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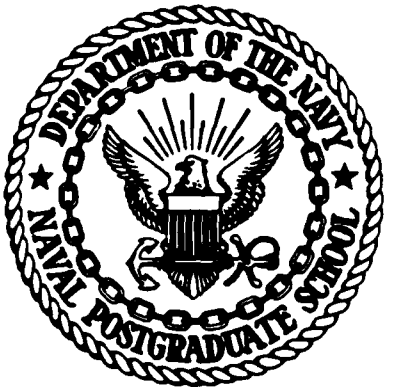

THESIS

A REVIEW OF THE "SHOULD COST" PROCESS
AND MANAGEMENT ISSUES OF THE PROCESS

by

Robert Leon Williams

December 1985

Thesis Advisor: Raymond W. Smith

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Should Cost Analysis has become a popular "catch-phase" with people involved with DoD major systems acquisitions in the 1980's. This analysis technique is generally recognized as an effective tool for the Government to achieve cost reasonableness with negotiated contracts. In an attempt to enable acquisition managers to challenge contractor's costs, Congress has legislated the use of Should Cost analysis on major weapons systems. This research examines the Should Cost concept, capabilities of this technique, the Should Cost legislation, and presented several key management issues of Should Cost analysis. The research has conducted through literature search, supplemented by interviews with DoD and industry officials.

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A Review of the "Should Cost" Process and Management Issues of the Process

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ABSTRACT

Should Cost Analysis has become a popular "catch-phase" with people involved with DoD major systems acquisitions in the 1980's. This analysis technique is generally recognized as an effective tool for the Government to achieve cost reasonableness with negotiated contracts. In an attempt to enable acquisition managers to challenge contractor's cost, Congress has legislated the use of Should Cost analysis on major weapons systems. This research examines the Should Cost concept, capabilities of this technique, the Should Cost legislation, and presented several key management issues of Should Cost analysis. The research has conducted through literature search, supplemented by interviews with DoD and industry officials.

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I. INTRODUCTION

Should Cost analysis has become a popular "catch phase" in the vocabularies of those involved with or interested in Department of Defense major acquisitions. Should Cost analysis is often described as a technique that inables the Government to pay a defense contractor only what a product should cost. This technique is said to be a proven technique and will solve many of the procurement cost problems of DoD major acquisitions.

Problems in the defense acquisition process and aggressive critics of the process moved Congress to take more assertive legislative action in FY 86 to get the defense acquisition process under control. One such action was the passage of an amendment in the FY 86 DoD Authorization Act that would require Should Cost analysis in major defense acquisitions.

Although it would be hard to disagree with the notion that the Government should only pay defense contractors what a product should cost, one must understand that Should Cost analysis are not as simplistic a concept as described and believed by many. In order to appreciate the capabilities of Should Cost analysis, one must understand the concept and the issues surrounding the concept.

A. RESEARCH QUESTIONS

1. The primary question to be addressed in this study is: "What is the Should Cost concept and how is it used in defense acquisitions?"
2. The subsidiary question is: "What are the key management issues surrounding the Should Cost concept?"

The Should Cost legislation and the Should Cost process of cost estimating have raised several concerns to the researcher:

-What is Should Cost analysis and how does it differs from traditional cost estimating techniques?

-What are the stated and underlying requirements of the Secretary of Defense and the military services as a result of the Should Cost Legislation?

-What can Should Cost analysis accomplish as far as solving procurement ills?

-What are the key issues in planning and executing a Should Cost analysis:

-Can the DoD efficiently accomplish a Should Cost analysis on a major weapon system?

B. OBJECTIVES

The objectives of this research is to examine and answer these questions. This will update the literature as to Should Cost analyses in the DoD. Additionally, it will provide insight for the military service acquisition managers as to the impact of the Should Cost legislation and provide recommendations on how to implement the legislation's flowdown requirements.

C. SCOPE OF THESIS

This study will focus on reviewing the Should Cost concept and the key management issues of Should Cost analyses. It will examine past Should Cost analysis efforts and identify key problems and issues associated with this technique. The limitations of Should Cost analyses and how DoD might perform Should Cost analyses at the major defense system level will also be examined. This study will not examine the anlytical techniques employed in performing a Should Cost analysis. The results of this study will be the presentation of those issues considered to be germane to the Should Cost concept as a whole. Additionally, an analysis of the Should Cost legislation and recommendations for its implementation will be offered.

D. METHODOLOGY

The research data was collected by means of literature search, telephone and individual interviews. A history of the issues leading up to this study was developed from the literature search and interviews. Interviews were conducted with Government personnel that have either been involved with a Should Cost analysis or are knowledgable of Should Cost analyses, from the military systems commands. Also, interviews were conducted with two major sole source defense contractors and two major competitive source defense contractors that have had Should Cost studies conducted on them. They were queried about the Should Cost legislation, key issues and problems in conducting a Should Cost analysis, and issues of the Should Cost concept as a whole. Interviews were held on a nonattributable basis to aid the researcher to gain honest and candid responses. Personnel interviews are considered to be the most appropriate research method since most available information on the subject is outdated. The questions posed included:

-From your perspective, what prompted such wide spread interest in the use of Should Cost in major acquisitions?

-What are the key management issues and problems that you have encountered in preparing for a Should Cost analysis?

-What are the key management issues and problems that you have encountered during the initial Government/industry interface?

-What are the key management issues and problems that you have encountered during and after the conduct of a Should Cost analysis?

-What do you see as the constraints to a Should Cost analysis?

-How does industry view Should Cost?

-What are the overall important issues germane to the Should Cost concept?

E. CHAPTER OUTLINE

1. Introduction

Chapter I will define the research problem and why this problem is important. The environment and events leading up to the time of the research is presented.

2. Background

Chapter II presents the economic, social and political environments that prevailed during the period of the research.

3. The Should Cost Concept

The issue of Should Cost analyses and the factors surrounding the acquisition process are presented from a historical perspective.

4. The Should Cost Analysis Process

The methodology and the key issues of planning and conducting a Should Cost analysis are presented.

5. Analysis of the Should Cost Lesgislation

The Should Cost legislation contained in the Department of Defense Authorization Act, 1986 is analyzed as to its implications and requirements by the Secretary of Defense and the military services.

6. Key Management Issues of the Should Cost Concept

Key management issues germane to the Should Cost concept which were developed from interviews with Government and industry are presented.

7. Conclusions and Recommendations and Areas for Further Research

Conclusions are based upon findings. Recommendations are made regarding the use of the information developed.

Areas of this study that warrant further research are identified.

II. BACKGROUND

A. RESOURCE MANAGEMENT

A nation's ability to effectively manage and properly allocate its resources is an essential element for achieving and maintaining national stability. Being able to compete in the world's trade market, maintain internal security, and flourish as a nation are dependent on the prudent management of all national resources. Recent examples of the decaying U.S. steel, oil, and automotive industries show how past mismanagement of these areas have resulted in the U.S. being heavily dependent on foreign nations for these resources. This reliance has weakened the U.S. industrial base, which directly affects the security of our nation.

There are three broad categories of resources; manpower, material, and money. In the United States, money is the one resource that drives the availability of the remaining resources. In order to acquire manpower or material, adequate financial resources must be available. As in most nations, the available resources are inadequate to satisfy all of the national needs. Therefore, those financial resources that are available must be efficiently spent and effectively allocated to satisfy the nation's most critical needs. [1:5]

1. Allocation of Resources

Since 1983 the Department of Defense (DOD) has obtained an average of 27.6% of the total budget authority for military purposes. It is estimated that between the years 1987 and 1990, the DOD will average 30.8% of the total budget authority for military purposes, reflecting a steady

increase from the recent past (primarily from 1976 to 1982) average of only 23% of the total budget authority. In contrast, with the exception of the Department of Health and Human Services (DHHS), social/environment related Government organizations saw a constant reduction of their budgets between 1979 and 1985. DHHS's budget has experienced a modes 3.8% growth between 1979 and 1985 [2].

The perception by this country's leadership in the late 1970's was that America's military hardware was outdated and needed replacement. This perception lead to DoD receiving an constantly increasing share of the total Federal Budget. Efforts were soon underway to modernize each service component of the DoD with the most modern equipment available. Rapid modernization of the military forces became a top priority of this nation's leaders.

2. Government Resource Management: The Problem

The 1980's not only brought new hardware for the services, it also brought scathing reports of cost mismanagement in DoD procurements. Examples of the types of reported cost abuses are:

> . . . . Overruns last year (1981) averaged 140 percent . . . . Most of the overruns . . . . 243 billion dollars woth . . . . occurred in military projects [3:13].
>
> . . . . The Navy cut its order of Harpoon antiship cruise missiles by 47 percent but still would up with cost more than double the initial billion dollar estimate [3:13].
>
> . . . . The Navy spends $7,622 for a coffee brewer [4:417].
>
> . . . . Fifteen of the 20 larges defense contractors under criminal investigation [5:1135].

These reports of Government mismanagement of programs were numerous and raised serious questions and criticisms of the DoD's ability to control costs in their procurements. In addition to these continuing reports

of DoD cost mismanagement, the federal deficit was nearing $2 trillion[2] and heated debates concerning military vs social programs funding raged constantly on Capitol Hill.

A former top level defense acquisition expert named Norman Augustine made these observations of the DoD. Augustine believed that in 1980, the DoD met or exceeded its general performance goals about 75 percent of the time. Schedule overruns of one third or more were believed to happen at least one third of the time. The probability that a major program would be completed within its initial estimates for research and development, and procurement was about nine percent. The probability that a program would be completed with not more than 50% cost overrun was not better than 70%. Augustine also believed that the average cost overrun was 52% while the median was 32%. Although Augustine admits that over the last 30 years this trend has gradually improved, he also states that there is a long way yet to go for the acquisition system to meet its cost and schedule goals. [6:27,28,52].

The reasons for the DoD not consistently achieving its goals, primarily its cost goals for major acquisitions, are complex and numerous. The main cause is attributed to program instability [7:7]. Program instability causes problems in many areas of program management. One such area is that of funding and the budgeting process. Several of the characteristic budgeting problems are: [7:9]

a. Underestimating cost

b. Program stretch-out

c. Criticism of management ability

B. GAO REPORTS

At the request of the Chairman, Senate Committee on Governmental Affairs, the GAO examined the DoD structure and how weapon systems were costed. The resultant report was titled DoD Needs to Provide More Credible Weapon Systems Cost Estimates to the Congress. The conclusions of this report stated [8:i]:

> DoD cost estimating guidance needs improvement and stricter implementation to ensure that cost estimates are uniform, consistently developed, and well documented. GAO found that using more reasonable assumptions and independent cost estimates would result in more accurate reporting to the Congress.

The DoD challenged many of the findings of the report, and was sustained on several of their challenges [8:28-36].

Shortly after this GAO report, another GAO report was published in October 1984 titled Compensation by 12 Aerospace Contractors. This review was conducted in response to a request by Jack Brooks, Chairman of the Subcommittee on Legislation and National Security Committee on Government Operations, House of Representatives. The GAO was requested to review the reasonableness of compensation paid in aerospace firms in relation to that paid to employees in other industries [9:1]. The findings and conclusions of this report were [9:15-16]:

> The contractors, on average, paid executives and clerical, technical, and factory employees more than the average pay for similar positions surveyed by the Bureau of Labor Statistics (BLS) and the American Management Association (AMA). Professional salaries (mostly engineers) were slightly below the BLS averages. Some of the contractors' pay was about the same as BLS and AMA and some was much higher.

The GAO was unable to draw any conclusions on whether the compensation paid by aerospace contractors was reasonable. The report did recommend that defense contracting officials examine compensation carefully during negotiations, and to find a workable means of assessing the reasonableness of the compensation.

C. CONGRESSIONAL/DOD ACTION

1. Defense/Procurement Act

In an attempt to regain public confidence in defense spending, Congress passed the Defense Procurement Reform Act of 1984. Congressional policy and findings concerning the DoD's cost management that were the basis of this legislation were stated as: [10:316]

> The Congress believes that excessive payments for spare parts by the Department of Defense has undermined the public confidence in the defense procurement process, and enunciating certain policies to ensure that spare parts are procured in an efficient and cost effective manner. The recurrence of seemingly inexplicable occurrences such as these mandate legislative attention. While acknowledging the recent initiatives undertaken by the Department of Defense, only legislation will ensure that the recent initiatives will result in systemic changes.

The Procurement Reform Act of 1984 contained additional legislation that stressed the use of competition in defense acquisitions, and it gave the Government easier access to contractor's technical data and proprietary data for use in future competitive acquisitions [10:102-119].

2. Government Investigations of Contractors

By 1985, stories of Government procurement waste became a daily topic of the news media and in most American homes. The environment was such that most people associated with Government procurement used extraordinary caution in performing their daily contract related responsibilities. In the midst of "whistle blower" reports of exhorbit prices paid for spare parts, unfavorable GAO reports on the DoD's management of major acquisitions and reports of gross waste in the supply system, the time was right for aggressive and unprecedented actions to be taken to begin correcting the Government's procurement ills.

Investigations were launched by Justice Department, Department of Defense Inspector General (DoDIG), and the Defense Contract Audit Agency (DCAA) into alledged cost, quality and product impropriety allegations of numerous major defense contractors. As a result of these investigations, several of the nation's largest defense contractors were suspended from doing further work with the Government [11:906]. One such suspension was levied against the nation's number three defense contractor for submitting false claims to the Government. The suspension of these large defense contractors was a bold and unprecedented move by the military services which sent a clear signal to everyone that things were not "business as usual" in the DoD.

