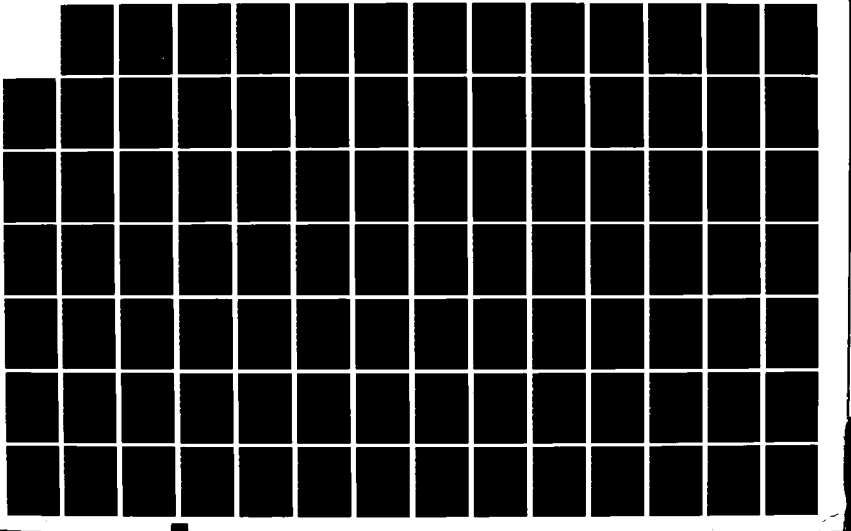
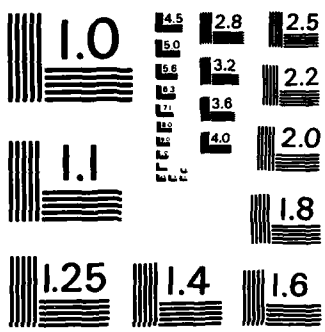
AD-A161 649 EVALUATION OF PROCEDURES EMPLOYED DURING SOURCE SELECTION FOR CONTRACTS I..(U) AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH SCHOOL OF SYST.. J E PUGH 1/2

UNCLASSIFIED SEP 85 AFIT/GSM/LSY/85S-30 FFG 5/1 NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

AD-A161 649

DTIC FILE COPY

DTIC
ELECTE
NOV 2 7 1985
S D
E

DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY

AIR FORCE INSTITUTE OF TECHNOLOGY

Wright-Patterson Air Force Base, Ohio

This document has been approved for public release; its distribution is unlimited.

85 11 25 095

2

AFIT/GSM/LSY/85

EVALUATION OF PROCEDURES EMPLOYED DURING SOURCE SELECTION FOR CONTRACTS INCLUDING CLAUSES REQUIRING COST/ SCHEDULE CONTROL SYSTEMS CRITERIA (C/SCSC)

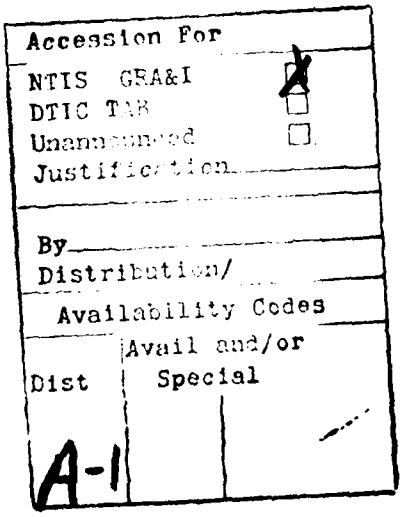
THESIS

James E. Pugh
Captain, USAF
AFIT/GSM/LSY/85S-30

DTIC
ELECTE
NOV 2 7 1985
S D
E

Approved for public release; distribution unlimited

The contents of the document are technically accurate, and no sensitive items, detrimental ideas, or deleterious information are contained therein. Furthermore, the views expressed in the document are those of the author(s) and do not necessarily reflect the views of the School of Systems and Logistics, the Air University, the United States Air Force, or the Department of Defense.



AFIT/GSM/LSY/85S-30

EVALUATION OF PROCEDURES EMPLOYED DURING SOURCE SELECTION FOR CONTRACTS INCLUDING CLAUSES REQUIRING COST/SCHEDULE CONTROL SYSTEMS CRITERIA (C/SCSC)

THESIS

Presented to the Faculty of the

School of Systems and Logistics

of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the

Requirements for the Degree of

Master of Science in Systems Management

James E. Pugh, B.S.

Captain, USAF

September 1985

Approved for public release; distribution unlimited

Acknowledgements

I extend my gratitude to all who helped to make this research possible. I am deeply indebted to my faculty advisor, Lt Col Thomas L. Bowman, for his continuing patience and assistance in times of need. I also wish to thank my reader, Lt Col Jeffery Phillips. Finally, I wish to thank all those at ASD who took time out of their schedules to be interviewed.

James E. Pugh

Table of Contents

	Page
Acknowledgements	ii
List of Figures	v
Abstract	vi
I. Introduction	1
General Issue	1
Specific Problem	3
Definitions	4
Checklist	4
Work Breakdown Structure (WBS)	5
Source Selection	5
Research Objective	6
Research Questions	6
II. Literature Review	7
Topic Statement	7
Justification	7
Scope	7
Discussion	8
Purposes and Objectives of C/SCSC	8
Criteria and the Implementation Process	11
Problems and Perceptions of C/SCSC	13
Results of Literature Review	17
III. Methodology	19
Initial Research Phase	19
Primary Research Phase	21
Reasons for Methodology Used	23
IV. Findings	25
Research Question 1	25
Research Question 2	28
The Source Selection Elements	28
The Evaluation Process	32
Research Question 3	35
Research Question 4	39
Preparing for the Evaluation	39
Limitations and Problems with the Evaluation	40
The Evaluation	42
Summary of Research Findings	46

page

V. Conclusions 49

C/SCSC Items to Consider during Source Selection 51
Recommendation 52

Appendix A: Evaluation/Demonstration Review Checklist For C/SCSC 54

Appendix B: Record of Interviews 67

Appendix C: ASD Evaluation Standards 81

Appendix D: Evaluation Write-ups 84

Bibliography 91

Vita 94

List of Figures

Figure		Page
1.	Source Selection Hierarchy	31
2.	Source Selection Schedule	33
3.	C/SCSC In Relation To Overall Program	36

Abstract

To effectively manage Research and Development, and full-scale production programs, the DOD requires contractors to submit performance measurement information. Performance measurement information is produced by management systems for control purposes and is verified as valid and timely by its adherence to the Cost/Schedule Control Systems Criteria (C/SCSC). This research effort examines how performance measurement systems are evaluated during source selection. This thesis explains: the C/SCSC-related items of a DOD solicitation and the resulting requirements placed on a contractor's proposal; how the source selection process works; the importance of C/SCSC in regard to the overall source selection; and how the contractor's C/SCSC plan is evaluated during source selection.

The research is based primarily on interviews with Aeronautical Systems Division personnel. Those interviewed were chosen based on their position, experience, and training. The general agreement among those interviewed provides a basis for developing a list of important items to consider during source selection when evaluating contracts which include C/SCSC clauses.

EVALUATION OF PROCEDURES EMPLOYED DURING SOURCE SELECTION FOR CONTRACTS INCLUDING CLAUSES REQUIRING COST/SCHEDULE CONTROL SYSTEMS CRITERIA (C/SCSC)

I. Introduction

General Issue

The Department of Defense (DOD) develops and procures many items that are not available in the consumer marketplace. These items often advance technology, use exotic materials, take much time and effort to develop, and are very expensive to produce. Additionally, the DOD marketplace is small in competitive number of contractors. Only a few large contractors can produce items such as aircraft, ships, tanks, and radars. All too frequently these conditions have led to huge cost overruns, lengthy schedule delays, and critical reports of waste; this has caused concern among the public and the government. In order to help the government monitor and control the progress of military acquisitions, the DOD has developed regulations and instructions to describe the various requirements for doing business with the military.

Department of Defense Directive (DODD) 5000.1, "Major System Acquisitions," provides the guidance for large acquisitions in terms of time and dollar effort. This directive is supported by the Air Force Systems Command's (AFSC) supplement to AFR 800-6. This regulation requires

that contracts in excess of $40 million for Research, Development, Testing, and Engineering (RDT&E) effort or $160 million in production effort must contain clauses requiring the contractor to adhere to Cost/Schedule Control Systems Criteria (C/SCSC). The government can also require C/SCSC on smaller efforts with a value of at least $10 million (3:Atch 4). Programs that require C/SCSC will be referred to as "major" programs throughout this thesis.

When the government awards a "major" contract, performance measurement reporting to the system program office (SPO) is required. The C/SCSC concept was developed by the government to ensure that contractors have the ability to measure and report performance in an accurate, complete, and timely fashion (12:3). The C/SCSC contain 35 standards (or criteria), all of which must be satisfied by the contractor's performance measurement system (10:5).

C/SCSC is established by Department of Defense Instruction (DODI) 7000.2 titled "Performance Measurement for Selected Acquisitions" (10). The stated policy of DODI 7000.2 is to provide the DOD data that is "derived from the same internal management control system as used by the contractor to manage the contract" (12:3). The SPO uses this information to schedule other program activities, identify potential problem areas, evaluate the cost and schedule impact of these problems, and determine future funding requirements (17:178).

Specific Problem

The contractor's capacity to adhere to the C/SCSC requirements is often not evaluated adequately during source selection. Even though regulations have required C/SCSC since 1967, many procurement officials lack familiarity with C/SCSC requirements. Source selection committee members have difficulty evaluating contractor proposals because the regulations do not explain exactly what to look for while evaluating the proposals (5).

The lack of specific direction makes the source selection process very difficult and often inadequate. Section 52.242-7001 of the DOD supplement to the Federal Acquisition Regulation (FAR) directs the contractor to submit a "Comprehensive Plan for C/SCSC." If the contractor already has a validated system (validated by the government against the 35 criteria), submitting evidence of the validation satisfies the requirement (9:25647).

By submitting a Comprehensive Plan for C/SCSC in response to a RFP requiring C/SCSC, the contractor is certifying that their performance measurement system satisfies the criteria. This plan helps the government in determining if the contractor understands the criteria. The contractor's performance measurement system does not have to actually prove adherence with the C/SCSC until after contract award (5).

It is important to evaluate the contractor's

performance measurement system in source selection. The government requires C/SCSC as it helps both the government and the contractor manage the program better (12:3). The government wants to receive performance measurement information early in the program so that problems can be identified and corrected before a situation becomes critical. By evaluating C/SCSC during source selection the government reduces the probability that a contractor without a proper performance measurement system will be awarded a contract (20). If the contract is awarded to a contractor who has an inadequate plan for C/SCSC, performance measurement may be inadequate and the information provided to the government may be a distortion of the actual conditions (17:94).

Definitions

The following terms are used throughout this paper and are defined below.

Checklist. A checklist is a listing of important items that are stated in a question form that can normally be answered in a "yes" or "no" fashion. Checklists often break down complicated procedures or questions into series of straightforward questions that can be easily answered. Most checklists are designed so that either "yes" or "no" is the preferred answer while any other response indicates a potential problem.

Work Breakdown Structure (WBS). "A work breakdown structure is a product-orientated family tree composed of hardware, software, services, and data" (11:2). The WBS completely defines the project or contract by dividing the product into detailed levels of components that add up to the total product. The WBS identifies all the elements that make up the total product and shows how the elements interrelate. Common types of WBS are Summary WBS, the upper three levels only; Contract WBS, contains the activities of a specified contract; and Project WBS, contains the contracted events along with all other activities that must be completed within the project. Military Standard 881A, Work Breakdown Structures for Defense Material Items, provides guidance for work breakdown structures and gives examples of Project Summary WBSs (11).

