	44.Mfg Ops Manpwr	R	59.Rent on Cont Facility	X
34.Plant Overhd	R	45.Config Mgt Manpwr	R	60.Gen & Admin	X
35.Labor Overhd	R	46.Data Mgt Manpwr	R		
36.Eng Overhd	R	47.Eng Manpwr	R		
37.Mfg Overhd	R	48.Bldg maint, Util, Clerical	X		
38.Matls Overhd	R				
39.Gen & Admin Ex	N	**Project Office:**		**Subcontract CAO:**	
		49.Mission Suppt	R	61.Qual Assr Manpwr	R
Subcontractor:		50.Transportation	N	62.Cont Admin Manpwr	R
40.Repair Charge	R	51.Proj Mgt Manpwr	R	63.Prop Admin Manpwr	X
		52.Proc Manpwr	R	64.Rent on Cont Facility	X
		53.Eng Manpwr	R	65.Gen & Admin	X
		54.Config & Data Mgt Manpwr	R		
		55.Bldg maint, Util, Clerical	X		

* R = Data Generation required; N = Data Generation not required; X = Not considered by respondents to be an important cost element.

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