Shortly after the suspensions were levied, Rep. John Dingel (D-Mich) released a list obtained from DoD Inspector General Joseph Sherrick of major defense contractors under criminal investigation. A seemingly appropriate capstone to the massive amounts of unfavorable attention already generated about the DoD acquisition process, this list revealed that one third of the top 100 defense contractors were under criminal investigation. Each of the top nine defense contractors were listed for alledged offenses such as cost mischarging, subcontractor kickbacks, false claims, defective pricing, and bid rigging. The overall perception of the relationship between the DoD and defense contractors was described by Rep. Dingel who said, "The list of major contractors released today makes it clear that the types of violations found in recent cases are a way of life throughout the industry." [5]

3. Congressional Mandate of Should Cost

By early 1985, many members of Congress were introducing several pieces of legislation for the DoD Authorization Act, 1986. Table 1 is a list of the various proposed amendments offered by members of Congress for the upcoming authorization act.

Title IX Procurement Policy Reform and Other Procurement Matters of the DoD Authorization Act, 1986 contained legislation that specifically addressed the areas of: [12:104-114]

-false claims, debarments, burden of proof, and related matters;

-Government procurement personnel employment with defense contractors and;

-program management matters.

It was clear the Congress intended to become more involved in the DoD's management of acquistions.

In an attempt to rectify the problems of poor cost estimates typical in DoD and to give Government officials the ability to challenge contractor's costs, the Congress directed the Secretary of Defense to report the programs marked for Should Cost analyses to the Congress. Included in the legislation is criteria to identify those programs that are considered mandatory Should Cost candidates. The Secretary of Defense would have to submit a list of those programs planned for Should Cost analyses. Additionally, the Secretary would have to submit a list of those major acquisitions that are not planned for Should Cost analyses with justification why these acquisitions are not planned to receive and analysis. [12:110]

In constructing the language of the Should Cost amendment, the House and Senate conferees decided that the agreed to final version of the amendent would allow the Department of Defense to utilize its resources where

they would provide the most significant return, but ensure that Congress had adequate oversight of their use. 12:453

TABLE I

GENERAL DESCRIPTION AND NUMBER OF AMENDMENTS OFFERED TO H.R. 1872 RELATING TO THE PROCUREMENT PROCESS

-Acquisition of Weapons Systems
 -- Civilian Director (4)**
 -- "Should cost" plans/reports (1)**
-Civil/Criminal Penalties
 -- Convicted employee working on DOD contracts (1)**
 -- Employment with DOD contractors (4)**
 -- Submission of unallowable G&A costs (8)**
-Competition
 -- Competition plans (3)**
 -- 5 percent per year increase in competitive awards (1)*
 -- Use of multiple sources (3)**
-Contract Prohibitions
 -- Contractor/subcontractor convicted of fraud (1)*
 -- Contractor/subcontractor officer of employee indicted for fraud (1)*
 -- Specified G&A costs (8)**
-Contracting Officer Assignments (1)*
-Contracting Out (restrictions) (3)**
-Cost or Pricing Data
 -- Categories of data required (1)**
 -- Comparison with actual costs (1)**
-G&A Costs
 -- Specified expenses unallowable (8)**
 -- Certification of costs (8)**
-DOD Inspector General
 -- Assignment of "compliance officers" to debarred contractors (2)*
 -- Suspension of contract payments and debarment of contractors (2)
-Minority/Small Business Set-Asides (3)*
-Progress Payments (1)
-Renegotiation Act (reinstatement) (1)
-Selection Acquisition Reports (1)**
-Subpoena of Contractor/Subcontractor Records (8)**

* Subjects included in H.R. 1872 as passed by the House

** Subjects covered in the compromise DOD AUTHORIZATION ACT reported by the House/Senate vonferees.

Source: Hienstand, O.S. "Do Miracles Ever Happen In Congress?" Contact Management, September 1985, pp. 8-11.

III. SHOULD COST ANALYSIS CONCEPT

A. INTRODUCTION

Congressional action has legislated the performance of Should Cost analyses on major weapon system's production costs. One Defense Department official indicated to the researcher that this legislation will present a major management challenge to those acquisition managers who will be tasked with carrying out its requirements. The challenge for these managers will be to perform Should Cost analyses in an efficient and effective manner, consistent with the intent to the legislation, and with the current resources. In order to meet these challenges, the manager must be knowledgable of exactly what a Should Cost analysis consists of, how does it differ from traditional cost estimating approaches, and what can and can not be obtained from a Should Cost analysis. Understanding these fundamental concepts will then allow managers to concern themselves with the issues of Should Cost analyses that are essential to conducting effective Should Cost analyses.

B. COST ESTIMATING TECHNIQUES

1. The Should Cost Concept

The concept of Should Cost analyses implies a particular methodology taken to determine what a contractor's production costs ought to be. Should Cost analysis consists of employing an integrated team of Government contracting, engineering, audit and pricing specialists to conduct an indepth review of all phases of the contractor's plant and operations. An example of the elements examined are, the contractor's engineering and manufacturing

operations, accounting procedures, cost estimating systems, purchasing procedures, make or buy decisions, organizational structure, and any other elements of cost and management control required for contract performance [14:1-11]. A Should Cost analysis considers all activity in a contractor's plant and is not directed at one program or product [1:13]. The intent of the Government is not to tell contractors how to run their business even though inefficiencies may be determined through Should Cost efforts. Instead, the Government presents the findings to the contractor, and makes it clear that taxpayers' money will not be paid out for demonstrated inefficiences [15:8].

The purpose of Should Cost analyses is to develop a negotiation objective that will support the contracting officer's efforts in negotiating a fair and reasonable contract price [13:1]. A secondary purpose of Should Cost analyses is to bring about both short-range and long-range improvements in the efficiency and economy of the contractor's operations [14:1-5]

2. Traditional Approach

Traditional cost estimating approaches use historical cost as the baseline for contract negotiations. Traditional cost analysis is comprised of conducting a cost audit and technical evaluation of the contractor's past cost and performance data, and his proposal rationale for the instant contract. The results of thes independent analyses are furnished to the contracting officer who evaluates and reconciles the reports in order to establish the Government's cost objective [13:2]. When past operations were inefficient, such projections of cost will automatically have a built-in cost factor to cover the cost of the continued inefficiency [14:1-21].

3. Should Cost vs Traditional Approach

The Army Should Cost guide states that should cost differs from the traditional approach to cost analysis principally in two respects, the depth of the analysis and the extent to which the Government challenges inefficiencies in the contractor's operations [14:1-2]. Two additional differences were revealed during the researcher's interviews that should be included; the Should Cost team is resident in the contractor's plant until the analysis is complete, and the team leaders are comprised of personnel independent of the program or contractor under review. Therefore, the differences between the Should Cost approach and the traditional approach to cost estimation as viewed by the researcher are:

-the depth of the analysis;

-the extent to which the Government challenges inefficiency;

-team resides inplant until analysis completed and;

-teamleaders are independent of the programs under review.

C. CAPABILITIES OF SHOULD COST ANALYSIS

1. What Should Cost Can Achieve

Various Government officials interviewed offered what they saw as the capabilities of Should Cost analyses. The benefits that were identified are:

a. Set Negotiation Target

Should Cost analyses provide the Government with a negotiation target with adequate backup data to support that target. A Government negotiator who has been involved in the Should Cost review and has an intimate understanding of the numbers and recommendations of the Should

Cost team, will be able to negotiate a more reasonalble price for the Government than he could have negotiated if this information was not available to him.

b. Identify Non-recurring Costs

Another benefit of the Should Cost analysis is that Government representatives can identify costs, such as non recurring costs and other start up costs, that should not be included in subsequent production contracts. A Government official interviewed revealed that these complex costs are often difficult to segregate and identify under traditional analysis techniques, and the Government frequently pay non recurring cost several times in later production contracts because these costs are easily hidden by the contractor.

c. Identify and Challenge Inefficiencies

Should Cost analysis can uncover inefficient operations in a contractor's plant. With a highly skilled Government team, dialogue can begin with the contractor of how the identified inefficiencies might be corrected. Information concerning how the contractor is performing in relationship to others in the same industry is vital to that contractor. Much of the management data that contractors could use to evaluate themselve against other contractors is considered proprietary data and is difficult to obtain. The Should Cost team can identify areas of inefficiencies in a contractor's plant, and recommend methods to correct these inefficiencies to the contractor. Although a sole source relationship may exist between the contractor and the Government, the contractor is still interesved in becoming efficient. This is because in order to remain viable in the market in the long run, that sole source contractor must produce efficiently.

d. Foster Better Government/Industry Relations

The identification of a contractor's inefficiencies and the recommending of solutions to solve those inefficiencies by the Government, can make the contractor a better industry competitor if those recommendations are adopted. Interviews with industry officials indicate that, when a Should Cost team conducts a thorough and professional analysis of a contractor's operations, the contractor is generally impressed and commends the Should Cost team members on their efforts. The attitude between the contractor and the Government is often changed from antagonistic to supportive of the team's endeavors.

The benefits of Should Cost analyses mentioned are not inclusive, but rather the most common ones obtained from interviews. The tangable cost benefits that have accrued from past Should Cost analyses have been well documented. As a result of the many benefits that have been derived from past utilization of Should Cost analyses, this method is often viewed as the answer to all of the DoD's cost control problems.

2. Limitations of Should Cost

In contrast to the benefits of Should Cost analyses, there are several limitations of this technique.

a. Cost

Perhaps the main limitation to using the Should Cost method of cost analysis is that it is a costly technique. This technique requires the utilization of highly skilled specialists for an extended period of time. Past Should Cost efforts manpower requirements ranged from as few as 8 persons to as many as 80 persons. Depending on the depth of the analysis, Government personnel may be away from their homebase anywhere

from a few weeks to several months. The costs incurred by the Government for personnel salaries, travel, and lodging of a Should Cost team are significant.

b. Qualified Personnel

The old saying "Garbage in - Garbage out" is particularly applicable in the case of performing a Should Cost analysis. To achieve the benefits of a Should Cost analysis, the Government team must be adequately staffed with experienced and skilled personnel. A large portion of the analysis is spent by team members performing individual data collection, analyses, and forming conclusions. Team members must be sufficiently trained to perform these tasks. Failure to have these trained personnel will cause the contractor to suspect the validity of the entire process, and produce less than desired results. Therefore, the benefits of a Should Cost analysis are limited by the availability of qualified resources in adequate numbers at the front end of the effort.

c. Planning

Similar to the resource limitation, adequate up front planning is essential to the success of the Should Cost effort. Initiating a Should Cost analysis with inadequate time or planning will result in chaos for the team and discredit the Government with the contractor. Interfacing far in advance with the contractor to determine what is needed by both parties to make the analysis a smooth one is essential. Research indicates that the vast majority of problems that are encountered during a Should Cost analysis are due to insufficient planning, insufficient time to properly plan the evolution, or failure to include the contractor's input into the plans.

d. Only a Budgeting/Negotiation Tool

Although Should Cost identifies what a product should realistically cost under efficient conditions, it is nothing more than a technique to budget costs and a negotiation tool. The proponents of Should Cost analyses who think that it is a panacea to the cost overrun problem or the excessive spare parts pricing problem do not fully understand the Should Cost analysis concept.

Costs that exceed the amount of costs initially budgeted, are considered cost overruns. A Should Cost analysis provides and efficiency-based estimate of a product, if produced under the particular conditions assumed by the Should Cost team. This estimate is only useful for budgeting the costs of a program and as a negotiation target for the negotiator to strive towards. If the assumptions made by the Should Cost analysis team are incorrect, or program requirements change and additional costs are incurred, then a cost overrun will occur. Therefore, Should Cost analysis is only a budgeting tool that provides a cost estimate for a product based on a particular set of assumptions and circumstances.

e. Should Cost Not Applicable to Spare Parts Pricing:

Should Cost analysis is felt by some to be the answer to the spare parts pricing problem. According to a DoD official interviewed, the majority of spare parts pricing problems experienced by the services are a result of proper allocation of overhead to the product. In these instances, Should Cost would not have prevented theproblem. But the more pertinent issue concerning Should Cost analysis and spare parts pricing, is that Should Cost analysis is an efficient way to solve the problem. The Government official interviewed said that the costs of the resources

needed to perform Should Cost analyses on spare parts in the military system would far exceed any benfit that the Government could possibly derive from such an analysis.

Many benefits can be obtained by the contractor and the Government as a result of Should Cost analyses. However, the costs incurred by the Government to conduct a Should Cost analysis and the limitations of a Should Cost analysis must be recognized.

D. HISTORICAL PERSPECTIVE

1. Civilian Utilization

The civilian sector first utilized the Should Cost technique of cost estimating. A large, nationwide consumer durable goods chain had utilized a Should Cost method of pricing appliances and durable goods from its suppliers for many. By analyzing its suppliers operations, the retail chain was able to evaluate and determine what the supplies should cost if they were produced efficiently. The retail chain had the ability to convince its suppliers to submit to this review because it maintained significant buying power in the market. Failure of the suppliers to cooperate with the retail chain's estimating method would result in a sizeable reduction in orders from the chain to that supplier. The results of these evaluations encouraged the suppliers to search for more efficient methods to manufacture their products to bring costs in line with the Should Cost evaluation [15:14].

2. Military Application

The Department of Defense was the first Government agency to utilize the Should Cost concept to estimate product cost. Under the direction of Mr. Gordon W. Rule, Director of the Procurement Control and

Clearance Division at the Naval Material Command, a special negotiating team was created to perform a Should Cost analysis on the production of 2,053 TF 30 engines for the F-111 aircraft produced by Pratt and Whitney (P&W), in late 1967. This review was prompted by what the Navy considered to be unrealistic cost proposals to a letter contract for the engines from P&W. Initially, the team's objective was to assist in definitizing the letter contract, but it soon became apparent to the team that the overall objective could not be confined to simply pricing this isolated letter contract. A DoD official interviewed indicated that the special team's objective was expanded to include not only the definitization of the present letter contract, but also to obtain a binding agreement with P&W to make certain changes in their practices and procedures, and to obtain certain improvements and innovations that would bring about economies and efficiencies for future requirements.