Source Selection. Source selection is a highly structured process used to determine which contractors should be awarded contracts. Guidance for source selection is provided by AF Regulation (AFR) 70-15, "Source Selection Policy and Procedures." According to this regulation the objective of source selection is:

> To select the source whose proposal has the highest degree of credibility and whose performance can be expected to best meet the government's requirements at an affordable cost. The process must provide an impartial, equitable, and comprehensive evaluation of the competitors' proposals and related capabilities. The process should be accomplished with minimum complexity and maximum efficiency and effectiveness. It should be structured to properly balance technical,

> financial, and economic or business considerations consistent with the phase of the acquisition, program requirements, and business and legal constraints. It must be sufficiently flexible to accommodate the objectives of the acquisition and a decision must be compatible with program requirements, risks, and conditions [8:3].

Specifics on the role that C/SCSC related areas play in the overall source selection process will be described in later chapters.

Research Objective

The research objective is to investigate how the source selection community determines that a contractor's proposal satisfies the C/SCSC-related areas of the solicitation. Research will also look at the options available to the government when a contractor's response is unacceptable. The product of this research will be a list of items to consider when evaluating C/SCSC during source selection.

Research Questions

1. What type of information concerning C/SCSC is the contractor required to provide to the government in a proposal?

2. How are contractors' proposals evaluated during source selection?

3. How important are the C/SCSC-related areas in the overall source selection?

4. What specific elements should the persons evaluating the Comprehensive Plans for C/SCSC examine in the proposals?

II. Literature Review

Topic Statement

This chapter examines published literature, government publications, and seminar presentations that deal with the Cost/Schedule Control Systems Criteria.

Justification

It is important to understand the C/SCSC in order to understand the problems of evaluating C/SCSC during source selection. Looking at available literature provides a basis for determining the depth of information that is available and the areas that need to be researched further in order to satisfy the research objective.

Scope

Much of the information on C/SCSC is published by the DOD in the form of regulations, directions, and guides. Besides examining government publications and published literature, this review also looks at detailed studies and presentations from a C/SCSC conference. Research is limited to materials available through the Air Force Institute of Technology (AFIT) libraries. (AFIT is the lead agency, appointed by the OSD for educating DOD agencies and organizations on C/SCSC (2)).

Discussion

Three areas concerning the C/SCSC will be discussed. The first area, "Purposes and Objectives of C/SCSC," establishes the reasons why C/SCSC was established. The second area, "Criteria and the Implementation Process," presents the content of the criteria. The final area, "Problems and Perceptions of C/SCSC," identifies some of the difficulties inherent in the C/SCSC concept.

Purposes and Objectives of C/SCSC. Due to the importance and high cost of major projects, it is very important that a contractor have a performance measurement system (for cost and schedule control) that provides accurate, timely information for decision-making (10:3). However, Marvin Friedenberg, head of the Cost Performance Management Branch at the Naval Material Command states:

> Cost control [performance measurement] systems do not control cost. People control cost. Cost control systems aid people in controlling cost by providing pertinent, useful information in a readily understandable form in a timely manner. No control system, no measurement of performance, no report of status is ever an end in itself [13:257].

DODD 7001, "Resource Management Systems of the Department of Defense," among other things, identifies the need for contractors to have an "effective" performance measurement system for providing accurate and timely information. To further identify the intrinsic attributes of an "effective" management system, the DOD developed DODI 7000.2, "Performance Measurement for Selected Acquisitions."

This instruction contains two main objectives:

> 1. To provide an adequate basis for responsible decision-making by both contractor management and DOD components, contractors' internal management control systems must provide data which (a) indicate work progress, (b) properly relate cost, schedule, and technical accomplishment, (c) are valid, timely, and auditable, and (d) supply DOD managers with information at a practicable level of summarization.
>
> 2. To bring to the attention of, and encourage DOD contractors to accept and install management control systems and procedures which are cost effective in meeting their requirements and controlling contract performance. DOD contractors also should be continuously alert to advances in management control systems which will improve their internal operations [10:1].

These objectives imply that the criteria were designed to help both industry and government. Gary Christle, from the Office of the Assistant Secretary of Defense (Comptroller), has identified seven acquisition management policies of the DOD that were used in developing the criteria.

(1) Reduce & standardize requirements
(2) Make maximum use of contractor's [performance measurement] system
(3) Review contractor's system for adequacy
(4) Avoid imposing specific methods and techniques
(5) Tailor reporting requirements to fit programs
(6) Use common work breakdown structure
(7) Obtain summary level data [6:78].

Robert R. Kemps, from the Department of Energy and former Air Force C/SCSC focal point, adds that a cost and schedule control system should "insure a single system for internal management and reporting to the government" and

"insure that reported data relates contract performance accurately and objectively" (17:96).

The C/SCSC process is intended to better DOD's management of large programs. L. A. Stone, from the Army's Contract Cost Management Division, gave a presentation at a conference sponsored by the American Institute of Aeronautics and Astronautics in which he listed seven benefits to the government from contractors that have a validated performance measurement system:

(1) [government gains] Confidence in contractor's internal management system.
(2) Measurement against a controlled, contract-orientated baseline.
(3) Objective (rather than subjective) contract status information.
(4) Cost impact of known problems.
(5) Identification of problems not previously recognized.
(6) Capability to trace problems to source (hardware and organizational).
(7) Quantitative measure of schedule deviation in dollars [21:234].

Besides benefiting the government, a validated performance measurement system can be a big advantage to industry. In his presentation, Stone listed six benefits to contractors from having a performance measurement system that meets the C/SCSC requirements.

(1) System discipline
(2) Earned value
(3) Improved planning
(4) Better communication
(5) Deeper and earlier program visibility
(6) Cost and schedule awareness [21:234].

Criteria and the Implementation Process. The Cost/Schedule Control Systems Criteria described by DODI 7000.2 consists of 35 separate criteria broken down into five sections. The five sections are "organization," "planning and budgeting," "accounting," "analysis," and "revisions and access to data" (10:9-12). The criteria are general in nature and evaluation against the criteria often requires subjective judgments.

The "Evaluation/Demonstration Review Checklist for C/SCSC" (Attachment A) is used to evaluate the contractor's adherence to the criteria (12:9-12). This checklist breaks down each criteria into a series of questions that aids in the evaluation of the contractor's performance measurement system.

The Cost/Schedule Control Systems Criteria Joint Implementation Guide, published under the auspices of the Office of the Assistant Secretary of Defense (Comptroller), provides interpretive information on the criteria. This guide, used by all three military services and the Defense Logistics Agency, contains a detailed explanation of each criterion along with a discussion of appropriate implementation procedures (12).

According to these procedures, a contractor does not need an "approved" performance measurement system to be awarded a government contract. FAR clause 52.242-7002 allows the contractor 90 days after contract award (or longer if agreed to by the government) before a

Demonstration of C/SCSC compliance is required. A Demonstration Review of the contractor's performance measurement system is conducted by the procuring activity to ensure that all 35 criteria are satisfied. The performance measurement system is said to be "validated" when all the criteria have been satisfied (9:25647-8).

In evaluating a performance measurement system against the criteria, the C/SCSC Joint Implementation Guide cautions that "use of the criteria must be based on common sense, which means being practical, but also mindful of the overall requirements for performance measurement" (12:3).

If the contractor already has an approved system, a Subsequent Application Review (SAR) may be performed in lieu of a Demonstration Review. This review ensures "the contractor is properly and effectively using the accepted system, revised in accordance with approved changes" (12:66). These reviews ensure that both government and industry receive the benefits of good performance measurement.

A primary benefit of C/SCSC is knowing the current status of all elements of the program. C/SCSC requires the current status to be reported to the government via a Cost Performance Report (CPR) on a routine and timely basis. This report examines every WBS item and lists for each: the amount of work scheduled, the amount of work completed, the budgetary goal for the work, and its actual cost (12:19).

This report also identifies potential problem areas by reporting variances. A variance is the difference between what was planned and what actually occurred. When a variance is significant, the contractor reports the cause of the problem to the government and identifies corrective actions that have been initiated. This information is useful in effectively managing the program (12:18-9).

Problems and Perceptions of C/SCSC. Despite the benefits mentioned earlier, many contractors view C/SCSC as "a four-letter word, ranking just slightly above 'technically unacceptable' and 'defective pricing' in popularity" (24:11). This section on problems and perceptions of C/SCSC identifies some of the reasons why there is contractor resistance to the C/SCSC concept. This section may also help explain why there are problems in evaluating contractors' proposals during source selection.

Contractors have many reasons for disliking C/SCSC requirements. A 1983 article, "Taking the Heartburn out of CS^2" written by Varady & Lumer, mentions some of the reasons:

(1) Lack of incentive (money)
(2) Cost involved with setting up system
(3) Lack of knowledge and understanding
(4) Ability to get contracts without system
(5) Corporate dislike for government procedures
(6) Lack of ability [24:11].

Another 1983 article, "The Cost of C/SCSC" by Gadeken and Tison, discusses the cost and benefits of C/SCSC. Many contractors and some DOD managers question the cost of

implementing a C/SCSC system compared to the benefits received. In their opinion, a large problem is how to quantify the cost and benefits of C/SCSC.

> The benefits of C/SCSC are good cost/schedule control of a project, but quantifying such benefits is the same as trying to answer the question 'What is the value of good management?' Even in an isolated analysis of a specific contract, benefits of using C/SCSC cannot be clearly associated with results in terms of improved technical performance, increased quality, shortened schedule, or contract cost savings, let alone quantified into one cost figure [14:15].

Gadeken & Tison explain that determining the cost associated with C/SCSC is almost impossible. Many of the reports and procedures required by C/SCSC would be part of any normal management system. The cost of implementing C/SCSC for the first time, therefore, often includes bias based on contractors' views of C/SCSC. While there is a cost involved with implementation, the quantification of this cost is infeasible because of factors such as "initial company management systems, company size, contract value, government criteria interpretation, and attitude/acceptance" (14:16).

Gadeken & Tison also point out problems with the implementation process. The government team that reviews the contractor's performance measurement system often includes individuals without proper knowledge and experience on C/SCSC. These people have problems making subjective judgments when the contractor's system appears not to exactly satisfy the criteria. In some cases, these

judgments have resulted in the contractor being cited for noncompliance. "Rigid interpretation of the criteria is the cause of continuing disagreement between the DOD and industry" (14:17).

Even though all contractors are not totally in favor of C/SCSC, "the worth of C/SCSC to DOD managers has been proved over the years" (14:18). Recent highly publicized reports of questionable billing practices at major defense contractors including General Electric and General Dynamics have caused Congress and the American public to question the DOD's relationship with the defense industry. The 8 April 1985 edition of Time has a section on current problems with DOD contractors. In one article, a Pentagon spokesman explains that the DOD must do a better job monitoring and controlling cost on major contracts in order to "restore the public support for a stronger defense that has been squandered by repeated revelations of waste, fraud, and abuse" (23:20).

The Arthur D. Little Program Systems Management Company performed a detailed study called Survey Relating to the Implementation of Cost/Schedule Control Systems Criteria within the Department of Defense and Industry. This study, which was commissioned by the Office of the Secretary of Defense (OSD) and completed in 1983, surveyed program and business managers from the DOD and the defense industry. It is viewed by many experts as the most complete C/SCSC study done to date (5).

Several summarized findings from this survey include:

(1) Government review teams lack flexibility and technical qualifications.

(2) Review teams do not consistently interpret C/SCSC during demonstration reviews.

(3) Demonstration reviews often take longer than six months.

(4) CPRs are received to late to provide timely data.

(5) Program offices do not perform timely reviews of CPRs.

(6) Government contract administration representatives lack expertise in C/SCSC [4:IV-5-13].

The Little study also identifies some positive points about the use of C/SCSC. Those surveyed feel: (1) that despite the problems, the benefits from C/SCSC outweigh the cost; and (2) that the criteria approach is as good or better than other methods of ensuring adequate performance measurement (4:IV-2-4).

A big problem for contractors is the implementation process. Gadeken & Tison feel this problem could be solved by having government personnel experienced with C/SCSC work closely with the contractor. The government personnel should start communications early, explain the required terminology and concepts, and understand the peculiarities of the contractor's system. This effort will use a great deal of the government's limited C/SCSC resources. However, the benefits of accurate performance measurement information

early in the program should outweigh the cost involved (14:17).