This special negotiation team remained in the P&W plant for three months and utilized approximately 50 people to conduct the review. The team was comprised of personnel from the Navy, Air Force, Navy Plant Representative Office (NAVPRO), Defense Contract Administration Agency (DCAA), and P&W. Each member was highly skilled in one or more areas of management and/or production control. Areas of the P&W operation that were specifically targeted for review were:

Labor Standards	Mfg and General Overhead
Allowances	Standard Material
Plant Capacity	Material Variations
Machine Utilization	Vendor Tooling
Labor Cost Variations	Make or Buy
	Purchasing

As a result of this intense effort which took eleven months to complete, the Government negotiated a contract that saved approximately $100 million on that particular letter contract and savings estimated to be many times that amount on future procurements from P&W.

Following the Navy's Should Cost Study on Pratt and Whitney, the Air Force conducted a Should Cost study on the Minuteman II program in late 1967, and the Army performed a Should Cost study on the Hawk Missile program in 1970. [16:17-17, 17:1-1]

3. Competition Simulation

Each of the DoD initiated Should Cost studies were done on contractors who were in a sole source relationship with the Government. For a long time, it has been recognized that contractors in a sole source relationship with the Government have limited incentive to be efficient. This is because the Government is reimbursing them for their incurred costs and paying a profit based on these costs. In this type of arrangement, generally the greater the total costs, the more profit. Therefore, contractors are actually incentivized to be inefficient and drive cost up inorder to realize greater profit. In the competitive marketplace, the forces of competition prevent this phenomena from occuring.

4. Guidance

Should Cost analysis is recognized as a tool that can yield significant savings for all federal agencies in negotiated procurements if used properly. A DoD official interviewed indicated that immediate savings averaging 15% of the proposal price have been achieved with Should Cost analysis. However, the DoDIG reported that the average

yield was 7 to 8 % [18:1]. In any event, long term cost avoidance is attained when management improvement recommendations from the Should Cost effort are implemented.

a. FAR

The Federal Acquisition Regulation (FAR), which is the acquisition regulation governing procurement in the Federal Government, incorporates the concept of Should Cost analysis as a specialized form of cost analysis and provides guidence for its use.

The FAR describes Should Cost analysis as a specialized form of cost analysis employing an integrated team of Government contracting, contract administration, pricing, audit and engineering representatives. The objectives of a Should Cost analysis are to identify inefficiencies or uneconomical practices in the contractor's operations and management, quantify the cost of those practices to develop a realistic negotiation objective and to recommend changes that will lead to both long and short term improvements in the contractor's economy and efficiency. Additionally, the FAR cites the conditions of the procurement that should prevail to achieve the greatest benefit of a Should Cost analysis. The conditions that are considered to be most conducive to a Should Cost analysis involved a major weapon system acquisition where [19:15-39];

(1) Some initial production has already taken place;

(2) The contract will be awarded on a sole source basis;

(3) There are future year production requirements for substantial quantities of like items;

(4) The items being acquired have a history of increasing costs;

(5) The work is sufficiently defined to permit and effective analysis and major changes are unlikely;

(6) Sufficient time is available to plan and conduct the Should Cost analysis adequately; and

(7) Personnel with the required skills are available or can be assigned for the duration of the Should Cost analysis.

b. DoD FAR Supplement

Should Cost analysis is also addressed in the DoD FAR Supplement is an addendum of regulations to the FAR that covers the unique needs of the DoD in the acquisition process. Guidance concerning the use of Should Cost analysis is more specific in the DoD FAR Supplement than the FAR. The DoD FAR Supplement states that [20:15.810]:

> A Should Cost review will be made in connection with the procurement of a system or item which will require a Defense System Acquisition Review Council (DSARC) approval, unless the contracting officer makes written determination that the potential savings to be realized do not justify the expense of such a should cost review.

c. Service Guidance

Additional guidance on Should Cost analysis policies and procedures have been promulgated by each of the military services. The Air Force's governing directives concerning Should Cost analysis are the Air Force FAR Supplement and the Air Force Systems Command FAR Supplement. The Navy's governing instruction is NAVMAT INSTRUCTION 4330.37 dated 25 March 1974, and the Army's directive on Should Cost analysis is Army Material Command Regulation 715-92.

5. Policies and Views of Should Cost

Each major military service, the GAO, and industry have expressed policies and views on Should Cost analysis.

a. The Navy

The Department of the Navy currently has the most flexible and loosely defined policy on the utilization of Should Cost analyses of the three services.

Although it was the initiator of Should Cost analysis in major weapons acquisition (Pratt & Whitney by Gordon Rule, 1967), the Navy has not actively utilized this technique to any notable extent. This was confirmed by two GAO studies [16:18-19][21:1-2]. Recently a DoDIG's draft report on Should Cost utilization in the services reported that the Navy had not performed a Should Cost analysis on any of its 40 major programs. [18:1]

According to several DoD officials interviewed, shortly after the Pratt and Whitney study, Gordon Rule stated that "should cost" findings have little use in affecting the terms and conditions of fully definitized contracts. Mr. Rule felt that "should cost" has real application at the time of definitization of letter contracts and fixed price incentive successive target contracts. In such cases, the contracting officer is able to unilaterally determine the final definitive price if mutually agreeable prices can not be negotiated. Of course this determination is subject to appeal, but the contractor is required to continue contract work until the appeal is settled.

The Navy's policy on the utilization of Should Cost analyses is contained in NAVMAT Instruction 4330.37 Should Cost, dated 25 March 1974. This instruction makes utilization of Should Cost analyses discretionary, but does give guidelines when Should Cost may be required [22]. Overall, the Navy policy is that Should Cost is just one method of pricing which is available to the contracting officer and it is applicable only when we have reason to believe that a predominantly sole source contractor is not meeting the test of reasonable economy [1:26].

The NAVMAT instruction was undergoing revision at the time of this study. The revision is anticipated to emphasize the necessity for

effective performance and reasonable pricing of Navy contracts. According to Navy officials interviewed, this revision is not expected to mandate or advocate the use of Should Cost analysis, to determine reasonable costs in sole source production contracts.

b. The Army

The Department of the Army has a policy that is quite specific and requires the use of Should Cost analysis in particular situations. In testimony before the Subcommittee on Econony in Government of the Joint Economic Committee of the Congress, the Assistant Secretary of the Army (Installation and Logistics) made the following comments in 1970 [14:1-6]:

> This technique (Should Cost) will be used in major procurements when genuine price competition is not existent and when it is determined that such an indepth analysis is necessary in preparing for contract negotiations.

Since that time, the Army's basic policy on the utilization of Should Cost analysis has been that this technique would be used with every major weapons production contract for which there is not competitive bidding [23:3].

Should Cost analyses will to be performed on all sole source acquisitions in excess of 50 million dollars in the first and fourth years of production, including multiyear acquisitions. A request to waiver this requirement may be submitted by the PCO to the headquarters having authority to grant relief. [23:3]

To support the Army's Should Cost endeavors, a guidebook titled Should Cost Analysis Guide [14] has been published. This guidebook covers the basic principals and techniques of Should Cost analysis and serves as a reference for planning an analysis. Additionally, the Army has established a Should Cost office at their Rock Island Arsenal. This

office administers and coordinates all Should Cost efforts in the Army. The Should Cost office provides training for Should Cost team leaders, assumes administrative control of personnel assigned to Should Cost teams, and maintains the data base of Should Cost lessons learned.

The draft report of the DoDIG's audit of Should Cost utilization in the services (1985), concluded that the Army has conducted Should Cost analyses on all noncompetitive major weapon acquisitions [18:1].

c. The Air Force

The Department of the Air Force's policy on Should Cost analysis is similar to the Army's, but it limits the use of Should Cost analysis to appropriate and selected situations. Mandatory use is limited to those situations when the production contract exceeds a predetermined dollar threshold (currently at 50 million dollars), the conditions in the FAR are satisfied, and contracting environmental factors are such that the payoff of such endeavor would outweigh the time, effort and cost involved in conducting the analysis. The Should Cost requirement can be waived for those contracts exceeding the dollar threshold only by submitting a waiver request to the product division Commander. Large dollar value contracts (excess of 300 million dollars) waiver requests can only be approved by the Air Force Systems Command Deputy Chief of Staff/Contracting. [24:ATCH2]

d. GAO Review of Should Cost Concept

In 1969 a report titled The Economics of Military Procurement, was published by the Subcommittee on Economy in Government, Joint Economic Committee. In this report, the Subcommittee expressed its concerns as to the traditional method of pricing negotiated contracts was protecting the interest of Government adequately. The Subcommittee recommended that the

GAO study the feasibility of incorporating the Should Cost method of cost estimating into its audit and review function of contractor performance.

In May 1970, the GAO completed its study and concluded that it appeared feasible to include Should Cost concepts in its reviews. However, the GAO added that it had neither the statutory authority or the negotiating position with contractors needed to derive the most benefit from Should Cost analyses. [16:2]

e. Contractor's View

Interviews with industry officials reveal that industry supports the basic concept of Should Cost analysis. However, overwhelming enthusiastic support from the contractor for a technique that challenges the way he does business should not be expected. This finding is slightly different from that found in Haight's thesis, The Applicability of "Should Cost" to the Procurement Process, 1974. Haight concluded that the atmosphere was not conductive to the kind of dialogue which, in the long run, could be of great benefit to both (industry and Government), and ultimately to the entire defense industry relationship [1:28]. This researcher has concluded that the atmosphere has changed such that the dialogue can begin.

During the 10 years since Haight's thesis, the relationship between Government and industry has improved, judging from the comments received by the researcher from Government and industry officials. They said that the Government has improved its planning and execution of Should Cost analyses and industry has learned of the value that they can obtain from this process. Industry officials indicated that generally, major defense contractors do not have an accurate method of comparing their level of efficiency with their competitors. However, to remain healthy and

viable in the long run, even the sole source contractor must concern himself with being efficient.

Some industry officials interviewed perceived the Should Cost analysis as providing contractors with a "free" management evaluation of their efficiency compared to others in the same industry. Also, these analyses suggest efficient methods that currently exists in the market place to help the contractor be more efficient. Although viewed by some contractors as "free" consulting, these contractors also understand both the positive and negitive implications that the Should Cost analysis could have on their company.

The feeling of "outsiders" coming into the contractor's operation still prevails at most contractors, and personality and methodology disagreements still exist. Some, industry officials indicated that the inconveniences of Should Cost analysis are just part of being in business with the Government.

6. Resurgence of Should Cost

a. Carlucci Report

In March 1981, Deputy Secretary of Defense Mr. Frank Carlucci initiated a joint OSD, DOD, industry working group to make recommendations on improving the acquisition process. The results of this study were 32 management recommencations that would shorten the acquisition process, increase readiness, provide cost savings and strengthen the industrial base [25:att 1]. This study became known as The Defense Acquisition Improvement Program (DAIP) or the Carlucci Report.

Later in 1982 as a result of discussions between Assistant Secretary of the Navy (Research, Engineering and Systems), M. Paisley, and the Under Secretary of the Army, J. Ambrose, a task force was formed

to identify the most beneficial Carlucci recommendations to implement first for the Army and the Navy. The objective was to work together to accelerate the implementation of the more significant DAIP decisions through presentation of joint recommencations to Dr. DeLauer (Deputy Under Secretary of Defense for Research and Engineering) and Mr. Carlucci. [26:1]

This joint DAIP implementation task force was chaired by Dr. Yaru, Chairman of the Naval Research Advisory Committee Task Group. The task force studied the Navy's acquisition process in July of 1982. As a result of this review and the task force's understanding of the Carlucci recommendations, 11 Carlucci recommendations were identified that would contribute the most to the improvement to the Navy's acquisition process [26].

One of the Carlucci recommendations identified by the task force was Carlucci initiative number 6 titled, Budget to Most Likely Cost. Carlucci initiative number 6 addressed the problem of inaccurate cost estimates in major system acquisitions [26:15]. The causes of these inaccurate estimates primarily centered around unrealistic pricing and scheduling in the advocacy phase of a system, and underestimation of inflation. Two recommendations given to assist in alleviating this problem were; (1) cost realism in proposals should be the basis for accepting or rejecting a competitive proposal. (2) The Navy should develop a highly competent "Most Realistic Cost" estimating team to establish the acceptable cost range [26:15-16]. Although the Carlucci recommendations were targeted for competitive buys, the researcher feels the concepts are also to sole source procurements.

b. Taft's Overhead Cost Control Plan

Deputy Defense Secretary William H. Taft IV began researching ways to reduce contractor's overhead cost in August 1984. The goals of his investigation were not only to reduce the overhead costs, but also to devise a plan to (1) incentivize contractors to voluntarily reduce their overhead costs and (2) to improve DoD's oversight of contractor overhead. The ground work for the effort was laid by a joint service panel. Taft reviewed the panel's recommendations and approved them in December 1984 [27:833].

As a result of the Taft study, ten principals of overhead cost control were formulated. One of these principals was titled, Discrete Cost Analysis which stated [28:911]:

> Overhead costs are to be evaluated on an element by element basis, concentrating on where management decisions are made. Pricing methods which place undue emphasis on historical costs are to be avoided, and evaluation tools such as hould cost, cost monitoring reviews and operations audits should be used to the fullest.

One month following the release of the ten principals for reducing overhead costs, Secretary Taft directed each military service and the Defense Logistics Agency to conduct a Should Cost analysis of plant wide overhead at one contractor's location by September 30, 1985 [29:28]. These Should cost analyses were to be the "test cases" to determine if Should Cost analysis is a viable method of cost reduction. As of this writing, the feasibility of Should Cost analysis as a method of overhead cost reduction had not been determined.

c. Should Cost Legislation

Legislation was being proposed by both houses of Congress to improve the defense acquisition process throughout fiscal year 85. Senator Dan Qualye (R-Ind), Chairman of the Senate Armed Services Committee

Task Force on Selected Defense Procurement Matters announced that he was introducing a package of amendments to the 1986 DoD Authorization Act designed to improve the procurement process. One of the areas covered was improved cost estimates [30:321]. Later, Senate Armed Services Committee Chairman Barry Goldwater (R-Ariz) released a statement outlining the committee's actions in its markup of the FY 86 Defense Authorization Bill. Included in this statement was the committee's approval of an initiative that required Should Cost studies on major defense systems [31:229]. This Should Cost amendment was unanimously adopted by the Senate with similar language adopted by the House shortly afterwards.

The conferees recognized the benefits that can accrue from Should Cost analyses, and the cost of conducting these analyses. They wrote the language of the Should Cost amandment to allow the DoD to utilize its resources where they provide the most significant return, but ensure that Congress has adequate oversight of their use [12:453]. The final language of the Should Cost amendment was agreed upon and passed as part of the DoD Authorization Act, 1986 in late October 1986. An expert of The FY 86 DoD Authorization Bill which includes the Should Cost amendment is contained in Appendix A.

(1) DoD/Navy response. The Department of Defense opposes mandatory use of Should Cost analyses, but do endorse discretionary use of the technique shere it makes the most sense. The primary arguements forwarded by DoD and Navy against legislated mandatory Should Cost are [32:1]:

-Should Cost analyses are only one technique of ensuring sound business deals, they are very expensive and labor intensive.

-Tough but fair hard nose negotiations on most noncompetitive deals are probably a more cost effective means of ensuring reasonable pricing.

-The Navy has moved aggressively toward increasing competition and this is the best way of ensuring good contracts.

-The Navy is selectively using Should Cost now where it is reasonable to do so.

d. DoDIG Audit of the DoD Should Cost Program

During the summer of 1985, the DoDIG launched an investigation to determine what extent the military services were utilizing Should Cost analyses. The draft report listed six elements that were considered necessary for an analysis to be considered a Should Cost analysis. These elements are [18:2-3]:

(1) Integrated team approach.

(2) Level 5 Work Breakdown Structure Analysis.

(3) Significant on-site work done by the team.

(4) Identify deficient contractor practices.

(5) Develop a sound negotiating position with members participating in the negotiations.

(6) Make recommendations.

Based on these six elements, the draft report concluded that [18:1]:

-Army performed Should Cost analyses on all programs;

-Air Force performed Should Cost analyses on a selected basis and;

-Navy was not performing Should Cost analyses on any programs.

IV. PLANNING & EXECUTING THE SHOULD COST ANALYSIS

A. INTRODUCTION

Should Cost analysis is a process that requires careful planning, execution and monitoring to be effective. Several excellent, indepth studies and guides have been produced on the planning and execution of Should Cost analysis. Some of the literature that examines these issues are:

-"Should Cost" Lessons Learned by Gunther Lange

-Critical Success Factors for Should Cost Planning by Heitmand and King

-Should Cost SOP #340 HQ U. S. Army AMCCOM

-Should Cost Air Force Pamphlet 70-5 Department of the Air Force

-Should Cost Analysis Guide AMCP 715-7 HQ U. S. Army Material Command

It is not the intent of the researcher to reiterate what is contained in the existing literature on planning and executing Should Cost analysis. This chapter will concentrate on presenting a broad overview and pertinent elements of Should Cost analysis planning and execution, supplemented by current issues presented to the researcher.

B. PHASES OF SHOULD COST ANALYSIS

Gunther Lange identified six phases of the Should Cost process. These six phases are [33:2]:

-Phase I Preparatory Effort (Off-Site)

-Phase II Preparatory Effort (On-Site)

-Phase III Fact Finding/Analysis

-Phase IV Prepare Report

-Phase V Prepare for Negotiations

-Phase VI Start Negotiations

Figure 3-1 is a Sample Master Schedule of these phases which could serve as a management aid in planning the Should Cost analysis.

1. Phase 1 Preparatory Efforts (Off-Site)

This phase focuses on the agency having a proper foundation organizational to conduct the Should Cost analysis. Phase 1 is by far the most important phase of the Should Cost process [33:2].

a. Selection of Should Cost Candidate

When selecting a candidate for a Should Cost analysis, the primary considerations should be, reviewing the proper candidates and, selecting candidates that the probability of achieving a beneficial outcome is high [17:1-1].

Lange presented five "Go/No Go" considerations that must exist prior to a candidate being seriously considered for a Should Cost analysis. They are [33:3]:

-Lack of price competition.

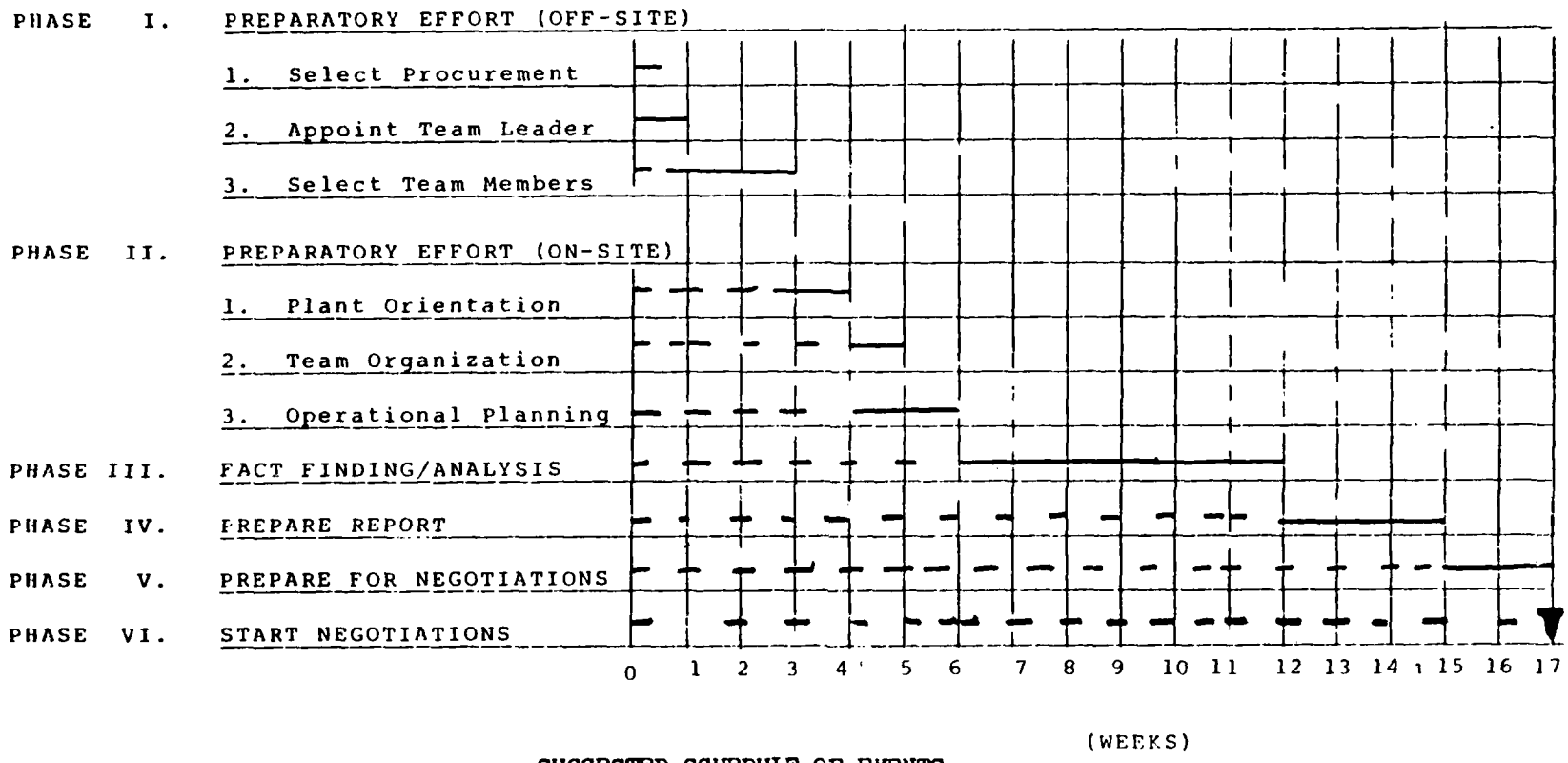
-Sufficient time to complete the "Should Cost" analysis before negotiations.

-Procurement expected to be of high dollar value.

-Required special skills are available to the team.

-All major tasks required for contractor's performance are known and defined.

The Air Force identified additional factors that are not directly related to the Should Cost analysis itself, but should be investigated to further narrow the field of candidates to only those that are most likely to yield benefits [17:2-2, 2-3] Appendix B is an excerpt from AF Pamphlet 70-5 Should Cost which lists these indirect considerations.



SUGGESTED SCHEDULE OF EVENTS
FOR "SHOULD COST"

FIGURE 3-1

Source: Lange, G., Should Cost Lessons Learned, Logistics Management Center, Fort Lee, Virginia

To further aid in reducing the field of candidates to the optimum candidate, Lange suggests that the following questions concerning the "Go/No-Go" characteristics be evaluated [33:3]:

- -Which characteristic may be expected to maximize (or minimize) the benefits of a "Should Cost" analysis?
- -Among the characteristics identified, what factors (or weights) may be used to describe their relative impact on the benefits to be realized.
- -How may the data derived from the above considerations best be analyzed to identify the optimum candidate for selection?

Table II is a checklist suggested by Lange as a guideline for selecting Should Cost candidates.

TABLE II

SUGGESTED "SHOULD COST" RATING FOR CANDIDATE CONTRACTORS

A. Go/No Go Considerations
   1. Lack of adequate price competition
   2. Sufficient time to complete "Should Cost" analysis
   3. Procurement expected high dollar value
   4. Required special skills available
   5. Tasks sufficiently well-defined

B. Weighted Considerations
   1. Potential for significant follow-on business
   2. Known or suspected specific problems to be solved or reduced
   3. History of increasing costs, or improvements needed in cost controls
   4. Probability of shifting cost risk to contractor by improving contract type or cost incentive sharing arrangement
   5. Preponderance of Government business
   6. Probability that "should cost" benefits will extend into other effort (e.g., development to production, other programs, etc.)
   7. Existence of a good base of historical data to benefit the "should cost" analysis
   8. Manufacturing conditions not likely to change
   9. Program not subject to excessive technical, quantity or schedule change
   10. Lack of confidence in current cost estimates
   11. Government will have strong bargaining position
   12. Potential for improvement in contractor's efficiency of manufacturing operations
   13. Other factor (as appropriate)

SOURCE: Gunther Lange, Should Cost Lessons Learned, U.S. Army Logistics Management Center, Fort Lee, Virginia, November 1970

b. Government Should Cost Organizational Structure

The proper organization and organizational philosophy of Should Cost analysis must exist at the Government agency conducting the analysis if this technique is to be effective, commented several DoD and industry officials interviewed by the researcher.

The DoD FAR Supplement mandates the use of Should Cost analysis for items requiring DSARC approval unless the contracting officer makes written determination that the expense of the review outweighs the potential savings [20:15-810]. Several of the Government officials interviewed felt that pressures are often placed upon the contracting officer by the program manager, contract administration personnel and the contractor to waiver the Should Cost requirement. A Should Cost analysis is often viewed as a possible source of perturbations for a program by these personnel. The decision to perform this analysis should be made by someone higher in the organization than the contracting officer, according to these officials.

Government and industry officials interviewed agreed that involvement of senior defense officials from the Office of the Secretary of Defense down to the buying activity is essential to the success of Should Cost analyses. The researcher believes that senior personnel involvement in the Should Cost analyses process will accomplish several key elements for the process. These elements are:

-Establish credibility of Should Cost analysis with the contractor.

-Provide organizational comparability with large contractors.

-Ensure that the Should Cost analysis effort is properly supported within the buying organization.

-Relieve undue pressures on the contracting officer to waive the Should Cost analysis requirement.

-To integrate program management participation in the Should Cost process.

From the comments made by DoD and industry officials interviewed, the researcher concludes that the Government must have a firm organizational structure that will support the Should Cost analysis process prior to becoming involved in other phases of the process.

c. Selecting a Should Cost Team

The selection of the Should Cost team is an extremely important event. Team members must be highly skilled, motivated and versatile to be a productive participant in a Should Cost analysis.

A Should Cost team leader should be selected and given a written charter. This charter will establish [33:6]:

-the task to be performed;

-his authority and responsibility during the analysis;

-his lines of communication;

-reporting requirements; and

-any constraints on time, resources, etc.

The team leader should be tasked with selecting the members for the Should Cost team [33:7]. These selections are of vital importance. Should Cost analyses subject the team members to extraordinarily unpleasant working conditions. Team members should expect to be away from their families for many weeks and work long hours. As mentioned previously, team members are expected to be loyal, highly skilled in their areas of expertise, self-motivated, tenacious, and versatile. The benefits that accrue from a Should Cost analysis are directly dependent on the quality of the team members. The Army Procurement Research Office published a study

titled, Should Cost: Guidelines for the Selection of Team Members, that addressed the selection of Should Cost team members [34]. This study reviewed the selection criteria and personal attributes that managers should consider to aid them in identifying and selecting the best personnel for a Should Cost team. The researcher recommends that this study be referred to for further information in this area.

Government Should Cost teams are matrix structure organizations comprised of personnel obtained from different functional areas and organizations. DoD officials interviewed feel that the matrix structure of Should Cost teams places an extra burden on the organization unit that releases personnel to participate in a Should Cost analysis. It was revealed that in general, supervisors are reluctant to release personnel because:

- -the loss of already scarce skills to a Should Cost team will have a detrimental affect on their unit
- -the long absences of team members with no replacement;
- -increased work load on others from the work left by the team member.

d. Objectivity

To optimize the effectiveness of the Should Cost effort, the objectivity of the effort must be maintained [33:5]. To aid in this effort, the Should Cost team leadership should not be held by personnel from the activity responsible for the negotiations [33:5]. Government officials interviewed identified as examples of personnel who should not be in positions of Should Cost team leadership; contract administration personnel, contracting officer, and various personnel tasked with managing programs or portions of programs produced by the contractor. The officials interviewed feel that these personnel have "built-in" biases that could

affect their ability to conduct an objective analysis. However, it is important that each of these categories of personnel are involved in the Should Cost analysis because they have a wealth of knowledge that is vital to the process.