Varady and Lumer take a different view on how to get contractors to accept C/SCSC. They believe the government should forcefully motivate the contractor to want to use a C/SCSC validated system. They list three approaches for a timely implementation:

1. An award fee for implementation and management of the CS [C/SCSC] program throughout the life of the contract.

2. A formal course of instruction for key contractor personnel, to be set forth as a contractual requirement.

3. A withholding of (any) fee until CS [C/SCSC] is fully implemented [24:11].

If the contractor still does not implement C/SCSC, Varady & Lumer suggest a clause in the contract that allows for contract termination if the contractor refuses to establish an acceptable performance measurement system (24:12).

Results of Literature Review

Much has been written on C/SCSC both pro and con. In addition, courses and seminars taught by both the government and private sector are aimed at giving people a better understanding of the C/SCSC concepts. This information covers purposes and objectives of C/SCSC, the criteria themselves and their implementation process, and problems and perceptions of C/SCSC. This literature review has uncovered valuable information on many aspects of

C/SCSC. However, it has reflected a lack of substantial information and guidance for determining acceptability of contractor's plans for a performance measurement system in source selection. In other words, there is a need to investigate how the source selection community determines if a contractor's proposal satisfies the C/SCSC related areas of the solicitation.

III. Methodology

This chapter describes the methodology used to solve the research problem. The research on this project consists of two phases. The initial phase concerns researching the requirements of the Cost/Schedule Control Systems Criteria (C/SCSC) and the source selection process. Secondly, the primary phase of the research explores how the government evaluates C/SCSC during the source selection process.

Initial Research Phase

The first step in this research is to gain an understanding of C/SCSC. Initial Orientation to C/SCSC was accomplished by attending the professional continuing education course SYS 362 "Cost/Schedule Control Systems Criteria" at the Air Force Institute of Technology in January 1984.

The literature review (chapter 2) examined official direction and guidance along with opinions and findings from knowledgeable people in the C/SCSC field. This review resulted in several findings that otherwise would have to be included in the research. The literature review also verified that research was lacking in regards to determining how the C/SCSC related areas are examined during source selection.

Interview questions were formulated using the AFIT course and literature review as background. Personnel at Air

Force Systems Command (AFSC), the Air Force's R&D and production procuring organization, were interviewed first to determine command guidelines and policies. Division heads from Aeronautical Systems Division (ASD) were also asked similar questions. (ASD is one of the Air Force's product divisions. A product division is a separate procuring organization that specializes in a certain area. Other product divisions include Electronic Systems Division (ESD), Space Division (SD), and Armament Division (AD)). The questions asked in these preliminary interviews changed as more was learned about C/SCSC.

Lt Col Connie Teetz, chief of AFSC's Cost Information Division (AFSC/ACCI), explained in a telephone interview that:

(1) There is not an AFSC focal point in charge of source selections.

(2) The different product divisions can require contractors to submit different information but the C/SCSC requirements must be consistent with the FAR and AFR 70-15.

(3) There is not an AFSC guideline for evaluating C/SCSC during source selection. However, based on Lt Col Teetz's frequent conversations with the product divisions, there is little difference in the way the product division's evaluate C/SCSC during source selection (22).

These points, which were verified by second sources at both AFSC and ASD, helped to determine where to focus the remaining research effort.

Initially, source selection and C/SCSC personnel from the different product divisions were to be interviewed, however, this proved to be unnecessary. Based on the preliminary interviews it was discovered that the product divisions can organize and evaluate source selections differently but they still must follow the procedures of AFR 70-15. Therefore, any product division could be considered as "typical" and ASD was chosen because of it's close proximity to AFIT.

The source selection process was explained in detail by James Helmig, chief of the Source Selection Division at ASD (ASD/PMPS). The findings of this interview are substantiated by the ASD handbook, The Source Selection Process. An attempt to witness a source selection was disallowed due to the sensitive nature of the source selection process.

Primary Research Phase

From the initial interviews, ASD/ACCM was identified as the office that evaluates the C/SCSC area during source selections at ASD. Currently at ACCM, Patrick Cyrus, William Harper, John Wohlman, and Stanley Nesivich (the division chief) are the only people who have evaluated contractors' performance measurement systems during source selection. Another person in the ASD community with experience in this area is Dan Schild from The Analytical Sciences Corporation (TASC). Schild was the division chief

of ASD/ACCM before working as a C/SCSC consultant with TASC. These people were interviewed because their organizational responsibilities and job prerequisites require them to be experienced and trained in C/SCSC and source selection.

These five people were interviewed in their own offices at separate times to elicit their individual opinions. To insure that the information provided would be valid and useful, the purpose of the interview was explained and anonymity was offered. All persons answered the questions freely. Records of the interviews are attached in Appendix B.

Chapter 4 presents the findings of the interviews. In most cases, those interviewed expressed the same views. In these instances, special points brought out during the interview are referenced to the appropriate individual. Since nonattribution was offered, individuals were not referenced in the text in those cases where consensus was not reached between the interviewees. In these cases, paraphrased and quoted information from the interviewees are represented by "(*)" in the text. These areas are deleted from the record of interviews.

A list of C/SCSC-related items to consider in source selection was developed prior to interviewing the five C/SCSC evaluators. At the end of each interview, the interviewee was shown the list and comments were solicited. The comments were incorporated before the next individual

was interviewed. Due to general approval of the list by the final few interviewees, the evaluators were not asked to examine the list a second time. This list is presented in the conclusion (chapter 5).

Reasons for Methodology Used

People with experience in both C/SCSC and source selection were interviewed in order to determine how C/SCSC is evaluated during source selection. It was possible to interview the entire population of an acquisition organization due to the small number of people who have experience evaluating the C/SCSC area in proposals.

The interview process allowed the use of open-ended questions which are useful for having someone explain a process. Interviews also allow for questions which clarify and verify information received from others. Analyzing the interviews for agreement and differences helps explain the process of evaluating the C/SCSC-related areas of a contractor's proposals during source selection.

Sending a survey to other procuring agencies was considered. There are often problems inherent in surveys. These problems include wording the questions for consistent interpretation, correctly understanding the responses, and controlling the accuracy of the responses. Since the initial research indicated that procuring organizations evaluate C/SCSC similarly during source selection (22), interviewing one organization was chosen over surveying all

DOD personnel with experience in evaluating C/SCSC during source selection.

It was unnecessary (and impractical) to quantify the interviewees' responses as the interviews were open-ended. Therefore, this thesis contains no statistical analysis.

IV. Findings

This chapter contains the information obtained from interviewing selected personnel at AFSC & ASD. The findings of this research are organized as answers to the research questions posed at the end of chapter one. The interview responses for question four are also compared and contrasted.

Research Question 1.

1. What type of information concerning C/SCSC is the contractor required to provide to the government in a proposal?

At ASD, all Requests for Proposal (RFP) must be reviewed by the Cost Management Systems Division (ASD/ACCM) before the RFP is released to contractors. John Wohlman, a member of this division who has reviewed many RFPs, explained that the System Program Office (SPO) designs the RFP to meet the needs of the program. However, the FAR requires certain clauses to be included in the proposal when dollar thresholds are exceeded, regardless of SPO needs. As mentioned earlier, C/SCSC is required on all "major" programs. ASD/ACCM reviews the RFP for all such programs to ensure that DOD FAR Supplement clause 52.242-7001, "Notice of Cost/Schedule Control Systems," is included as part of the RFP package (25).

DOD FAR Supplement Clause 52.242-7001 requires contractors submitting an offer to include a

"Comprehensive Plan for C/SCSC" with their proposal. This plan explains the contractor's performance measurement system and how the system will be applied to manage the work authorized in the contract. The plan must also describe how the contractor's performance measurement system satisfies each of the 35 criteria established in DODI 7000.2. The DOD uses this clause to notify contractors that C/SCSC, as discussed in DODI 7000.2, is required on the contract. If the contractor is currently using an accepted system, evidence of the DOD's C/SCSC validation can be submitted instead of the Comprehensive Plan for C/SCSC (9:25647).

FAR clause 52.242-7001 also requires the contractor to identify critical subcontractors and the effort that these subcontractor will perform. In addition, this clause requires the contractor to "provide information and assistance as requested by the Contracting Officer for evaluation of compliance with the cited criteria" (9:25647).

In addition to the requirements of DOD FAR Supplement clause 52.242-7001, the contractor also must submit other C/SCSC-related items. Mr. Wholman explained that in procurements requiring C/SCSC, the RFP includes a Project Summary WBS (broken down to level 3) and instructions to the contractor to extend this WBS to the cost account level in their proposal. The Contract Work Breakdown Structure (CWBS) submitted by the contractor must reflect how the contractor plans to complete the program. The contractor

must also develop a "CWBS Dictionary" which defines the scope of work included in each CWBS element (25). Lt Col Thomas Bowman, who instructs C/SCSC courses at AFIT, adds that "a CWBS Index (which is a matrix of which CWBS elements comprise the Contract Line Items and End Items) is also required. The CWBS, index, and dictionary are all required via a single 'Data Item Description'" (5).

DOD FAR Supplement Clause 52.242-7002, "Cost/Schedule Control Systems," is the clause used in the contract itself to follow-up on the requisites established by 52.242-7001 in the solicitation. It requires the contractor to demonstrate the performance measurement system that was described in response to FAR clause 52.242-7001 (9:25647-8). Even though FAR clause 52.242-7002 is not evaluated in source selection, it is still important. Daniel Schild, a C/SCSC consultant with The Analytic Sciences Corporation (TASC) and former chief of ACCM, explained that this clause forces the contractor to plan for a Demonstration/Validation Review or Subsequent Application Review shortly after contract award. Since this clause requires the contractor to use the system described in the Comprehensive Plan for C/SCSC, it provides some assurance that the contractor has described the system it intends to use and that it has not copied the performance measurement system plan of another contractor (20).

Research Question 2.

How are contractors' proposals evaluated during source selection?

In order to explain the role C/SCSC plays in source selection it is essential to understand what takes place during this process. Mr James Helmig, Chief of the Source Selection Division at ASD (ASD/PMPS), explained the Source Selection elements and process during a personal interview.

The Source Selection Elements. The contractor submits the proposal as a set of volumes. Each volume contains information that is needed for a formal proposal evaluation and each is subdivided into areas. Normally, there are five areas: "Operational Utility," "Readiness Support," "Life Cycle Cost," "Design Approach," and "Manufacturing/ Program Management" (16).

Mr. Helmig explained that each of these areas, except Life Cycle Cost, are subdivided into items. There are approximately 8-10 items in each area. Each item is further subdivided into factors. In some rare instances, the factors are broken down into subfactors. The proposal is thus subdivided into smaller elements to allow for simpler and more precise evaluation of the proposals (16). (The evaluation process is described in the next section.)

The areas, items, and factors for all but the Life Cycle Cost area are determined and stated in the "Source Selection Plan (SSP)." The SPO tailors the SSP to meet the needs of the program. Therefore, the SSP, especially the

items and factors, differ from program to program (16). Other attributes of the SSP are the evaluation standards, source selection organization, source selection schedule, and program peculiarities that are relevant to source selection (1:21-28).