Objectivity is also achieved by analyzing only objective concepts and not those which are subjective or philiosophical. Several industry officials commented that the Should Cost team member's method of data collection, analysis, and conclusions must be able to withstand the scrutiny of examination from other team members and the contractor for validity and objectivity.

e. Initial Communications with Contractor

After it is decided which contractor will receive a Should Cost analysis and the team leader for the effort is selected, the contractor should be notified by a senior procurement official of the buying organization by a formal letter. This notification should provide the contractor vital information such as [14:2-5]:

-who is performing the Should Cost analysis
-the purpose and goal of the analysis
-what are the items of interest
-who is the team leader and who designated him
-when the advance team will arrive and leave
-the expected arrival date of the total team
-the approximate duration of the on-site work
-individual(s) to whom the contractor can direct questions

2. Phase II Preliminary Efforts On-Site

The preliminary efforts on-site phase are concerned with orientating the key members of the Should Cost analysis team with the contractor's plant and operations, and the types of data that are available for analysis. From this initial visit to the contractors facility, the team leader can get a better understanding of the scope of the Should Cost analysis to be conducted. [33:12-14]

a. Briefings By Contractor/Contract Administration Personnel

Preliminary on-site efforts are performed by an advance team consisting of the team leader, sub team leaders, and other key members of the Should Cost team. They are briefed by the contractor on the various organizational systems and interfaces, production methods, and controls and policies employed. The cognizant contract administration organization should also brief the advance team on topics considered pertinent to the analysis. Sources of data, the availability of data and the format of available data are determined. Finally, logistics considerations for the Should Cost team are arranged.

b. Government/Contractor Strategy

Prior to concluding the preliminary on-site planning efforts, industry officials interviewed suggested that the team leader and the contractor hold discussions concerning the planned Should Cost analysis process. During these discussions, the "ground rules" should be laid down that establish how the analysis will be done. These officials were primarily concerned with the Should Cost team analyzing data in such a manner that would preclude making improper conclusions.

c. Information From Other Sources

Following the preliminary on-site visit, the Should Cost team leader must finalize the scope of the effort. In addition to the information received during this advance visit, the team leader can investigate other organizations that may have recently conducted audits, studys or reviews on the contractor [35:2]. Government officials interviewed said that acquiring as much information on the contractor as possible prior to beginning the data gathering/analysis stage of the Should Cost process, will significantly aid the team leader in determining (1) the weak areas of a contractor's operations and (2) the necessary scope of the analysis to achieve it's objectives.

d. Requirements Letter to the Contractor

Once the Should Cost analysis task is sufficiently defined and initial data requirements are determined, the team leader should notify the contractor by letter. This notification should identify [23:M-1]:

-the members of the Should Cost team

-the data required, and the format required (a letter on this matter may also be sent to the contract administration office)

-when the team will arrive and depart

It was suggested by Government and industry officials interviewed that this letter have realistic deadlines to allow the data request and any other issues. Government officials indicated that it would be beneficial if the data requested from the contractor was received several weeks prior to the fact finding phase. This would allow the Government to review and began interpreting the data at homebase prior to arriving on-site, instead of spending valuable time performing these functions on site [35:1].

3. Phase III Fact Findings

The Should Cost team should be broken down into sub-teams to conduct the analysis. [14:4-8]. Each sub-team is assigned to an area of the contractor's operation to analyze. Although a sub-team's investigation in one area may lead into other areas, the objective is to minimize duplication of effort among sub-teams.

a. Listening

One DoD official interviewed suggested that the initial stages of the fact finding phase be devoted to careful listening. Often, contrator personnel will lead the analysis effort to areas needing investigation. This official also stressed that listening to the local contract administration personnel can aid the analysis substantially. It has been known for these people to surface problems to the Should Cost team that they have had no success in solving with the contractor. Equipped with the necessary skills and ability to solve many of these problems, the Should Cost team frequently can assist the contract administration personnel in finding solutions to this problems. This is one area where the Should Cost team can support the contract administration organization and not be considered a perturbation to the program or intruding outsiders.

b. Communications

Daily exchanges of information between team members, sub-teams, and the team leader are important. Daily meetings should be held primarily to discuss the nature of the team's findings. These meetings are necessary to prevent members from spending a large amount of time evaluating low priority areas [33:21]. Daily status reports from the sub-teams to the team leader should be required to give the team leader a record of the sub-teams status and provide him with an overview of the issues encountered [33:21].

Daily reports should be given to the contractor by the team leader concerning the general progress of the effort. A free flow of information between contractor personnel and the Should Cost team members was suggested by an interviewed DoD official, although information concerning specific findings should not be divulged.

c. Data Acquisition

One important and extremely difficult task to achieve is that of acquiring the data needed during the analysis effort and receiving it in a timely manner. A contractor may inhibit the effectiveness of the analysis by claiming that the requested data was not available or that it would be available only after considerable effort or delay [33:19]. This ploy is often used when a contractor is aware of the time constraints that the Should Cost team is under, according to one Government official interviewed.

The question of the Should Cost team having the right to examine the records of the contractor that do not directly pertain to the contract being negotiated is often raised by the contractor, related a DoD official interviewed. According to a 1967 decision by the United States Court of Appeals Ninth Circuit in the HEWLETT-PACKARD COMPANY v. UNITED STATES of America, the Government's right to access was upheld [36:1013].

The judgement rendered was expressed in the following manner [36:1013]:

> "Contract", within statute permitting United States to examine records of contractor that directly pertain to, and involve transactions relating to, the contract, embraces not only specific terms and conditions of agreement but also general subject matter, and permitted United States to inspect production cost records even though production costs had not been considered in negotiating contract.

This decision was later challenged in 1978 by the Eli Lilly Company when the GAO attempted to gain access to Lilly's data and was refused [37]. The Packard ruling was upheld and GAO gained access to Lilly's data.

Lange identified several procedures that can aid in minimizing the data acquisition problems [33:3-4].

-Obtain a list of every periodic report prepared by the company. This list will allow the Should Cost team members to know what data is available.

-All data requests should be submitted in writing and signed by the team leader or his deputy. Requests should clearly identify the data, and specify the date by which the data is needed. A suspense file should be maintained to allow the team leader or the deputy to remind the contractor of the due date.

-The operations officer should receive and maintain all data from the contractor. This centralized control establishes a focal point of knowledge providing for the identification of data; dates of request and receipt; and names of requestors.

-Whenever practical, at least two sets of data should be requested. Once received and index card should be prepared for each data item. One set is to be given to the team member that had requested it. The second set should be placed in the file. This procedure allows all team members to quickly determine if the team had previously received a particular piece of data, thus eliminating any duplicate requests. Every effort should be made to avoid the duplication of data extraction.

4. Phase IV Report Writing

The Should Cost analysis report is the culmination of the Should Cost team's analytical efforts. The report is a permanent record that serves four main purposes [14:8-1]:

1. It will become the principal negotiating tool for the Government.
2. It will be useful for follow-up and surveillance by the cognizant audit and contract administration agencies.
3. It will be helpful in communicating "lessons learned" to future teams.
4. It may be required to help support the Government's position in legal or administrative actions.

This phase has proven to be one of the most difficult stages of the Should Cost analysis process. This difficulty is attributed to three principal reasons [14:8-2]:

1. There are inherent difficulties in interdisciplinary communications among such specialists as engineers, auditors, and contracting people.
2. There is a genuine shortage of people who are skilled in writing effectively.
3. The urgency of the analytical effort often prevents team members from gaining a real appreciation of the reporting task until they actually start writing.

The factors listed above will always exists to some degree in the researchers opinion, but their impact may be minimized if proper consideration is given to these areas when selecting team members and initial planning of the effort.

a. Preparation of Report

To enable team members gain a full appreciation of the Should Cost analysis report requirements, proper planning of the report format must be exercised early in the planning phases of the effort. The format should be the controlling factor for the method which data is to be stored and retrieved. Team members must collect and structure the results of their individual analyses such that all results are of a compatiable format for the final report. Team members should begin "thinking" the report as soon as they start fact finding. The format and objectives of the report must always be in mind during the course of the team member's investigations. [33:24]

b. Assembling the Report

Assembling the individual sub-teams reports into a form that is suitable for printing demands the effort of at least one person full

time. This person should have outstanding administrative skills and be dedicated to formulating and assembling the sections for typing. [33:25]

The Army recommends that Should Cost reports be broken down in the following manner [14:8-3]:

a. Section I. Introduction

b. Section II. The detailed evaluation plans used for the study.

c. Section III. Summary report containing the negotiation position and alternatives and other general findings and recommendations, with cross-references to the detailed data in Attachment 1 and the contractor's proposal.

d. Section IV. Lessons Learned

e. Attachment 1 Detailed report which relates the analytical work done and is the substantiation of the negotiation position.

The effectiveness of the Should Cost analysis is directly related to the negotiator's ability to understand the Should Cost report. This requires that sufficient detail be provided in the report to explain the situation, the methodology, the reasons for analyzing certain aspects, the findings and results, and the probable contractor responses [33:25]. Therefore, the Report Writing Phase of the Should Cost process is most critical.

Lange recommends that the following points be considered to help alleviate report writing problems [33:27]:

-Be certain that each writer and typists understands and follows the report format.

-Employ the full-time services of a copying machine. The ability to reproduce data is a significant time saver.

-Maintain a "status board" for each section of the report.

-Designate one individual to control typing priorities.

-Do not waste time proofreading the first and second drafts. These drafts should be read for content and organization only.

-Establish a review board that would review each draft of the report. The board will also assist the proofreader in the final two drafts.

c. Briefing the Contractor

DoD and industry offcials interviewed suggested that the contractor be briefed on the overall findings of the Should Cost team and provided a summary report prior to the team leaving the plant. This briefing and report should provide the contractor with a broad, general knowledge of the Should Cost team's findings. However, Government officials warned that specific cost quantifications attributed to inefficiencies must be closely guarded by each Should Cost team member. This specific and detailed information will become the foundation for the Government's negotiation position.

5. Phase V and Phase VI Preparations for and Conduct of Negotiations

In preparing for negotiations, the chief negotiator must have indepth knowledge of the contents of the Should Cost report. For this reason, the team leader is traditionally the chief negotiator [14:8-23, 24]. This detailed knowledge should provide the chief negotiator with an "more-than-usual" amount of confidence in the strenght of his position, enabling him to bargain more effectively [14:8-24].

Once the negotiator is fully prepared to negotiate, a realistic time schedule for negotiations should be formulated and adhered to. A negotiator must recognize that he is in an adversarial role with the contractor during negotiations and must be prepared to use all possible and available tactics at his disposal. The chief negotiator must use imagination and be flexible with his position at anytime, but never cross the line into the unethical. [33:29]

V. SHOULD COST ANALYSES ISSUES (SHOULD COST LEGISLATION)

A. INTRODUCTION

The language of the Should Cost legislation clearly delinates the desires of the Congress. The researcher believes that this legislation is intended to provide DoD managers with accurate cost estimates of what production should cost, prior to awarding a contract. Apparently, Congress had determined that the DoD had ineffective methods of obtaining good program cost estimates, and it was now time to legislate a method. Through annual reports from the Secretary of Defense, the Congress will have oversight of the extent Should Cost analyses are being used in the DoD.

Although the requirements of the legislation for the Secretary of Defense are clear, the implied effects of the Should Cost legislation on the military services deserves further examination. Through an analysis of the Should Cost legislation, a determination can be made of scope and the flowdown requirements of the legislation on the services.

1. Approaches to Should Cost

Two common approaches to Should Cost analyses were found to exist in the Government by the researcher. These are, selective Should Cost studies, and classical Should Cost analyses.

a. Selective Should Cost Studies

A selective Should Cost study is an indepth analysis of specific resources required for contract performance to ensure the achievement of reasonable efficiency. This approach, often referred to as the

"mini-team" approach, is utilized in recognition of the limited pool of personnel available in Government buying commands with the proper skills for Should Cost analyses [17:5-2]. A selective Should Cost study is generally based on a detailed analysis of performance related efforts by Government specialists and may include development of drawing-based estimates of manufacturing labor, determination of adequate levels of support labor, independent estimation or validatinn of material costs, and evaluation of proposed contractor labor rates and indirect costs. A selective Government analysis may vary in scope from an evaluation of multiple resources in every phase of the procurement to a limited assessment of a specific resource in one facet of the proposed contract's requirements. [23:4]

From these studies, cost recommendations, for those areas examined, can be utilized as input to the overall cost target of the contract by the negotiator.

b. Classical Should Cost Analyses

A classical Should Cost analysis is a comprehensive, indepth analysis which is developed from an examination and evaluation of all phases of a proposed contractor's operation. This is done by a team of specialists in disciplines including engineering, pricing, audit, and plant facilities. The primary objective is to identify instances of omission or commission in the management and performance of planned or existing work which could compromise attainment of realistic schedule, performance, and cost objectives. A realistic price is one that is based on what it should cost if the contractor operates with reasonable economy and efficiency. The team's secondary objective is to provide the

contractor with recommendations as to how to remedy the identified inefficient and uneconomical conditions. [23:5]

B. IMPACT OF DIFFERENT APPROACHES TO SHOULD COST ANALYSIS

The two approaches to Should Cost analysis differ significantly in their scope and effort needed to complete the analysis. It is important to recognize if Congress had an intended approach to Should Cost analysis when writing the Should Cost legislation. The researcher believes that if the intended approach was that of the selective Should Cost study, the impact of the legislation should be of less consequence to the Army of the Air Force because these two services have procedures and organizations in place to conduct this type of analysis. However, the Navy would be affected much more. Due to the de-emphasis on the usage of Should Cost analyses in the Navy [21:2-3], the researcher believes that the experienced knowledge base of Should Cost analysis is minimimal and that the necessary organizational structures to coordinate and orchestrate Should Cost analyses service-wide are non-existant. Therefore, the Navy would have to reorientate its philosophy of Should Cost analyses, and create the appropriate knowledge base and organization to support Should Cost analysis efforts. However, each service would be affected by the lack of skilled personnel to support the effort, according to DoD officials interviewed.

The researcher feels that if the Congressional intended approach to Should Cost analysis is that described by the "classical" Should Cost approach, then the impact of the legislation will be substantial on each service. DoD officials interviewed said that the lack of skilled personnel resources to satisfy the current requirements for cost analysis,

traditional or "should cost", is the major problem that needs to be addressed and solved. Should Cost analysis efforts, particularly the classical approach, are extremely labor intensive and would require many more personnel than are currently available.

Research indicates that a classical Should Cost analysis of a major weapons system has yet to be performed by any branch of service.

C. CONGRESSIONAL CONFERENCE REPORT

The Dod Authorization Act, 1986 Conference Report provided as description of Should Cost analysis made by Congress. In the Joint Explanatory Statement of the Committee of Conference of the DoD Authorization Act, Should Cost analyses were described in the following manner [12:453]:

> Should-cost analyses are a technique used to evaluate ongoing production programs by sending in a government team to evaluate the contractor and to identify inefficiencies in the contractor's management and operation.

D. OTHER GUIDANCE

1. FAR

The FAR included the contracting officer's judgement of deciding which elements of the contractor's operation have the greatest potential for cost savings and assign the available personnel resources accordingly [19:15-39]. It would appear to the researcher that the availability of personnel is the determining factor in the depth of the Should Cost analysis. DoD and industry officials interviewed said that there are inadequate levels of skilled personnel in the Government to effectively support wide scale Should Cost analyses.

2. Service Guidance

Governing instructions for Should Cost analysis of the services emphasize selective utilization of this technique for procurement and

contractor's costs elements where the probability of benefit accruing to the Government is high. [23:12;22:2;17:1-1]

E. ANALYSIS OF SHOULD COST LEGISLATION

1. Report to Congress

Paragraphs (a) and (c) of the Should Cost analyses legislation (see Appendix A) delinate the reporting requirements for the Secretary of Defense. The Secretary of Defense is required to submit an annual report of his plan to perform Should Cost analyses on major defense acquisition programs for the next fiscal year to Congress. This report will be submitted to the Armed Service Committees in the Senate and the House of Representatives not later than 15 January or the date of budget submission for the next fiscal year. The report will cover one fiscal year but will be submitted eight and a half months prior to the start of the covered fiscal year. [12:110-111]

The report submitted to Congress from the Secretary of Defense will identify all major defense acquisitions. These acquisitions will be segregated into three broad categories. These categories are:

- "covered systems" planned for a Should Cost analysis;
- "covered systems" not planned for a Should Cost analysis, and in each case, the justifications for not planning such an analysis;
- major defense systems not determined to be "covered systems" and the reasons for that determination.

The researcher fails to understand the necessity for the amount of information to be included in the annual report to the Congress. As can be seen from the text of the Should Cost amendment contained in Appendix A, Congress specifically delinated the criteria for a major defense system to be considered a "covered system". The requirement to identify major

defense systems that clearly do not meet the criteria listed for a "covered system", makes the stated use of this information questionable. The only explanation that the researcher can offer is that Congress desires a source of information that will annually present all of the major defense programs.

The timing of the presentation of the "Annual Should Cost Report" to Congress deserves further examination. One of the objectives of the Congressional conferees when fashioning the language of the Should Cost legislation was to have adequate oversight of the use of Should Cost analyses in the DoD [12:453]. This oversight role could have been either a proactive one or a reactive one, Congress obviously chose a proactive role. In this role, one must be concerned with the action that Congress may take in the event there is disagreement with the "Annual Should Cost Report" submitted by the Secretary of Defense and the members of Congress. Although any answer on this matter would totally be conjecture at this point, the researcher feels that this question is worthy of consideration by the DoD. Additionally, while in this proactive role, Congress does not have the visibility of the results of the legislated Should Cost analyses. The researcher feels that this information would be of vital importance to Congress in assessing the effectiveness and economy of the Should Cost legislation. Also, the researcher feels that a report of post-should cost efforts and the savings achieved by the DoD, to Congress, could assist in the budgeting process as well. However, as the legislation is written, it appears to the researcher that Congress does not desire any feedback on the effectiveness the Should Cost legislation.

The issues raised by the researcher are pertinent areas for further examination. Until these areas are addressed, the actual intent of Congress with the Should Cost legislation must be questioned.

2. Covered Systems

Paragraph (b) of the Should Cost legislation (Appendix A) describes the criteria that determines whether a major defense acquisition is covered by the legislation.

The researcher feels that the most pertinent criteria for major defense systems (is; "a production contract for the system is to be awarded during the year following the next fiscal year using procedures other than full and open" [12:110]. The listed criteria for a "covered system" covers a wide range of major defense systems. There is no distinction between those systems which are considered well managed and have controlled costs, and those which are documented laden with inefficiencies and uneconomical.

The researcher speculates that perhaps one of the reasons that Congress wrote the amendment to cover a wide array of major systems, is its desire for sweeping cost savings in these acquisitions. Afterall, the benefits and cost savings that resulted from past Should Cost analyses were substantial and well documented. DoD officials interviewed commented that in those instances where Should Cost analyses were used, the programs were already identified as having excessive cost growth and being inefficient. Consequently, when analyses were performed on these programs, substantial cost savings resulted for the Government. The expectation of similar cost savings over all defense systems should be resisted.

The Should Cost legislation would consider all programs as Should Cost candidates, including those that have costs below the initial estimates

or have shown no problems with being efficient or controlling costs. Unless those programs with cost problems or suspected efficiency problems are identified and targeted by the Congress as Should Cost candidates, the researcher believes that the "shotgun" approach being pursued by Congress will be costly and ineffective.

Other systems that are subject to the Should Cost legislation are those being contracted under multi-year and second sourcing acquisition methodologies.

Multi year procurement is a method of contracting for mature systems such that multiple year requirements are contracted at one time [38:5-39]. This method is designed to lower the cost of the acquisition by making the process more stable than it would have been if requirements were contracted on an annual basis. Multi year contracting allows the contractor to take advantage of economic production rates and quantity purchases from it's suppliers. The cost savings achieved by the contractor, because of this more stable long term contract, are passed on to be contracted as a multiyear contract, the program is reviewed and evaluated for stability and approved by Congress [38:5-39, 40]. Performing a Should Cost analysis on multi year programs is believed by the researcher to be a costly endeavor with an inadequate payback to the Government. These programs (multiyear) have been reviewed and evaluated for cost control and effective management and are subject to constant scrutiny by the contractor and the Government.

Similar to multiyear contracting, programs acquired using second sourcing methodologies are also subject ot Should Cost analyses. Two second sourcing methods in particular, contractor teaming and leader

follower, would be grossly misrepresented in a Should Cost analysis in the researcher's opinion. These methods of second sourcing, cause the first several production lots to be costly and inefficient. The benefits to the Government of these methods are realized later when future requirements are competed between the sources and the forces of competition influences the contractor to be less costly and more efficient. [38:5-3]

The benefits of a Should Cost analysis on these types of acquisitions would be substantially less than if applied to other contracts and an unnecessary expense, in the researcher opinion.

3. Definition

The term "major defense acquisition program" has the meaning given such term in section 139a(a)(1) of title 10, United States Code [39:137-138]. This section is presented in Appendix C. It should be recognized that the definition of "major defense acquisition system" is substantially different from that of "major acquisition system". The Should Cost legislation is only applicable to defense programs and not general major systems. The definition of "major system" was added to the United States Code by an amendment to Chapter 137 of Title 10, in the FY 85 DoD Authorization Act [10:103]. Appendix D is an exerpt of this amendment defining the term "major systems".

4. Effective Date

Paragraph (e) of the Should Cost Legislation identifies when the legislation will take effect. This paragraph states [12:111]: "This section shall apply to covered systems for which initial production funds are first appropiated for a fiscal year after fiscal year 1986". The field of initial candidates to be considered for Should Cost analyses is

more restricted than just those programs meeting the criteria listed under "covered systems". The earliest that a program could be considered for a Should Cost analysis in accordance with the legislation is fiscal year 1988, and the program must have had initial production funds first appropriated for fiscal year 1987. As currently written, the Should Cost legislation would not effect any program that has gone through initial production prior to fiscal year 87, which limits the affected programs to new production programs.

The researcher believes that initially targeting only the new production programs will not take full advantage of the cost savings that could be achieved through the Should Cost legislation. It is believed that there are plenty of established programs that could provide substantial cost savings if they received a Should Cost analysis. In an era when defense acquisition is scrutinized at all levels, the researcher is of the opinion that newer programs are receiving the proper management, cost control, and efficiency emphasis, and would not yield the Should Cost benefits that are available in some current programs.

F. SUMMARY

The key aspects of the researcher's analysis of the Should Cost legislation are:

- -Congressional emphasis appears to be on the number of major programs being awarded production contracts, not the results of the Should Cost analyses mandated by the legislation.
- -"Good", cost efficient programs and programs under special cost saving contract methodologies are not exempt.

-The achievable benefits from Should Cost analyses must be understood, if not, they will be misleading.

-Only new programs with initial production after FY 87 are affected, but none of the existing known costly programs are affected by the legislation.

IV. OTHER SHOULD COST ISSUES

This chapter will identify and examine several current issues that were considered key management issues of Should Cost analysis by personnel interviewed.

A. ISSUE #1: NECESSITY OF PROPOSAL PRIOR TO SHOULD COST EFFORT

Several DoD officials indicated that a Should Cost analysis can not be performed without a contractor's proposal. The contractor's proposal sets the baseline of comparison for the Should Cost team. An issue raised by a Government official is whether it is necessary to have a proposal to analyze follow-on production operations of the contractor?

The contractor's proposal provides the Government certified cost or pricing data which aids the Should Cost team structure its analysis. The Truth in Negotiations Act, Public Law 87-653 directs the Government to obtain certified cost data on all contracts over $100,000 [40:383]. This certified data is submitted to the Government with the contractor's proposal. An analysis of the contractor's proposal and the certified pricing data by the buying activity formulates the baseline of costs and the depth of the proposed Should Cost analysis [23:12]. However, this certified cost data may be changed and/or updated by the contractor at anytime up to the date of agreement on price [40:3B4]. Given this type of flexibility with the finality of certified cost data, the researcher feels the advantage of having this data prior to a Should Cost analysis is minimimal.

Several key pieces of information must be available to the Government to allow the performance of a Should Cost analysis without the benefit of

a proposal. The researcher has identified six basic questions that should be answered before a Should Cost analysis can be performed. These questions are:

-What product is required and in what quantity?

-Who can provide the product?

-What is the level of competition?

-What manufacturing process will be employed?

-How stable and defined is the program?

-How many resources are required to produce the product?

It is believed by the researcher that a contractor's proposal is not necessary to conduct a Should Cost analysis. Information needed to answer the six questions above is available to the Government prior to solicitation and the receipt of a proposal. The majority of this needed information is contained in the Program Manager's Acquisition Strategy.

An acquisition strategy is the conceptual basis of the overall plan that a program manager follows in program execution to obtain a new weapon system to satisfy an approved mission need. It serves as the baseline for preparing the plans and activities to accomplish the program [38:3-11]. The acquisition strategy serves as a road map for program planning and execution.

By the Full Scale Development phase of the acquisition process, the product(s) required and respective quantities needed to satisfy a mission objective are identified. The product is developed and tested according to the refined acquisition strategy. Strategy decisions concerning who will provide the product(s) and the level of competition to be provided in acquiring the product(s) are known prior to beginning the Production and Deployment phase of the acquisition process.

From the acquisition strategy, the questions of what is required, the quantity, and the degree of competition planned for the product can be obtained.

Information to answer the remaining three questions becomes available shortly after the initial production of the product is completed. The methods employed in the initial production stage are the processes to be used for full scale and follow-on production. The data obtained from the initial production stage will allow the Government to determine the amount of resources that would be needed to produce future requirements if produced in the same manner. Also, by the end of the initial production stage the Government will be in the position to evaluate the stability and definition of the program.

The identification of the needed product, the quantities needed, the contractor who will provide the product and the level of competition is available through the refined acquisition strategy beginning at the Full Scale Development phase of the acquisition process. The methods of manufacture and the costs associated with those methods to produce the product in full scale production are known shortly after the initial production phase. The early availability of this data is the reason the researcher believes that a contractor proposal is not necessary to conduct a Should Cost analysis. Determining what a product "should-cost" is a process that should be independent of a contractor's proposed cost.

Conducting a Should Cost analysis on the known sole source contractor for a known anticipated quantity prior to beginning the acquisition timetable for a follow-on contract, provides the Government more time to conduct the analysis. It would then be possible to perform a series of time-phased "mini" Should Cost analyses on the various cost elements

involved to produce the product. This approach of several small teams, as opposed to one massive team performing a concentrated effort, is believed to be less disruptive to the contractor and removes the time constraints traditionally imposed on a Should Cost team.

However, the FAR 15.810(c) states that the contracting officer should indicate in the solicitation when a Should Cost analysis is planned for the contract. Although not a mandatory provision, its inclusiton in the FAR as guidance must be recognized.

B. ISSUE #2: OBTAINING RESOURCES

DoD and industry personnel interviewed stated that there is a lack of skilled personnel in the Government to effectively support Should Cost analyses on major defense systems. It is generally agreed that more personnel trained in the skills necessary for effective Should Cost analyses are needed to accomplish the requirements of the Should Cost legislation. The researcher submits several methods for the Government to acquire and/or enhance the skills needed to conduct Should Cost analyses.