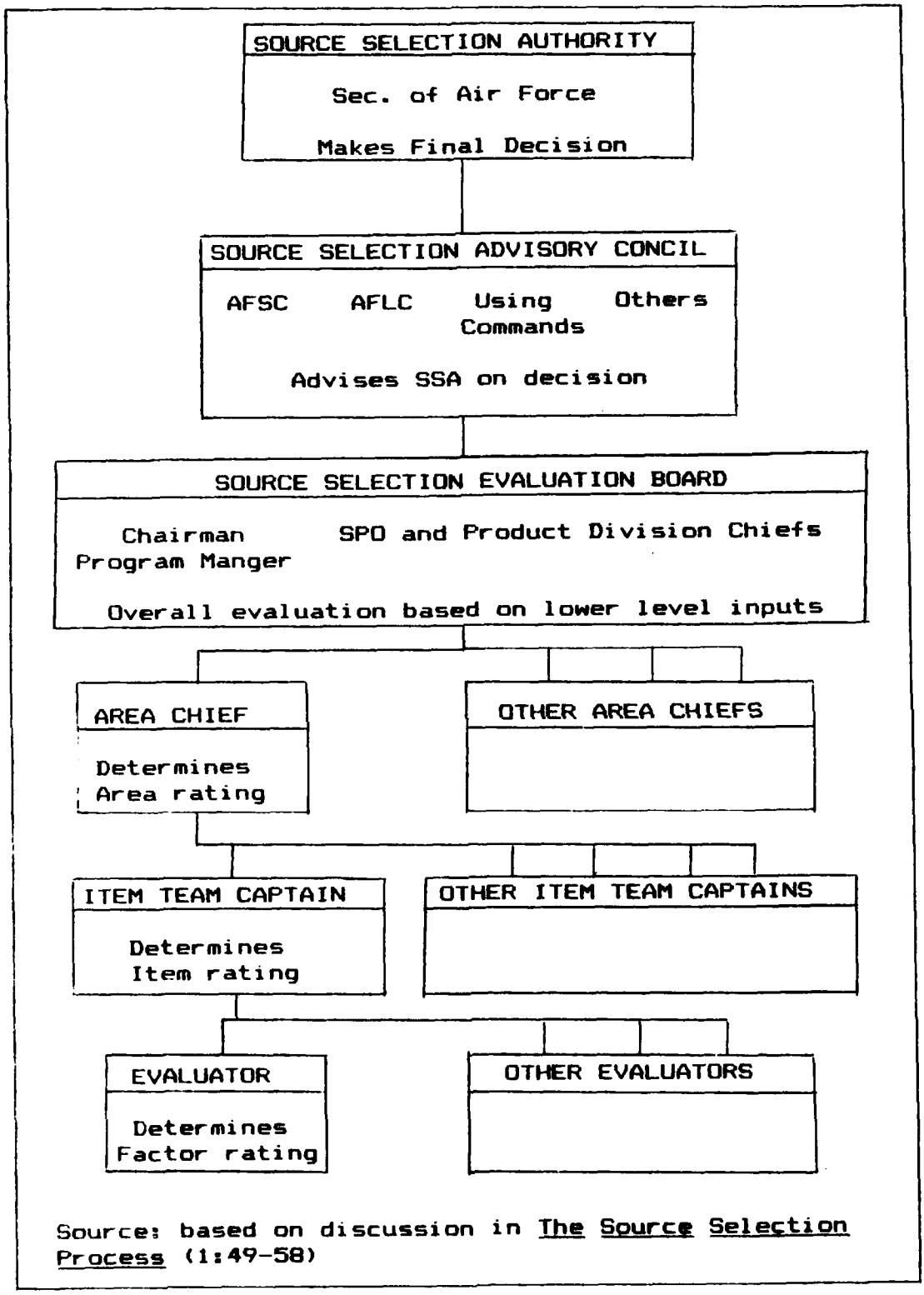
As mentioned earlier, the Life Cycle Cost (LCC) area is not broken down into items and factors. Donald Osborne, chief of the Resources Validation Division (ACCC), explains that at ASD his ACCC division and SPO Program Control personnel jointly evaluate the LCC area. This valuation is to determine whether the bid submitted by the contractor is realistic and contains all costs. ACCC and the SPO determine the operating and support cost for the entire life of the program based on the contractor's design approach. The LCC area is then summarized into a "most probable cost" for the program (19).

The source selection process (including the source selection plan referred to earlier) is explained in detail in the ASD/PMPS handbook, The Source Selection Process. According to this handbook, the SPO develops evaluation standards concurrently with the development of the Source Selection Plan. These standards are used to determine whether the contractor's response satisfies the individual factors. A standard normally represents the minimal quality acceptable (1:28-31).

The handbook also discusses the hierarchy of a source

selection organization. The evaluation of the factors is typically done by non-supervisory people from the SPO and various staff offices (e.g., comptroller, manufacturing, test, etc.). These people present their findings to "Item Team Captains" who have more experience and understanding of the requirements of the RFP. The Item Team Captain consolidates the factor evaluations to determine the item rating and presents the evaluation of the item to the "Area Chief." The Area Chief then rates and presents the area rating to the "Source Selection Evaluation Board (SSEB)." The SSEB is made up of people at higher level positions, often SPO division chiefs (e.g., engineering, program control, logistics, etc.), and is chaired by the program manager. The SSEB presents an overall evaluation to the "Source Selection Advisory Council (SSAC)." On "major" programs (the types that usually include C/SCSC), the SSAC normally consists of General Officers or members of the Senior Executive Service (SES). The SSAC advises the "Source Selection Authority (SSA)" who determines which contractor will be awarded the contract. The SSA is normally the Secretary of the Air Force on Air Force programs that require C/SCSC (1:49-58). Figure 1 presents the different levels in the source selection hierarchy including what each level evaluates.

A schedule of all source selection activities is developed by the SPO and included in the SSP. This schedule shows the time allowed to complete each task and the order



Source: based on discussion in The Source Selection Process (1:49-58)

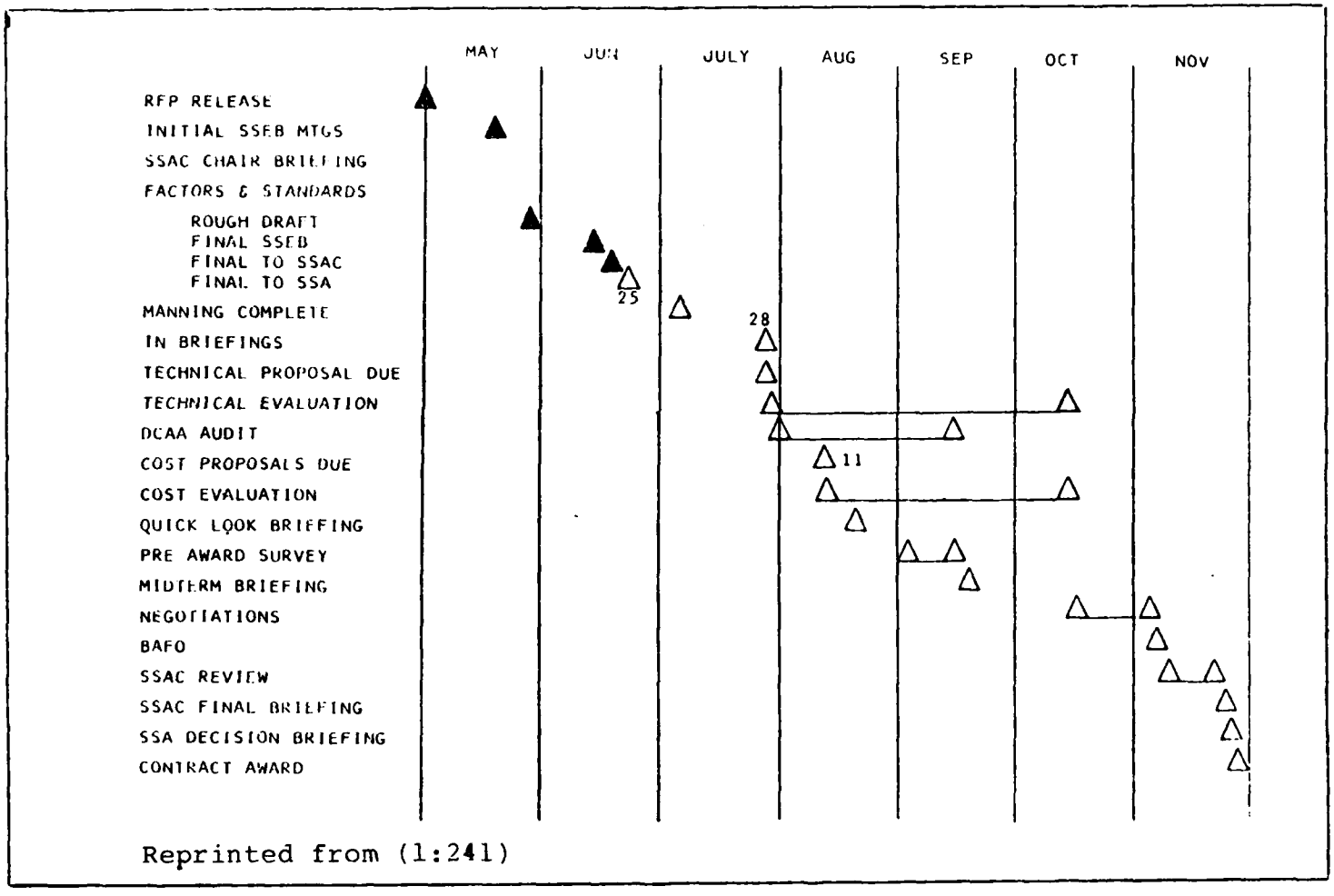
Figure 1. Source Selection Hierarchy

in which the events need to be started and completed (1:32-5). Figure 2, reprinted from ASD's The Source Selection Process, shows an example of a Source Selection Schedule (1:214).

The Evaluation Process. The ASD/PMPS handbook explains how factors are evaluated. When the proposal satisfies the evaluation standard, a "check" is recorded in the evaluation form for the factor. If the proposal exceeds the requirements of the standard, a "plus" is recorded. When the proposal does not satisfy the standard, the contractor is given a chance to correct the problem. A "Deficiency Report (DR)" notifies the contractor that the response is unacceptable. If the contractor does not change the proposal or if the change still fails to satisfy the standard, a "minus" is recorded for the factor (1:59-62).

Helmig explained that many DRs result from the contractor misunderstanding the RFP. These problems can easily be corrected without changing the basic content of the proposal. When a contractor receives a DR, only the part of the proposal that caused the problem is allowed to be changed. The DR process is used because the source selection is intended to choose the better source for the acquisition, not to eliminate competitors who misinterpret the RFP (16).

A "Detailed Narrative Analysis" is required besides marking a "plus," "check," or "minus" for the factor. This



Reprinted from (1:241)

Figure 2. Source Selection Schedule

written explanation for the rating of each factor should contain a description, analysis, summary, and rating. The Detailed Narrative Analysis reports the strengths and weaknesses along with the risks associated with the contractor's approach (1:99-101). A sample of a Detailed Narrative Analysis is included in Appendix D.

The ASD/PMPS handbook also explains how the Item Team Captain should indicate the rating of an item by a color code after all the factors have been evaluated. An outstanding rating should be coded blue while an acceptable rating should be coded green. If the item is marginal the rating should be coded yellow whereas an unacceptable rating receives red. The reasons for the rating are explained in an "Item Summary" which is similar to the Detailed Narrative Analysis used to explain the reasons for a factor's rating. The same type procedure is used to determine the overall rating for each area (1:61-2, 102-5). Samples of an Item Summary and an "Area Summary" are also included in Appendix D.

Daniel Schild mentioned that a problem in rating the items and areas is in determining the effect of minuses and pluses on the total rating (i.e. the effect of a "minus" when everything else is a "plus"). It is for this reason that the lower-level "write-ups" must contain an explicit statement of reasons for the ratings as well as a risk assessment (20).

According to Schild, only critical information is

included in the SSEB's presentation of the area ratings to the SSAC. There is a good chance that problems involving single-factor "minus" ratings may go unnoticed since the SSA and SSAC have little interface with the factor evaluators (20).

A final important fact concerning the evaluation process was explained by James Helmig. The source selection process does not require all areas to be considered equally. Normally, the Design Approach and Life Cycle Cost areas are more important and have a greater impact on the contract award (16). This impact of contracts containing C/SCSC clauses will be discussed in the following section.

Research Question 3.

How important are the C/SCSC-related areas in the overall source selection?

C/SCSC is evaluated at the factor level. In an example of an actual major program presented during the interview with James Helmig, C/SCSC was located under the "Programming, Management, Planning, and Organization" item in the "Manufacturing/Program Management" area. Other factors in this item included "Organizational Responsibilities," "Management Information System," "Work Breakdown Structure," and "Schedule" (16).

Figure 3 shows the relationship between C/SCSC and other factors, items, and areas. Many of the possible items and factors are deleted for simplicity. This figure does

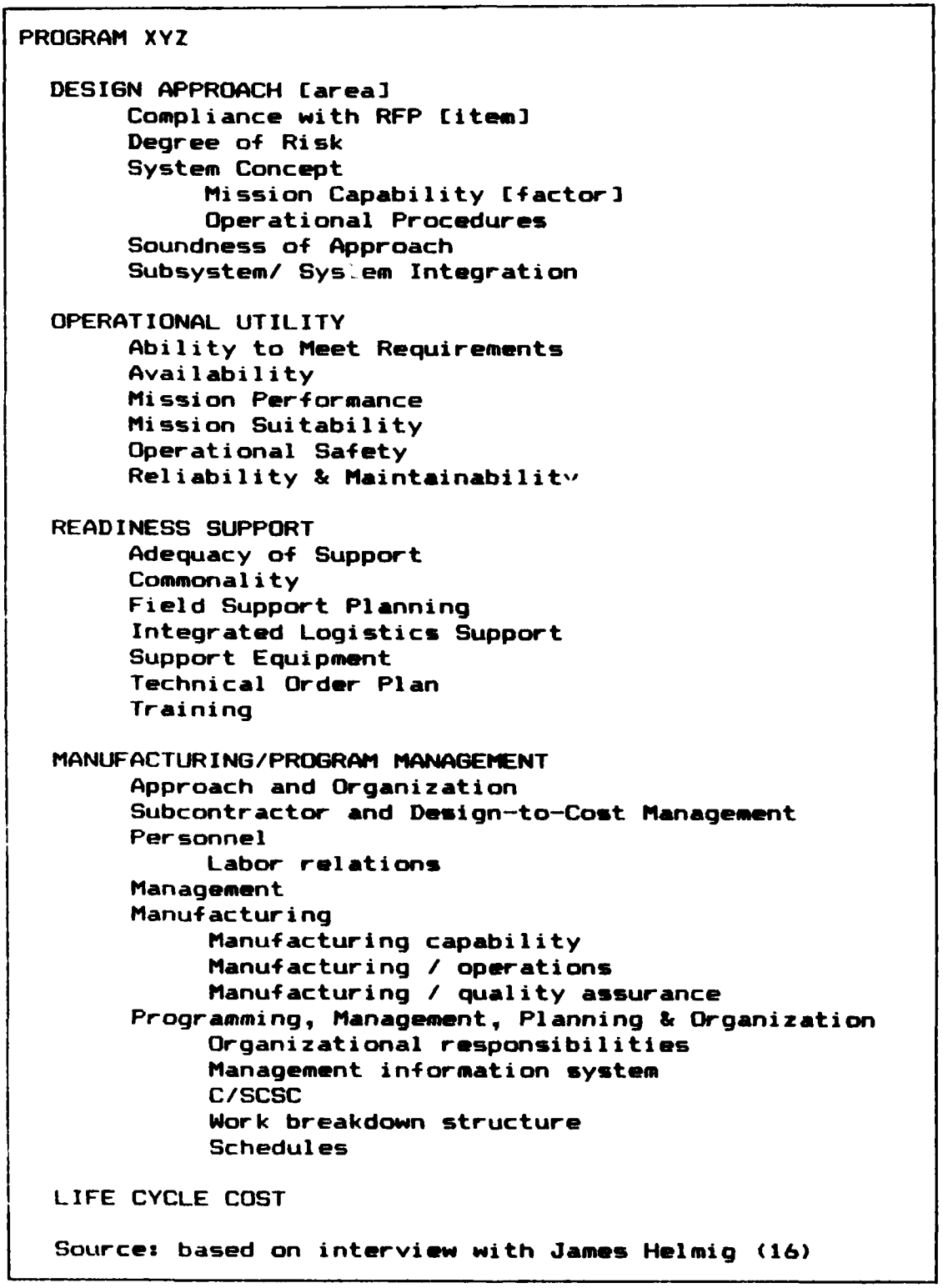


Figure 3. C/SCSC in Relation to Overall Program

not represent any particular program at ASD. As Mr. Helmig cautions, this illustration represents only one of an endless number of ways that a Source Selection Plan might be designed. A SPO can add and delete any item or factor as a means of designing an SSP to satisfy its program requirements (16).

In programs at ASD where C/SCSC is required, ACCM is the sole evaluator of the C/SCSC and Work Breakdown Structure factors. They also examine the Program Control section of the "Organizational Responsibilities" factor. All of these factors are normally located under the same item (25). There is a difference in opinion on how much influence ACCM has in the rating of this item.

The chief of ACCM, Stan Nesivich, who has participated in many source selections, mentioned that the evaluator must prepare an accurate "write-up" regardless of the evaluators influence with the higher levels of the source selection hierarchy. In order to strongly influence the item rating, ACCM must do a good job analyzing the strengths, weaknesses, and risks of the contractor's Comprehensive Plan for C/SCSC. The evaluator must also be sure that the Item Team Captain understands the Detailed Narrative Analysis of each factor (18).

C/SCSC has limited influence in determining the rating of the Manufacturing/Program Management area. C/SCSC is only one of approximately 50 factors in this area. One

interviewee, who has evaluated many contractors' Comprehensive Plans for C/SCSC during source selection, doubts that a "minus" on C/SCSC, when all other factors are either a "check" or "plus," would result in a "yellow" or "red" area rating (*). However, another interviewee from the same office believes a proposal that received a "minus" on C/SCSC would likely receive "minuses" on other factors in the Manufacturing/Program Management area. These other "minuses" could result in a "yellow" or "red" rating for the area (*).

Mr. Nesivich mentioned that most of the factors in source selection receive "green" ratings. Those that fail to satisfy the standards initially are often acceptable after the DR process. There is no rule or guideline for determining how many "red" or "yellow" factors are needed to rate an item less than "green." Therefore, the overall area rating is based on the SSEB's judgment of how well the contractor satisfies the area's requirements (18).

Although C/SCSC is only a small part of the overall proposal, it is still a contract requirement. Dan Schild recommends when the contractor's Comprehensive Plan for C/SCSC is bad and the evaluator feels that there will be difficulty in making the system acceptable, the evaluator should notify the Source Selection Evaluation Board about the problem. The evaluator can even suggest that the contractor be removed from competition, although, this can be overruled by others on the SSEB (20).

Research Question 4.

What specific information should the persons evaluating Comprehensive Plans for C/SCSC examine in the proposals?

Preparing for the Evaluation. A proposal received by ASD is checked to ensure all required items are included. William Harper, whose job includes serving on source selections, explains that on RFPs that include DOD FAR Supplement clause 52.242-7001, it is ACCM's responsibility to ensure that the proposal includes the following: a Comprehensive Plan for C/SCSC (or evidence of system validation), a Contract Work Breakdown Structure (broken down to the cost account level), a CWBS dictionary, identification of subcontractors and the subcontracted effort, and procedures for the flowdown of C/SCSC to major subcontractors. The contractor is notified and urged to provide the information if any of these items are not included in the proposal (15).

As mentioned earlier, ACCM evaluates the C/SCSC-related areas at ASD. Stan Nesivich explained that normally only one person evaluates the proposals for a given RFP. The people that evaluate the Comprehensive Plans for C/SCSC are the more experienced members of his staff. These people have gained C/SCSC experience from serving on C/SCSC Demonstration/Validation Reviews and C/SCSC Subsequent Application Reviews. This experience with C/SCSC reviews and the job of interpreting contractor's performance

measurement systems helps the evaluator make "reasonable" decisions about the acceptability of the Comprehensive Plan for C/SCSC (18).

According to Wohlman, it normally takes 3 to 5 days to review a contractor's Comprehensive Plan for C/SCSC. Part of this time is spent waiting on clarifications of parts of the contractor's proposal. Each evaluation normally takes only about a half-day when a contractor submits evidence of having a previously accepted system (25).

Limitations and Problems with the Evaluation. It is important to understand some of the limitations of the source selection process before looking at the specifics of the evaluation. Mr. Nesivich mentioned that the depth of the evaluation in the Design Approach and Life Cycle Cost areas is often limited by the time allowed to review and "write-up" the evaluation of each proposal. Time is scheduled for the evaluation process during the planning for source selection. In determining how much time to spend on a proposal, the reviewer considers the total amount of time available, the number of proposals to be reviewed, and the number of reviewers. Time is distributed proportionately among the proposals to help ensure fairness (18).

Normally, time is not a major problem in evaluating the C/SCSC related area of the proposals. According to Nesivich, the "Design Approach" and "Life Cycle Cost" areas require a more detailed evaluation. The standards for these

areas vary greatly from program to program and the people who evaluate these factors are often chosen by availability instead of ability. Therefore, the evaluation of the factors within these areas often takes time. The C/SCSC and WBS standards, however, are the same for all "major" programs. The stability of the standards and the experience of the evaluator normally result in a timely evaluation of C/SCSC (18). Copies of ASD evaluation standards for C/SCSC and Work Breakdown Structures are included in Appendix C.

Patrick Cyrus, an ACCM member with experience in evaluating Comprehensive Plans for C/SCSC, pointed out another problem that arises when the government's estimate for the program cost is below the C/SCSC threshold but the contractors' proposals exceed the C/SCSC threshold. This situation fails to require the C/SCSC clauses in the RFP resulting in an insufficiently planned evaluation of the C/SCSC. In this case, contractors must change their proposal to include the Comprehensive Plan for C/SCSC. This either shortens the evaluation time or causes delays (7).

Dan Schild adds that even the more experienced evaluators can be occasionally fooled by a contractor's Comprehensive Plan for C/SCSC. The system described may adequately satisfy the C/SCSC requirements but be totally different than the system the contractor plans to use. This problem can be identified if the evaluator has time available to visit the plant to see how the system actually works (20).

The Evaluation. All those interviewed expressed similar views concerning how to evaluate the contractors' Comprehensive Plans for C/SCSC. This section summarizes the findings of the interviews.

Eighty percent of those interviewed stated the evaluator should first read the Comprehensive Plan for C/SCSC from "front to back" to ensure the plan adheres to the general philosophy of the C/SCSC concept. Reading the plan helps the evaluator determine whether the plan is noncontradictory and achievable (15). When the Comprehensive Plan for C/SCSC is not understandable, these evaluators feel there is little reason to proceed further in the evaluation of the C/SCSC factor (7).

All of the interviewees agreed the Comprehensive Plan for C/SCSC must show how the contractor's performance measurement system satisfies the C/SCSC requirements. However, there was disagreement on how much detail the plan must include. The responses ranged from: (a) requiring the Comprehensive Plan for C/SCSC to explain how every one of the criteria is satisfied (*) to (b) simply providing enough explanation to demonstrate that the contractor understands the 35 C/SCSC (*). Eighty percent of those interviewed agreed the most important criteria disciplines are "earned value" techniques, "variance" reporting, material costing techniques, planning/work package procedures, and procedures for applying funds to planning/work packages. These

disciplines are where major problems in the C/SCSC demonstration/ validation process often occur (25). The remaining 20% felt that all criteria disciplines were equally important. One of those interviewed cautioned that while some of the criteria may seem more important in source selection, during the C/SCSC Demonstration/Validation Review all the criteria are equally important. The lack of any of the criteria not being satisfied by the contractor's system is sufficient to have that contractor's entire performance measurement system be considered unacceptable (20).

All those interviewed thought the 35 criteria, devoid of the subquestions (the bold type face checklist items) of the Joint Implementation Guide Checklist, are a useful tool to ensure all the C/SCSC are discussed by the contractor's Comprehensive Plan for C/SCSC. However, all the interviewees explained that some of the criteria are difficult to evaluate until the system is actually in use. As one evaluator explained, when using the Joint Implementation Guide Checklist as a guide, the evaluator needs to remember that during source selection the plan need only show an understanding of the criteria. Compliance with the C/SCSC will be evaluated after the contract is awarded (18).