1. Request Additional Funding for Needed Personnel

The DoD could request additional funding to acquire personnel that have those skills which are vital to performing Should Cost analyses. It may be possible for the DoD to capitalize on the passage of the Should Cost amendment and the wide support for procurement reform by identifying possible savings which are achievable if the needed addition personnel are obtained. A request for these additional personnel may be viewed favorably when the potential benefits are compared to the modes additional costs of the new personnel.

2. Cross Fertilization

Personnel who have participated on Should Cost teams are an invaluable source of experience for future Should Cost efforts. There is no substitute for experience and knowledge gained through actual participation. These personnel should be the management nucleus for conducting future Should Cost analyses and training future Should Cost team members. [17:9-1]

The working conditions for conducting a Should Cost analysis, and often the lack of recognition for the team member's efforts during the analysis, provide little incentive for personnel to participate in future efforts. The long periods away from families, long working hours and other less than desirable attributes of Should Cost analysis for team members often extinguishes the desire of members to become involved in Should Cost analyses again. The lack of participation in these efforts limits the pool of personnel qualified to participate in future analyses. Attention must be given to methods that will make participation as a Should Cost team member beneficial to the individual. Two methods recommended by the researcher that could start enhancing the participation on a Should Cost team are:

- -public recognition of efforts by a senior procurement official through letters of appreciation/commendation or other awards;
- -making participation on a Should Cost team, at varying levels, a prerequisite for future position/salary advancements.

Maintaining experienced personnel interested in future Should Cost analysis efforts is instrumental in having a core of knowledge to train others. It is through this process of the core base training the unskilled and having the unskilled become skilled and experienced by participating in a Should Cost analysis, that the pool of qualified personnel can expand.

3. Contractor Services

Another alternative for the acquisition of properly skilled personnel resources to conduct effective Should Cost analyses is to contract out for these services. The researcher considers this alternative feasible only as a short term solution or to acquire for unique skills.

4. Formal Training

A Government sponsored formal training program could be initiated to train personnel in the skills needed in Should Cost analyses. A centralized source of training could provide in addition to skilled analysts, a standardized procedure to conducting a Should Cost analysis. The Naval Space and Warfare Command has a course titled An Introduction To Direct Cost Analysis, that covers many of the skills required to conduct a Should Cost analysis. The Army offers a Should-Cost Analysis Workshop to give team members a broad overview of Should Cost analysis and analytical techniques. Courses similar to these should be offered by all buying commands.

C. ISSUE #3: ORGANIZATIONS FOR SHOULD COST ANALYSES IN MAJOR DEFENSE SYSTEMS ENVIRONMENT

DoD acquisition officials interviewed revealed that a challenging management issue is, how will the DoD best be able to perform Should Cost analyses on major defense systems. As a result of conversations with several DoD acquisition officials, the researcher offers several organization structures that are believed to be capable of performing effective Should Cost analyses in the major defense systems environment.

1. Individual Buying Commands

Each Government official interviewed agreed that the individual buying commands should have the skills and necessary quantities of

personnel to conduct simple "selective should cost studies". This approach to Should Cost analysis isolate particular cost drivers of a contract and apply the Should Cost concept of anlysis to these areas. However, the analysis efforts should be limited to components, subsystems or simple major systems due to the limited availability of needed skills at the individual buying commands.

2. Centralized Should Cost Organizations

For analyzing complex major defense systems, the researcher feels that a more centralized organization structure that has a large pool of resources to devote to the effort is necessary. A coordinated orchestration of Should Cost analyses in major defese systems is needed to provide all of the elements (e.g. skills, manpower, money, direction, support, etc) that are necessary for a successful analysis. This objective is believed achievable by organizing a centralized Should Cost Office in each military service or a seperate organizational body that would represent all military services.

The rationale for the researcher suggesting a centralized approach to major systems Should Cost analyses is that this approach would:

- -increase the availability of skilled personnel by including either the assets of the entire service or the assets of the entire DoD as a pool of talent, vice being limited to what is available to through the buying agency
- -reduce duplication of efforts;
- -allow standardization and coordination of the process;
- -create a centralized core of "experts"

a. Centralized by Service

Under this type of organization, each military service would establish a central Should Cost office. This office would coordinate all

Should Cost analyses for its service, set policies and procedures for conducting Should Cost analyses, be a repository for all Should Cost reports/lesson learned written by the service, and be that service's core of knowledge for Should Cost analysis. Organizing a Should Cost office on the service level also increases the pool of available skilled resources from that of an individual buying agency to all buying agencies in that service. This organization would be supplemented by buying activity personnel when planning and conducting Should Cost analyses.

To further reduce duplication and expand the size of the personnel pool, each service could act as the lead agency to conduct Should Cost analyses for other services. Similar to the lead agency concept used in negotiating ceilings for independent research and development (IR&D) with contractors, or administering the Cost Schedule Control System Criteria (C/SCSC), the service with the preponderance of business at a contractor's facility would be the lead agency for Should Cost analyses for other service's programs at the facility. The buying service would be heavily involved in planning the analysis with the lead agency and provide additional personnel for the analysis. This "lead agency" approach further broadens the pool of resources to include cross service support, and limits duplication of effort between services.

b. Centralized DoD Should Cost Organization

A Should Cost organization at the DoD level is another method of centralizing the effort to conduct Should Cost analyses on complex major defense systems. This organization would be staffed with highly talented personnel skilled in all areas of Should Cost analysis. These personnel could provide the "core" Should Cost team which is supplemented by personnel from the buying activity during the analysis. In this manner, the Government would have a centralized group of "experts" that provides

to the buying organizations to maintain a base of skills in these organizations. Maximum control, coordination and utilization of resources during an analysis are achieved.

The DoD Should Cost organization and the centralized service Should Cost organization are designed to:

- -increase the pool of available qualified personnel to be on a Should Cost team;
- -provide unified policy, procedures, and guidance;
- -serve as a centralized repository of "core" knowledge, Should Cost reports and Should Cost Lessons Learned;
- -reduce duplication of Should Cost effort;
- -provide a source of training to buying activities;
- -bring top level DoD interest in the Should Cost process

D. ISSUE #4: MOTIVATING THE CONTRACTOR

The entire Should Cost analysis concept would be an ineffective method of long term cost control/avoidance if the contractor does not make the changes recommended by the Should Cost team. The researcher was unable to find any provision that made a contractor legally bound to implement a Should Cost team's recommendations. It would be argued that the Government should pay only the "should cost" amount and all incurred costs over this amount would be borne by the contractor. Several DoD officials interviewed said that although this seem to be a good way to motivate contractors to control costs, having contractors take excessive costs from profits is not likely to happen. To make Should Cost analyses an effective method of cost control, the Goverment must be able to influence the contractor to adopt the Should Cost team's recommendations.

1. Preponderance of Government Business

The researcher feels that one reason the interviewed contractors did not express an antagonistic attitude about the Government entering their facility and conducting a Should Cost analysis was that the majority of their business was Government business. In these instances, the contractor respected the leverage that the Government had over them and this leverage helped influence the contractor's attitude of Should Cost analyses. Preponderance of Government business is a characteristic that is mentioned only as a "secondary" consideration for selecting Should Cost candidates [14:2-3]. The researcher feels that this characteristic should be included as a Go/No Go consideration when evaluating Should Cost candidates. Contractors who are reliant on Government contracts to remain in business have more to risk by not implementing Should Cost recommendations than those contractor's with a substantial commercial business base.

2. Negotiable Contract Provisions/Incentivization

The inclusion of the Should Cost team's recommendations as negotiable elements of the contract could possibly influence the contractor to comply with the recommendations. This method would make the contractor contractually liable for those recommendations agreed to in negotiations.

Utilizing a profit incentive arrangement, where the contractor shares in the savings/cost avoidances achieved from implementing efficiency enhancing recommendations, could also be used to influence the contractor. This incentive arrangement could be implemented alone or in combination with other methods.

3. Weighted Guidelines

Another method of motivating contractors to implement the Should Cost team's recommendations is the inclusion of Should Cost analysis as

an element for the weighted guidelines profit consideration [14:8-17]. This element could be rated such that the more recent the Should Cost analysis the contractor has had, or in recognition of the contractor's improvement efforts, the higher the weight.

E. ISSUE #6: WHO SHOULD SHOULD COST WHO?

In major systems acquisitions, the trend had been for the prime contractor to serve primarily as a systems integrator for many sub-contractors. On large, complex systems, the prime/sub-contractor relationships could be in the hundreds.

Due to these large numbers of relationships, the researcher feels that critical decisions must be made concerning who will receive a Should Cost analysis in order for the Government to receive the maximum benefit with the limited resources available. The researcher will identify and examine several approaches to conducting Should Cost analyses on major defense programs with many subcontractors.

1. Government Conducts All Analyses

Reducing the costs of inefficiency in the contractual relationship between the Government and the prime contractor is the primary purpose of Should Cost analysis. Therefore, one would think that the prime should be the main target of the Should Cost analysis. However, in an environment where the prime contractor directly contributes only a small portion to the total costs of a contract, the analysis should extend to the sub-contractor tier to be effective. The question to consider is, how to perform Should Cost analyses at the sub-contractor tier?

One approach to performing Should Cost analyses on the sub-contractor tier is to have the Government perform the analyses. With the multitude of sub-contractors involved with major systems acquisitions,

the Government would have to approach these analyses on a selective basis. The criteria recommended by the researcher to select which sub-contractors to analyze should be the same as that applied when determining which prime to analyze. These criteria are:

-contracted under less than full and open competition;

-some production history exists;

-no major changes expected in product provided;

-contractor's product is sufficiently defined to allow an analysis.

There are two main drawbacks of this approach. The first drawback is that the number of skilled personnel required by the Government to perform Should Cost analysis at the sub-contractor tier is extensive.

The other drawback to the Government performing Should Cost analyses on sub-contractors is that usually "privity of contract" does not exist between the Government and the prime contractor's sub-contractors. Privity of contract occurs only if the *subcontractor is an agent of the Government* [41:909]. The prime contractor is an agent of the Government, not his sub-contractors. Sub-contractors are agents of the prime contractor. Unless the sub-contractor becomes an agent of the Government, or the prime includes provisions in the contracts with the sub-contractors which allow the Government to perform these analyses on the sub-contractors, the Government does not have the right to perform Should Cost analyses at the sub-contractor level.

2. Prime Contractor Performs Analyses on Subcontractors

As an alternative to the Government performing Should Cost analyses on sub-contractors, the prime contractor could be tasked with performing these analyses. This would eliminate the privity of contract issue between the sub-contractors and the Government, and the problem of insufficient Government personnel to analyze the sub-contractor tier.

Interviews revealed that contractors are no better equipped to perform Should Cost analyses than the Government. Lacking the needed in-house resources to perform these analyses, an alternative for the contractor could be to hire consultants to perform these Should Cost analyses. Regardless whether the contractor uses in-house personnel or consultants, the cost to the Government for these services would be high.

Research has also revealed that sub-contractors would adamantly resist the prime contractor conducting a Should Cost analysis on their operation. Although sub-contractors are agents of the prime, they are also competitors of the prime. An example of their competition is the prime contractor's make or buy decisions. Products received from sub-contractors are constantly evaluated by the prime contractor to determine whether it is cheaper to make the product themselves or continue buying from a sub-contractor. Sub-contractors consider the data needed to conduct a Should Cost analysis as proprietary data and would not submit it to a potential competitor.

VII. CONCLUSIONS AND RECOMMENDATIONS AND AREAS FOR ADDITIONAL RESEARCH

A. APPROACH TO SHOULD COST ANALYSES KEY TO IMPACT

A strict interpretation of the FAR's description of Should Cost analyses to that of the "classical" approach would have the most impact on the services ability to perform Should Cost analyses. The needed personnel resources are not available in DoD, the necessary coordination and control organization structures does not exist and there is not evidence that a "classical" approach to Should Cost analyses has ever been accomplished on a complex major defense system.

Congressional conferees stated that the Should Cost legislation was written to allow the DoD utilize its resources where they will provide the most significant return [12:453]. Emphasizing a particular, standard approach such as the "classical" approach to Should Cost analyses, would not allow the DoD to effectively use its resources.

Should Cost analysis is a concept that has as a goal, the ability to determine what a product should cost if it is produced with reasonable efficiency. The concept is built on a customer's ability to analyze its suppliers operation and data, then project the cost for a product based on efficient operations.

Several approaches to Should Cost analyses are utilized by Government agencies that can yield efficiency based costs. These different approaches attempt to gain the greates benefit to the Government at the minimum cost. Military buying organizations currently have the flexibility to select which acquisitions to anlyze, which elements to study, and what size team

will be necessary to conduct the analysis. The objective is to select a contractor, elements and team size that has the greatest potential of yielding significant savings to the Government as a result of the analysis.

The researcher recommends that each military service be allowed to define its own approach to Should Cost analysis, as long as the approach supports the process described in the FAR. Should Cost is a concept, not a technique or particular approach. What is important is that the approach used results in a price that is based on what it should cost in the environment and under the conditions of efficiency for the performance of the contract.

B. CENTRALIZED ORGANIZATION NEEDED FOR SHOULD COST IN MAJOR SYSTEMS

Unlike the Should Cost analyses of the past which were primarily performed on components and subsystems, Should Cost analyses of major defense systems will involve large, extremely complex integrated systems. Previous Should Cost analyses couldbe completed organized and orchestrated by individual buying activities with in-house resources and limited augmentation from other commands. Should Cost analyses of major defense systems will involve a broad scope of areas and relationships for analysis. Complex systems must be understood just as the complex organizations of the prime contractor and sub-contractors must be understood, to effectively conduct Should Cost analyses in the major systems environment.