Sixty percent of those interviewed agreed that most contractors on "major" programs have some understanding of the C/SCSC requirements from responding to prior RFPs. Mr. Schild explained that experienced contractors understand

the government evaluation needs and format their Comprehensive Plan for C/SCSC in a manner that is easy to evaluate. Some contractors even submit a completed JIG checklist as a cross-reference between each criteria and their Comprehensive Plan for C/SCSC (20).

All of the evaluators agreed the Comprehensive Plan for C/SCSC either satisfies the criteria or it does not. This factor should not receive a marginal rating in their opinion. Harper explained that if the evaluator has questions or concerns with the plan, he should contact the contractor to get the needed information or clarifications (15).

The evaluators unanimously agreed that experience is often the key technique in the evaluation. In many cases, it is impossible to determine whether the plan will perform as proposed until the system is in use. In those cases where the Comprehensive Plan for C/SCSC states the system will work in a certain way, the evaluator has to assume that it will (15). Therefore, the evaluation is often based on the perception that the contractor understands the criteria. The evaluator must rely on experience to make this type of decision. One of those interviewed mentioned that some evaluators in other areas are often timid about taking a stand on an issue, however, those who evaluate C/SCSC have the experience to defend the decisions they make (20).

Eighty percent of the evaluators mentioned they examine

the contractor's past performance. Many of the contractors have previously done some type of work for the government. These evaluators often check to see whether the contractor has experience with the "Contract Fund Status Report (CFSR)" or the "Cost/Schedule Status Report (C/SSR)." These reports are used to provide the government funding and performance measurement information on contracts of lesser dollar value. ASD, as well as other procuring organizations, keeps track of performance measurement on past and present programs (7).

Sixty percent of the evaluators explained that many contractors mention in their Comprehensive Plans for C/SCSC the hiring of experts or buying of computer programs to help set-up performance measurement systems. Two/thirds of these individuals do not consider this a benefit since the expert or computer program may not smoothly interface with the performance measurement system currently in use. According to Harper, the evaluator should, whenever possible, look at the technical description of the acquisition program to see whether the terms used are similar. This will demonstrate whether the people who designed the performance measurement system have worked together with the technical people on the project to design a compatible system (15).

All those interviewed agreed that when the contractor refers to a previously accepted system, the evaluator should verify that the system is validated and currently being used. Mr. Cyrus explained that the evaluator should also check with government plant representatives at Contract

Administration Offices and with other government sources to determine whether the validated system has any problems or peculiarities. These common problems include indirect costing and forward pricing agreements (7).

Mr. Harper explained that during source selection, one contractor will often submit an outstanding Comprehensive Plan for C/SCSC while another contractor's plan will only minimally satisfy the standard. Even though one is superior to the other, both would normally receive a satisfactory mark. However, the evaluator can report his findings in the Detailed Narrative Analysis (15).

Summary of Research Findings

Interested contractors should include performance measurement information in their proposal when C/SCSC is identified as a contractual requirement of a solicitation. Contractors should include a Comprehensive Plan for C/SCSC, a CWBS broken down to the cost account level, a CWBS index, and a CWBS dictionary. A contractor currently using a C/SCSC validated system may submit evidence of that validation instead of the Comprehensive Plan for C/SCSC. Contractor's also need to identify critical subcontractors, their subcontracted effort, and procedures for C/SCSC-flowdown to these subcontractors.

C/SCSC has little effect in the overall source selection although the government considers it very important. Since C/SCSC is evaluated at the factor level,

which is normally the lowest level of evaluation, C/SCSC can receive a unsatisfactory rating while barely influencing the area rating. The evaluator can make strong statements in the Detailed Narrative Analysis in order to influence the Item Team Captain's and SSEB's decision.

The DOD does not have a standard procedure for evaluating the Comprehensive Plans for C/SCSC which are submitted by contractors in response to RFPs. Establishing guidelines for this evaluation is a process normally delegated to the procuring agency. AFSC and ASD believe that all procuring agencies basically use the same procedures, although this research effort did not test the validity of this assumption.

At ASD, the Comprehensive Plans for C/SCSC are evaluated by experienced members of the Cost Management Systems Division (ACCM). The ACCM evaluators base their evaluation on how well the written description satisfies the criteria of DODI 7000.2. This type of evaluation is based on the evaluator's interpretation of the criteria and the proposed Comprehensive Plan for C/SCSC. The evaluators feel their training and experience in C/SCSC are the key to performing valid evaluations.

The evaluators explained that during source selection they look for indications that the contractors have a good understanding of the C/SCSC concepts rather than for an absolute compliance with the criteria. Trying to evaluate

compliance with many of the criteria would be almost impossible until the system is actually in use. The 35 criteria, without the subquestions contained in the C/SCSC Joint Implementation Guide Checklist, are a good guideline for determining what areas need to be addressed. When possible, examining the past performance of the contractor's ability to report cost and schedule information is helpful in determining how well the contractor understands the C/SCSC.

As one of the interviewees explained, the source selection process does not prevent contractors with poor performance measurement systems from being awarded major contracts. However, it does alert ACCM to the condition of the contractor's performance measurement system.

V. Conclusions

The objective of this research was to examine how the C/SCSC-related areas are evaluated during source selection. The reason for researching this topic was that occasionally a contractor with an inadequate understanding of C/SCSC is awarded a contract. When this happens, both the government and the contractor have inaccurate and untimely performance measurement information to use in managing the program. This research resulted in an explanation of why contractors with inadequate performance measurement systems are sometimes awarded contracts.

This research has identified two major problems with the current approach to evaluating C/SCSC during source selection. They are: (1) the lack of emphasis placed on C/SCSC and (2) the fact that contractors sometimes provide false information in the Comprehensive Plans for C/SCSC. Nevertheless, C/SCSC is very important to the DOD and could grow in importance as more emphasis is placed on controlling cost and reducing schedule delays. However, the evaluators feel that C/SCSC should not be as important as the "Design Approach" or the "Life Cycle Cost" of the proposal.

Despite the problems, the evaluators at ASD seem satisfied with the current process. None of the interviewees offered any suggestions for improving the source selection process. Even though an occasional contract is awarded to a contractor with an inadequate

performance measurement system, the evaluation still helps ACCM plan the activities needed to validate the contractor's performance measurement system.

The product of this research was stated earlier as "a list of items to consider when evaluating C/SCSC during source selection." Only a few highly trained and experienced people evaluate the C/SCSC-related areas at ASD during source selection. Since these people know what to look for in this process, a generic description of evaluation would have limited value for source selection in "major" programs.

However, one evaluator at ACCM explained that a listing of important items to consider would help those less-experienced with C/SCSC understand what is included in this contractual requirement. A listing of important C/SCSC characteristics could also benefit those who evaluate performance measurement on programs with smaller dollar value (25).

The following section identifies items to consider when evaluating the C/SCSC-related factors during source selection. All of the items included in the following list are discussed earlier in this thesis. The list does not include any procedures or guidelines for interpreting the Comprehensive Plans for C/SCSC since the interviews suggest that experience is the key for evaluating the C/SCSC-related areas during source selection.

C/SCSC Items to Consider During Source Selection

1. The proposal should include:

   A. Comprehensive Plan for C/SCSC or proof of C/SCSC validation.

   B. CWBS, CWBS Dictionary, and CWBS Index.

   C. Identification of critical subcontractors and their subcontracted effort.

   D. Procedures for C/SCSC flowdown to subcontractors.

2. The Comprehensive Plan for C/SCSC should:

   A. Describe how the contractor's proposed systems satisfies the C/SCSC requirement.

   B. Adhere to general C/SCSC philosophy.

   C. Be complete and non-contradictory.

   D. Be achievable.

3. The Contract Work Breakdown Structure must:

   A. Reflect the way the contractor plans to complete the program.

   B. Be an extension of the Project Summary WBS included in the RFP.

   C. Be supported by a CWBS dictionary and a CWBS index.

4. If the contractor submits evidence of prior C/SCSC validation, check to ensure that:

   A. Contractor's facility is still operating under the system that was validated.

   B. Contractor intends to use the same system if awarded the contract.

5. There should be evidence that the contractor is using or intends to use the system described in the Comprehensive Plan for C/SCSC.

6. The government should be allowed access to all information and supporting documentation.

7. If the contractor has performed work for the DOD before:

   A. Check with the ASD or other data base to determine if the contractor provided accurate and timely performance measurement data.

   B. Check with the DCAA Plant Representative to identify any peculiarities, especially with indirect costing and forward pricing methods.

Based on the interviews, this list contains the key points to examine during source selection. The evaluators emphasized that during source selection an understanding of C/SCSC is expected rather than a demonstration of compliance with the criteria.

Recommendation

Related research may be beneficial to determine how performance measurement systems on programs with smaller dollar values are evaluated during source selection. For these programs, the Cost/Schedule Status Report (C/SSR) and the Contract Funds Status Report (CFSR) are required. According to Mr. Wholman, ACCM does not normally get involved in these source selections, however, ACCM does review their RFPs to ensure that performance measurement is included. These type contracts are often evaluated by entry-level people of the SPO who lack experience in performance measurement. A checklist or other type of evaluation tool could be beneficial to these inexperienced evaluators (25). This thesis provides information that could be useful for

this research. However, further research into the requirements of C/SSR and CFSR would be needed to develop a useful tool for helping these evaluators.

Appendix A: Evaluation/Demonstration Review Checklist for C/SCSC Reprinted from (12:36-48)

CHECKLIST ITEMS	YES	NO	REMARKS
I. ORGANIZATION			
1. DEFINE ALL THE AUTHORIZED WORK AND RELATED RESOURCES TO MEET THE REQUIREMENTS OF THE CONTRACT, USING THE FRAMEWORK OF THE CWBS.			
a. Is only one CWBS used for the contract (attach copy of CWBS)?			
b. Is all contract work included in the CWBS?			
c. Are the following items included in the CWBS (annotate copy of CWBS to show elements below)?			
(1) Contract line items and end items (if in consonance with MIL-STD-881A)			
(2) All CWBS elements specified for external reporting.			
(3) CWBS elements to be subcontracted, with identification of subcontractors.			
(4) Cost account levels.			
2. IDENTIFY THE INTERNAL ORGANIZATIONAL ELEMENTS AND THE MAJOR SUBCONTRACTORS RESPONSIBILE FOR ACCOMPLISHING THE AUTHORIZED WORK.			
a. Are all authorized tasks assigned to identified organizational elements? (This must occur at the cost account level as a minimum. Prepare exhibit showing relationships.)			
b. Is subcontracted work defined and identified to the appropriate subcontractor within the proper WBS element? (Provide representative example.)			
3. PROVIDE FOR THE INTEGRATION OF THE CONTRACTOR'S PLANNING, SCHEDULING, BUDGETING, WORK AUTHORIZATION, AND COST ACCUMULATION SYSTEMS WITH EACH OTHER, THE CWBS, AND THE ORGANIZATIONAL STRUCTURE. (Reference format 1.)			
a. Are the contractor's management control systems listed above integrated with each other, the CWBS, and the organizational structure at the following levels: (Use matrix to illustrate the relationships.)			
(1) Total contract?			
(2) Cost account?			
4. IDENTIFY THE MANAGERIAL POSITIONS RESPONSIBLE FOR CONTROLLING OVERHEAD (INDIRECT COSTS).			
a. Are the following organizational elements and managers clearly identified?			
(1) Those responsible for the establishment of budgets and assignment of resources for overhead performance?			

Appendix E- continued

CHECKLIST ITEMS	YES	NO	REMARKS
(2) Those responsible for overhead performance control of related costs.			
b. Are the responsibilities and authorities of each of the above organizational elements or managers clearly defined?			
5. PROVIDE FOR INTEGRATION OF THE CWBS WITH THE CONTRACTOR'S FUNCTIONAL ORGANIZATIONAL STRUCTURE IN A MANNER THAT PERMITS COST AND SCHEDULE PERFORMANCE MEASUREMENT FOR CWBS AND ORGANIZATIONAL ELEMENTS. (Provide matrix showing integration.)			
a. Is each cost account assigned to a single organizational element directly responsible for the work and identifiable to a single element of the CWBS?			
b. Are the following elements for measuring performance available at the levels selected for control and analysis:			
(1) Budgeted cost for work scheduled?			
(2) Budgeted cost for work performed?			
(3) Actual costs of work performed?			
II. PLANNING AND BUDGETING			
1. SCHEDULE THE AUTHORIZED WORK IN A MANNER WHICH DESCRIBES THE SEQUENCE OF WORK AND IDENTIFIES THE SIGNIFICANT TASK INTER-DEPENDENCIES REQUIRED TO MEET THE DEVELOPMENT, PRODUCTION, AND DELIVERY REQUIREMENTS OF THE CONTRACT.			
a. Does the scheduling system contain (Prepare exhibit showing traceability from contract task level to work package schedules.)			
(1) A master program schedule?			
(2) Intermediate schedules, as required, which provide a logical sequence from the master schedule to the cost account level?			
(3) Detailed schedules which support cost account and work package start and completion dates/events?			
b. Are significant decision points, constraints, and interfaces identified as key milestones?			
c. Does the scheduling system provide for the identification of work progress against technical and other milestones, and also provide for forecasts of completion dates of scheduled work?			
d. Are work packages formally scheduled in terms of physical accomplishment by calendar dates (Gregorian, Julian, or manufacturing day			
2. IDENTIFY PHYSICAL PRODUCTS, MILESTONES, TECHNICAL PERFORMANCE GOALS, OR OTHER INDICATORS THAT WILL BE USED TO MEASURE OUTPUT.			

Appendix E -continued

CHECKLIST ITEMS	YES	NO	REMARKS
a. Are meaningful indicators identified for use in measuring the status of cost and schedule performance? (Provide representative samples.)			
b. Does the contractor's system identify work accomplishment against the schedule plan? (Provide representative examples.)			
c. Are current work performance indicators and goals relatable to original goals as modified by contractual changes, replanning, and reprogramming actions? (Provide exhibit showing incorporation of changes to original indicators and goals.)			
3. ESTABLISH AND MAINTAIN A TIME-PHASE BUDGET BASELINE AT THE COST ACCOUNT LEVEL AGAINST WHICH CONTRACT PERFORMANCE CAN BE MEASURED. INITIAL BUDGETS ESTABLISHED FOR THIS PURPOSE WILL BE BASED ON THE NEGOTIATED TARGET COST. ANY OTHER AMOUNT USED FOR PERFORMANCE MEASUREMENT PURPOSES MUST BE FORMALLY RECOGNIZED BY BOTH THE CONTRACTOR AND THE GOVERNMENT (Reference formats 2 and 8.)			
a. Does the performance measurement baseline consist of the following?			
(1) Time-phase cost account budgets.			
(2) Higher level CWBS element budgets (where not yet broken down into cost account budgets).			
(3) Undistributed budget, if any.			
(4) Indirect budgets, if not included in the above.			
b. Is the entire contract planned in time-phased cost accounts to the extent practicable?			
c. In the event that future contract effort cannot be defined in sufficient detail to allow the establishment of cost accounts, is the remaining budget assigned to the lowest practicable CWBS level elements for subsequent distribution to cost accounts.			
d. Does the contractor require sufficient detailed planning of cost accounts to constrain the application of budget initially allocated for future effort to current effort? (Explain constraints.)			
e. Are cost accounts opened and closed based on the start and completion of work contained therein?			
4. ESTABLISH BUDGETS FOR ALL AUTHORIZED WORK WITH SEPARATE IDENTIFICATION OF COST ELEMENTS (LABOR, MATERIAL, ETC.). (Reference formats 2, 3, and 4.)			
a. Does the budgeting system contain (Provide exhibit.)			
(1) The total budget for the contract (including estimates for authorized but unpriced work)?			

Appendix E–continued

CHECKLIST ITEMS	YES	NO	REMARKS
(2) Budgets assigned to major functional organizations? (See checklist Item II, 9ab.)			
(3) Budgets assigned to cost accounts?			
b. Are the budgets assigned to cost accounts planned and identified in terms of the following cost elements? (Reference Formats 3 and 4.)			
(1) Direct labor dollars and/or hours.			
(2) Material and/or subcontract dollars.			
(3) Other direct dollars.			
c. Does the work authorization system contain: (Prepare sample exhibit.)			
(1) Authorization to proceed with all authorized work?			
(2) Appropriate work authorization documents which subdivide the contractual effort and responsibilities within functional organizations.			
5. TO THE EXTENT THE AUTHORIZED WORK CAN BE IDENTIFIED IN DISCRETE, SHORT-SPAN WORK PACKAGES, ESTABLISH BUDGETS FOR THIS WORK IN TERMS OF DOLLARS, HOURS, OR OTHER MEASURABLE UNITS. WHERE THE ENTIRE COST ACCOUNT CANNOT BE SUBDIVIDED INTO DETAILED WORK PACKAGES, IDENTIFY THE FAR TERM EFFORT IN LARGER PLANNING PACKAGES FOR BUDGET AND SCHEDULING PURPOSES: *(Reference formats 6, 6a, and 6b.)*			
a. Do work packages reflect the actual way in which the work will be done and are they meaningful products or management-oriented subdivisions of a higher level element of work? (Provide representative sample.)			
b. Are detailed work packages planned as far in advance as practicable?			
c. Is work progressively subdivided into detailed work packages as requirements are defined?			
d. Is future work which cannot be planned in detail subdivided to the extent practicable for budgeting and schedule purposes (Provide sample.)			
e. Are work packages reasonably short in time duration or do they have adequate objective indicators/milestones to minimize the in-process work evaluation?			
f. Do work packages consist of discrete tasks which are adequately described? (Provide representative sample.)			
g. Can the contractor substantiate work package and planning package budgets?			
h. Are budgets or values assigned to work packages and planning packages in terms of dollars, hours, or other measurable units?			

Appendix E—continued

CHECKLIST ITEMS	YES	NO	REMARKS
5. Are work packages assigned to performing organizations?			
6. PROVIDE THAT THE SUM OF ALL WORK PACKAGE BUDGETS PLUS PLANNING PACKAGES WITHIN A COST ACCOUNT EQUALS THE COST ACCOUNT BUDGET. (Reference format 2.)			
a. Does the sum of all work package budgets plus planning packages within cost accounts equal the budgets assigned to those cost accounts?			
7. IDENTIFY RELATIONSHIPS OF BUDGETS OR STANDARDS IN UNDERLYING WORK AUTHORIZATION SYSTEMS TO BUDGETS FOR WORK PACKAGES.			
a. Where engineered standards or other internal work measurement systems are used, is there a formal relationship between these values and work package budgets? (Provide samples showing relationships.)			
8. IDENTIFY AND CONTROL LEVEL OF EFFORT ACTIVITY BY TIME-PHASE BUDGETS ESTABLISHED FOR THIS PURPOSE. ONLY THAT EFFORT WHICH CANNOT BE IDENTIFIED AS DISCRETE, SHORTSPAN WORK PACKAGES OR AS APPORTIONED EFFORT WILL BE CLASSED AS LOE. (Reference format 6.)			
a. Are time-phase budgets established for planning and control of level of effort activity by category of resource, for example, type of manpower and/or material? (Explain method of control and analysis.)			
b. Is work properly classified as measured effort, LOE, or apportioned effort and appropriately separated?			
9. ESTABLISH OVERHEAD BUDGETS FOR THE TOTAL COSTS OF EACH SIGNIFICANT ORGANIZATIONAL COMPONENT WHOSE EXPENSES WILL BECOME INDIRECT COSTS. REFLECT IN THE CONTRACT BUDGETS AT THE APPROPRIATE LEVEL, THE AMOUNTS IN OVERHEAD POOLS THAT WILL BE ALLOCATED TO THE CONTRACT AS INDIRECT COSTS. (Reference DCAA Audit Manual and DAR 15-203.) (Reference format 7.)			
a. Are overhead cost budgets (or projections) established on a facility-wide basis at least annually for the life of the contract?			
b. Are overhead cost budgets established for each organization which has authority to incur overhead costs?			
c. Are all elements of expense identified to overhead cost budgets or projections?			
d. Are overhead budgets and costs being handled according to the disclosure statement when applicable, or otherwise properly classified (for example, engineering overhead, IR&D)?			
e. Is the anticipated (firm and potential) business base projected in a rational, consistent manner? (Explain.)			
f. Are overhead costs budgets established on a basis consistent with the anticipated direct business base?			
g. Are the requirements for all items of overhead established by rational, traceable processes?			

Appendix E – continued

CHECKLIST ITEMS	YES	NO	REMARKS
h. Are the overhead pools formally and adequately identified? (Provide a list of the pools.)			
i. Are the organizations and items of cost assigned to each pool identified?			
j. Are projected overhead costs in each pool and the associated direct costs used as the basis for establishing interim rates for allocating overhead to contracts?			
k. Are projected overhead rates applied to the contract beyond the current year based on –			
(1) Contractor financial periods; for example, annual?			
(2) The projected business base for each period?			
(3) Contemplated overhead expenditure for each period based on the best information currently available?			
l. Are overhead projections adjusted in a timely manner to reflect –			
(1) Changes in the current direct and projected base?			
(2) Changes in the nature of the overhead requirements?			
(3) Changes in the overhead pool and/or organization structures?			
m. Are the WBS and organizational levels for application of the projected overhead costs identified?			
10. IDENTIFY MANAGEMENT RESERVES AND UNDISTRIBUTED BUDGET.			
a. Is all budget available as management reserve identified and excluded from the performance measurement baseline?			
b. Are records maintained to show how management reserves are used? (Provide exhibit.)			
c. Is undistributed budget limited to contract effort which cannot yet be planned to CWBS elements at or below the level specified for reporting to the Government?			
d. Are records maintained to show how undistributed budgets are controlled? (Provide exhibit.)			
11. PROVIDE THAT THE CONTRACT TARGET COST PLUS THE ESTIMATED COST OF AUTHORIZED BUT UNPRICED WORK IS RECONCILED WITH THE SUM OF ALL INTERNAL CONTRACT BUDGETS AND MANAGEMENT RESERVES. (Reference formats 3, 4, and 5.)			
a. Does the contractor's system description or procedures require that the performance measurement baseline plus management reserve equal the contract budget base?			

Appendix E–continued

CHECKLIST ITEMS	YES	NO	REMARKS
b. Do the sum of the cost account budgets for higher level CWBS elements, undistributed budget, and management reserves reconcile with the contract target cost plus the estimated cost for authorized unpriced work? (Provide exhibit.)			
III. ACCOUNTING			
1. RECORD DIRECT COSTS ON AN APPLIED OR OTHER ACCEPTABLE BASIS CONSISTENT WITH THE BUDGETS IN A FORMAL SYSTEM THAT IS CONTROLLED BY THE GENERAL BOOKS OF ACCOUNT.			
a. Does the accounting system provide a basis for auditing records of direct costs chargeable to the contract?			
b. Are elements of direct cost (labor, material, and so forth) accumulated within cost accounts in a manner consistent with budgets using recognized acceptable costing techniques and controlled by the general books of account?			
2. SUMMARIZE DIRECT COSTS FROM THE COST ACCOUNTS INTO THE WBS WITHOUT ALLOCATION OF A SINGLE COST ACCOUNT TO TWO OR MORE WBS ELEMENTS. (Reference format 3.)			
a. Is it possible to summarize direct costs from the cost account level through the CWBS to the total contract level without allocation of a lower level CWBS element to two or more higher level CWBS elements? (This does not preclude the allocation of costs from a cost account containing common items to appropriate using cost accounts.)			
3. SUMMARIZE DIRECT COSTS FROM THE COST ACCOUNTS INTO THE CONTRACTOR'S FUNCTIONAL ORGANIZATIONAL ELEMENTS WITHOUT ALLOCATION OF A SINGLE COST ACCOUNT TO TWO OR MORE ORGANIZATIONAL ELEMENTS. (Reference format 4.)			
a. Is it possible to summarize direct costs from the cost account level to the highest functional organizational level without allocation of a lower level organization's cost to two or more higher level organizations?			
4. RECORD ALL INDIRECT COSTS WHICH WILL BE ALLOCATED TO THE CONTRACT.			
a. Does the cost accumulation system provide for summarization of indirect costs from the point of allocation to the contract total?			
b. Are indirect costs accumulated for comparison with the corresponding budgets?			
c. Do the lines of authority for incurring indirect costs correspond to the lines of responsibility for management control of the same components of costs? (Explain controls for fixed and variable indirect costs.)			
d. Are indirect costs charged to the appropriate indirect activities and incurring organization?			
e. Are the bases and rates for allocating costs from each indirect pool consistently applied?			