To accomplish wide scale Should Cost analyses on major defense systems, the simple decentralized organizations of past Should Cost efforts will not suffice. The research recommends the establishment of an organization structure comensurate with the complexity and magnitude of the analysis. This organization should be structured such that it:

-minimizes duplication of effort on the inter and intra-service level;

-maximizes resources;

-is highly visable and is supported at the highest level of DoD;

-has the authority to acquire needed resources;

-can set standardized policy and procedure (not approach) to Should Cost analyses;

-is a central repository for "core" teams, reports and lessons learned;

-is supplemented by buying organizations during analyses to constantly expand the pool of experienced personnel in these organizations.

The researcher feels that a centralized Should Cost organization, with the elements listed above, would allow DoD to perform effective and efficient Should Cost analyses on major systems.

C. POTENTIAL PROBLEM OF SHOULD COST ANALYSES AT SUBCONTRACTOR TIER

Prime contractors of many major defense systems are primarily systems integrators and directly contribute only a small percentage to the overall cost of the system. The majority of costs are contributed by the many sub-contractors of the prime contractor. To be an effective method of controlling and cutting costs of a major system, the application of Should Cost analysis can not be limited only to the prime contractor. A review of sub-contractors operations and efficiency costing the product that is provided to the prime contractor is needed to achieve the maximum benefit of a Should Cost analysis on a major system.

Either the Government or the prime contractor could analyze the sub-contractor tier of prime major defense system contract. The problem that exist are:

-No privity of contract between the sub-contractors and the Government

-Sub-contractors consider data needed for Should Cost analysis by the prime contractor as proprietary and will resist submission.

-Neither Government or prime contractor adequately staffed to analyze sub-contractor tier.

The researcher feels that this problem can best be solved by the Government creating a contractual relationship with the sub-contractor tier and selectively conducting Should Cost analyses on the sub-contractors. The effort could be planned and coordinated by the central Should Cost office and buying organizations could be tasked to selectively analyze the sub-contractor tier.

D. MOTIVATING CONTRACTOR ESSENTIAL TO SHOULD COST CONCEPT

Long term benefits to be gained from a Should Cost analysis are contingent upon the contractor implementing the recommendations of the Should Cost team. The long term improvement recommendations may require substantial changes in the contractor's organization and operations. Unless special provisions are added to the contract, contractors are not obligated to implement the Should Cost team's recommendations.

The Government must explore ways to induce the contractor to implement Should Cost recommendations. One such method recommended by the researcher is offering the contractor additional compensation through an incentive contract arrangement. The contractor would be more motivated to implement Should Cost recommendations if he was to receive a percentage of the cost savings that resulted from implementing these recommendations.

E. AREAS OF ADDITIONAL RESEARCH

Several areas of Should Cost analyses were uncovered while researching the topic that were beyond the scope of this paper but deserved additional investigation. Areas recommended as follow-on thesis topics or research topics are:

-Determine the ideal training/experience profile for personnel involved in Should Cost analyses. Also investigate methods to retain personnel in the area of Should Cost analysis.

-Applications of Should Cost analyses in the competitive environment.

-Strengthening the contract administration organization to have a more direct role in Should Cost analyses.

-Study of past Should Cost analysis reports and determine if long term recommendations were implemented. If not, why?

APPENDIX A

SHOULD COST AMENDMENT

SEC. 915. SHOULD-COST ANALYSES

(a) Report on Annual Plan.- The Secretary of Defense shall submit to Congress an annual report setting forth the Secretary's plan for the performance during the next fiscal year of cost analyses for major defense acquisition programs for the purpose of determining how much the production of covered systems under such programs should cost. The report shall describe -

(1) which covered systems the Secretary plans to apply such an analysis to;

(2) which covered systems the Secretary does not plan to apply such an analysis to and, in each such case, the reasons for not applying such an analysis; and

(3) which systems were determined not to be covered systems under a major defense acquisition program and the reasons for that determination.

(b) Covered Systems.- For the purposes of subsection (a), a system under a major defense acquisition program shall be considered to be a covered system if-

(1) a production contract for the system is to be awarded during the year following the next fiscal year using procedures other than full and open competition;

(2) initial production of the system has already taken place;

(3) the current plans for the Department of Defense include production of substantial quantities of identical or similar items in fiscal years beyond the next fiscal year;

(4) the work to be performed under the contract is sufficiently defined to permit an effective analysis of what production of the system by the contractor should cost; and

(5) major changes in the program are unlikely.

(c) Submittal of Report.- The report required by subsection (a) shall be submitted to the Committees on Armed Services of the Senate and the House of Representatives not later than the date on which the budget for the next fiscal year is submitted each year.

(d) Definition.- The term "major defense acquisition program" has the meaning given such term in section 139a(a)(1) of title 10, United States Code.

(e) Effective Date.- This section apply to covered systems for which initial production funds are first appropriated for a fiscal year after fiscal year 1986.

Source: U.S., Congress, The Committee of Conference, Department of Defense Authorization Act, 1986, Øn S. 1160, 99th Cong., 1st sess., 1985.

APPENDIX B

CRITERIA FOR SELECTING CANDIDATES

The following general standards apply when selecting candidates for Should Cost review:

a. In selecting a candidate for a Should Cost study, the primary consideration should be the likihood of achieving a successful outcome. The most detailed and complete Should Cost analysis is of little benefit, if its results cannot be negotiated. For this reason, certain factors that are not directly related to the Should Cost review itself should be investigated carefully before selecting a candidate. The Government contract negotiator, in order to reach the Government's goals, must have bargaining strength at least equal to the contractor. For this reason, the following factors should be considered before selecting a contractor:

(1) Is it absolutely imperative that the hardware or services be acquired at once?

(2) Is the candidate truly the sole source of hardware or services or could they be purchased from another source?

(3) If necessary, can the conttracting officer make a unilateral price determination (for example, under a letter contract)?

(4) Are other acquisitions pending on which the candidate is bidding in competition with others?

(5) How much future Department of Defense business can the contractor be expected to acquire?

(6) How strongly does the contractor value its reputation with the Government and with the public?

(7) Is the contractor's plant full, or is there idle plant space?

(8) How has the contractor responded in the past to recommended improvements?

b. The answers to questions in (1) through (8) above should help provide the basis for determining whether the contractor should be selected, regardless of other considerations.

Source: Department of the Air Force, Should Cost, AFP 70-5, September 1979

APPENDIX C

DEFINITION of "MAJOR DEFENSE ACQUISITION PROGRAM"

SECTION 139a(a)(1) of TITLE 10, UNITED STATES CODE

139a. Oversight of cost growth in major programs: Selected Acquisition Reports

(a) In this section:

(1)"Major defense acquisition program" means a Department of Defense acquisition program that is not a highly sensitive classified program (as determined by the Secretary of Defense) and-

(A) that is designated by the Secretary of Defense as a major defense acquisition program; or

(B) that is estimated by the Secretary of Defense to require an eventual total expenditure for research, development, test, and evaluation of more than $200,000,000 (based on fiscal year 1980 constant dollars) or an eventual total expenditure for procurement of more than $1,000,000,000 (based on fiscal year 1980 constant dollars).

Source: United States Government Printing Office, UNITED STATES CODE 1982 Edition, Vol Three, Title 10-Armed Forces

APPENDIX D

DEFINTION of "MAJOR SYSTEM"

Part B-AMENDMENTS TO CHAPTER 137 OF TITLE 10, UNITED STATES CODE

DEFINITIONS

Sec. 1211. Section 2302 of title 10, United States Cose, is amended by adding at the end thereof the following new paragraph(s):

"(5) 'Major system' means a combination of elements that will function together to produce the capacilities required to fulfill a mission need. The elements may include hardware, equipment, software or any combination thereof, but excludes construction or other improvements to real property. A system shall be considered a major system if (A) the Department of Defense is responsible for the system and the total expenditures for reasearch, development, test and evaluation for the system are estiimated to be more than $75,000,000 (based on fiscal year 1980 constant dollars) or the eventual total expenditure for procurement of more than $300,000,000 (based on fiscal year 1980 constant dollars); (B) a civilian agency is responsible for the system and total expenditures for rthe system are estimated to exceed $750,000 (based on fiscal year 1980 constant dollars) or the dollar threshold for a 'major system' established by the agency pursuant to Office of Management and Budget (OMB) Circular A-109, entitled 'Major Systems Acquisitions', whichever is greater; or (C) the system is designated a 'major ststem' by the head of the agency responsible for the system ".

SOURCE: U.S., Congress, The Committee of Conference, Department Of Defense Authorization Act, 1985, on H.R. 5167, 98th Cong., 2nd sess., 1984.

LIST OF REFERENCES

1. Haight, R. W., The Applicability of "Should Cost" to the Procurement Process, M.S. Thesis, Naval Postgraduate School, Monterey, California, March 1974.

2. Office of Management and Budget Historical Tables, Budget of the Government Fiscal Year 1985, Government Printing Office, Washington, D.C., 1985.

3. "Overruns; Washington's Growth Industry", U.S. News and World Report, 92, May 13, 1982.

4. "Spare Parts Overpricing, Waste Persist Despite DoD Reforms, Senate Panel Told", Federal Contracts Report, Vol 42, September 24, 1984.

5. "Defense IG Lists Major Contractors Under Criminal Investigation", Federal Contracts Report, Vol 43, June 24, 1985.

6. "Just How Good/Bad Is the Defense Acquisition Process?", Government Executive, February 1982.

7. Brabson, G. D., "The Defense Acquisition Improvement Program", Program Manager, Nov-Dec 1983.

8. U.S.General Accounting Office, DoD Needs To Provide More Credible Weapon System Cost Estimates To the Congress, GAO/NSIAD-84-70, B-210041, May 24, 1984.

9. U.S. General Accounting Office, Compensation By 12 Aerospace Compensation, GAO/NSIAD-85-1, B-213672, October 12, 1984.

10. U.S. Congress, House, Committee of Conference, Conference Report on the Department of Defense Authorization Act, 1985, 98th Congress 2nd Session, September 26, 1984.

11. "G.E. Pleads Guilty to Fraud: Air Force Considers Debarment", Federal Contracts Report, Vol 43, May 20, 1985.

12. U. S. Congress, Senate, Conference Committee report, Department of Defense Authorization Act 1986, 99th Congress, 1st session, Report 99-118, July 29, 1985.

13. Horn, C.A., The "Should Cost" Concept, research paper, Army War College, Charlisle Barracks, Pennsylvania, December 28, 1973.

14. Headquarters, U.S. Army Material Command,"Should Cost"Analysis Guide, AMCP 715-7, May 1972.

15. Heitman, L.R. and King, T. J., Critical Success Factors For"Should Cost"Planning, M.S. Thesis, Air Force Institute of Technology, Wright Patterson Air Force Base, Ohio, September 1984.

16. U.S. General Accounting Office, Report to Congress, "Should Cost" Concepts in Reviews of Contractor's Operations, B-159896, February 1971.

17. Department of the Air Force,"Should Cost", AF Pamphlet 70-5, September 19, 1979.

18. Naval Space and Warfare Command, draft response to, DoDIG Audit of the DoD"Should Cost"Program, no date (drafted approximately June 1985).

19. Department of Defense, Federal Acquisition Regulations Government Printing Office, Washington, D.C.

20. Department of Defense, Federal Acquisition Regulations Supplement, Government Printing Office, Washington, D.C.

21. U. S. General Accounting Office, letter,"Should Cost" Efforts, B-159896, January 17, 1974.

22. Department of the Navy, Naval Material Command Instruction 4330.37, Should-Cost, 25 March 1974.

23. Headquarters, U.S. Army Armament, Munitions and Chemical Command, "Should Cost"Analysis, Standard Operating Procedure #340, January 21, 1985.

24. Department of the Air Force, Air Force Systems Command Federal Acquisition Regulations, date unknown.

25. Department of Defense, Memorandum, Guidance on the Defense Acquisition Improvement Program, Washington, D.C. June 6, 1984.

26. Department of the Navy, Naval Research Advisory Committee Report on, DoD Acquisition Improvement Program (Carlucci Decisions), October 1982.

27. "Taft Weighing Plan to Reduce Contractor Overhead Costs", Federal Contracts Report, Vol 42, November 12, 1984.

28. "DoD Group Still Weighing Taft Plan to Reduce Contractor Overhead", Federal Contracts Report, Vol 42, December 3, 1984.

29. "Taft Wants Contractor Overhead Audits, Should Cost Reviews", Aerospace Daily, January 7, 1985.

30. "Senator Quayle To Offer Legislation to Improve Defense Procurement", Federal Contracts Report, Vol 43, February 25, 1985.

31. "Goldwater on Defense Acquisition Policy", Aerospace Daily, April 10, 1985.

32. Unofficial position paper,"Should Cost", no date, (believed to have been written early 1985).

33. Lange, G.,"Should Cost" Lessons Learned, U.S. Army Logistics Management Center, Fort Lee, Virginia, November 1970.

34. U.S. Army Procurement Research Office,"Should Cost" Guidelines for the Selection of Team Members, U.S. Army Logistics Management Center, Fort Lee, Virginia, June 1973.

35. Headquarters, U.S. Army Armanent and Munitions and Chemical Command, "Lessons Learned : A Two-Year Review", date unknown, approximated early 1984.

36. "Hewlett Packard Company vs. United States of America", Federal Reporter, 2d series, date unknown.

37. "Ruling Supports GAO Bid to See Data on Drug Costs, Prices", Washington Post, 13 May 1978, section unknown, page unknown.

38. Defense Systems Management College, Acquisition Strategy Guide, Fort Belvoir Virginia, 1st Edition, July 1984.

39. United States Government Printing Office, United States Code, 1982 edition, Vol 3, Title 10, Washington.

40. Department of Defense, DoD Armed Services Procurement Regulation Manuel for Contract Pricing, ASPM 1, September 15, 1975.

41. Cibinic, J. and Nash R.C., Administration of Government Contracts, 2nd ed, The George Washington University, 1985.

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