Appendix E–continued

CHECKLIST ITEMS	YES	NO	REMARKS
f. Are the bases and rates for allocating costs from each indirect pool to commercial work consistent with those used to allocate such costs to Government contracts?			
g. Are the rates for allocating costs from each indirect cost pool to contracts updated as necessary to ensure a realistic monthly allocation of indirect costs without significant year-end adjustments?			
h. Are the procedures for identifying indirect costs to incurring organizations, indirect cost pools, and allocating the costs from the pools to the contracts formally documented?			
5. IDENTIFY THE BASES FOR ALLOCATING THE COST OF APPORTIONED EFFORT.			
a. Is effort which is planned and controlled in direct relationship to cost accounts or work packages identified as apportioned effort?			
b. Are methods used for applying apportioned effort costs to cost accounts applied consistently and documented in an established procedure?			
6. IDENTIFY UNIT COSTS, EQUIVALENT UNIT COSTS, OR LOT COSTS AS APPLICABLE.			
a. Does the contractor's system provide unit costs, equivalent unit or lot costs in terms of labor, material, other direct, and indirect costs? (Describe procedure.)			
b. Does the contractor have procedures which permit identification of recurring or nonrecurring costs as necessary?			
7. THE CONTRACTOR'S MATERIAL ACCOUNTING SYSTEM WILL PROVIDE FOR: ACCURATE COST ACCUMULATION AND ASSIGNMENT OF COSTS TO COST ACCOUNTS IN A MANNER CONSISTENT WITH THE BUDGETS USING RECOGNIZED, ACCEPTABLE COSTING TECHNIQUES; DETERMINATION OF PRICE VARIANCES BY COMPARING PLANNED VERSUS ACTUAL COMMITMENTS; COST PERFORMANCE MEASUREMENT AT THE POINT IN THE MOST SUITABLE FOR THE CATEGORY OF MATERIAL INVOLVED, BUT NO EARLIER THAN THE TIME OF ACTUAL RECEIPT OF MATERIAL; DETERMINATION OF COST VARIANCES ATTRIBUTABLE TO THE EXCESS USAGE OF MATERIAL. DETERMINATION OF UNIT OR LOT COSTS WHEN APPLICABLE; AND FULL ACCOUNTABILITY FOR ALL MATERIAL PURCHASED FOR THE CONTRACT INCLUDING THE RESIDUAL INVENTORY.			
a. Does the contractor's system provide for accurate cost accumulation and assignment to cost accounts in a manner consistent with the budgets using recognized acceptable costing techniques?			
b. Are material costs reported within the same period as that in which BCWP is earned for that material?			
c. Does the contractor's system provide for determination of price variances by comparing planned vs actual commitments?			
d. Is cost performance measurement at the point in time most suitable for the category of material involved, but no earlier than the time of actual receipt of material?			

Appendix E–continued

CHECKLIST ITEMS	YES	NO	REMARKS
e. Does the contractor's system provide for the determination of cost variances attributable to the excess usage of material?			
f. Does the contractor's system provide unit or lot costs when applicable?			
g. Are records maintained to show full accountability for all material purchased for the contract, including the residual inventory?			
IV. ANALYSIS			
1. IDENTIFY AT THE COST ACCOUNT LEVEL ON A MONTHLY BASIS USING DATA FROM, OR RECONCILABLE WITH, THE ACCOUNTING SYSTEM; BCWS AND BCWP; BCWP AND APPLIED (ACTUAL WHERE APPROPRIATE) DIRECT COSTS FOR THE SAME WORK; VARIANCES RESULTING FROM THE ABOVE COMPARISONS CLASSIFIED IN TERMS OF LABOR, MATERIAL, OR OTHER APPROPRIATE ELEMENTS, TOGETHER WITH THE REASONS FOR SIGNIFICANT VARIANCES.			
a. Does the contractor's system include procedures for measuring performance of the lowest level organization responsible for the cost account? (Provide typical example.)			
b. Does the contractor's system include procedures for measuring the performance of critical subcontractors?			
c. Is cost and schedule performance measurement done in a consistent, systematic manner?			
d. Are the actual costs used for variance analysis reconcilable with data from the accounting system?			
e. Is budgeted cost for work performed calculated in a manner consistent with the way work is planned? (For example, if work is planned on a measured basis, budgeted cost for work performed is calculated on a measured basis.)			
f. Does the contractor have variance analysis procedures and a demonstrated capability for identifying (at the cost account and other appropriate levels) cost and schedule variances resulting from the system (provide examples) which–			
(1) Identify and isolate problems causing unfavorable cost variances?			
(2) Evaluate the impact of schedule changes, workaround, etc?			
(3) Evaluate the performance of operating organizations?			
(4) Identify potential or actual overruns and underruns?			
2. IDENTIFY ON A MONTHLY BASIS, IN THE DETAIL NEEDED BY MANAGEMENT FOR EFFECTIVE CONTROL, BUDGETED INDIRECT COSTS, ACTUAL INDIRECT COSTS, AND VARIANCES, ALONG WITH THE REASONS (Reference format 7.)			

Appendix E–continued

CHECKLIST ITEMS	YES	NO	REMARKS
a. Are variances between budgeted and actual indirect costs identified and analyzed at the level of assigned responsibility for their control (indirect pool, department, etc.)?			
b. Does the contractor's cost control system provide for capability to identify the existence and causes of cost variances resulting from–			
(1) Incurrence of actual indirect costs in excess of budgets, by element of expense?			
(2) Changes in the direct base to which overhead costs are allocated?			
c. Are management actions taken to reduce indirect costs when there are significant adverse variances?			
3. SUMMARIZE THE DATA ELEMENTS AND ASSOCIATED VARIANCES LISTED IN ITEMS 1 AND 2 ABOVE THROUGH THE CONTRACTOR ORGANIZATION AND WBS TO THE REPORTING LEVEL SPECIFIED IN THE CONTRACT. (Reference formats 2, 3, 4, 5, 10, and 11.)			
a. Are data elements (BCWS, BCWP, and ACWP) progressively summarized from the detail level to the contract level through the CWBS? (Provide exhibit.)			
b. Are data elements summarized through the functional organizational structure for progressively higher levels of management? (Provide exhibit.)			
c. Are data elements reconcilable between internal summary reports and reports forwarded to the Government?			
d. Are procedures for variance analysis documented and consistently applied at the cost account level and selected WBS and organizational levels at least monthly as a routine task? (Provide examples.)			
4. IDENTIFY ON A MONTHLY BASIS SIGNIFICANT DIFFERENCES BETWEEN PLANNED AND ACTUAL SCHEDULE ACCOMPLISHMENT TOGETHER WITH THE REASONS.			
a. Does the scheduling system identify in a timely manner the status of work? (Provide representative examples.)			
b. Does the contractor use objective results, design reviews, and tests to trace schedule performance? (Provide examples.)			
5. IDENTIFY MANAGERIAL ACTIONS TAKEN AS A RESULT OF CRITERIA ITEMS 1 THROUGH 4 ABOVE.			
a. Is data disseminated to the contractor's managers timely, accurate, and usable? (Provide examples.)			
b. Are data being used by managers in an effective manner to ascertain program or functional status, to identify reasons for significant variance, and to initiate appropriate corrective action? (Provide examples.)			

Appendix E–continued

CHECKLIST ITEMS	YES	NO	REMARKS
c. Are there procedures for monitoring action items and corrective actions to the point of resolution and are these procedures being followed?			
6. BASED ON PERFORMANCE TO DATE AND ON ESTIMATES OF FUTURE CONDITIONS, DEVELOP REVISED ESTIMATES OF COST AT COMPLETION FOR WBS ELEMENTS IDENTIFIED IN THE CONTRACT AND COMPARE THESE WITH THE CONTRACT BUDGET BASE AND THE LATEST STATEMENT OF FUNDS REQUIREMENTS REPORT TO THE GOVERNMENT. (Reference formats 12, 13, and 14.)			
a. Are estimates of costs at completion based on–			
(1) Performance to date?			
(2) Actual costs to date?			
(3) Knowledgeable projections of future performance?			
(4) Estimates of the cost for contract work remaining to be accomplished considering economic escalation?			
b. Are the overhead rates used to develop the contract cost estimate to complete based on–			
(1) Historical experience?			
(2) Contemplated management improvements?			
(3) Projected economic escalation?			
(4) The anticipated business volume?			
c. Are estimates of cost at completion generated with sufficient frequency to provide identification of future cost problems in time for possible corrective or preventive actions by both the contractor and the Government program manager?			
d. Are estimates developed by program personnel coordinated with those responsible for overall plant management to determine whether required resources will be available according to revised planning?			
e. Are estimates of cost at completion generated by knowledgeable personnel for the following levels:			
(1) Cost accounts?			
(2) Major functional areas of contract effort?			
(3) Major subcontracts?			
(4) WBS elements contractually specified for reporting of status to the Government (lowest level only)?			
(5) Total contract (all authorized work)?			
f. Are the latest revised estimates of costs at completion compared with the established budgets at appropriate levels and causes of variances identified?			

Appendix E–continued

CHECKLIST ITEMS	YES	NO	REMARKS
g. Are estimates of cost at completion generated in a rational, consistent manner? Are procedures established for appropriate aspects of generating estimates of costs at completion?			
h. Are estimates of costs at completion utilized in determining contract funding requirements and reporting them to the Government?			
i. Are the contractor's estimates of costs at completion reconcilable with cost data reported to the Government?			
V. REVISIONS AND ACCESS TO DATA			
1. INCORPORATE CONTRACTUAL CHANGES IN A TIMELY MANNER, RECORDING THE EFFECTS OF SUCH CHANGES IN BUDGETS AND SCHEDULES, IN THE DIRECTED EFFORT BEFORE NEGOTIATION OF A CHANGE, BASE SUCH REVISIONS ON THE AMOUNT ESTIMATED AND BUDGETED TO THE FUNCTIONAL ORGANIZATIONS.			
a. Are authorized changes being incorporated in a timely manner?			
b. Are all affected work authorizations, budgeting, and scheduling documents amended to properly reflect the effects of authorized changes? (Provide examples.)			
c. Are internal budgets for authorized, but not priced changes based on the contractor's resource plan for accomplishing the work?			
d. If current budgets for authorized changes do not sum to the negotiated cost for the changes, does the contractor compensate for the differences by revising the undistributed budgets, management reserves, budgets established for work not yet started, or by a combination of these?			
2. RECONCILE ORIGINAL BUDGETS FOR THOSE ELEMENTS OF THE WBS IDENTIFIED AS PRICE LINE ITEMS IN THE CONTRACT, AND FOR THOSE ELEMENTS AT THE LOWEST LEVEL OF THE DOD PROJECT SUMMARY WBS, WITH CURRENT PERFORMANCE MEASUREMENT BUDGETS IN TERMS OF CHANGES TO THE AUTHORIZED WORK AND INTERNAL REPLANNING IN THE DETAIL NEEDED BY MANAGEMENT FOR EFFECTIVE CONTROL. (Reference formats 8 and 9.)			
a. Are current budgets resulting from changes to the authorized work and/or internal replanning, reconcilable to original budgets for specified reporting items?			
3. PROHIBIT RETROACTIVE CHANGES TO RECORDS PERTAINING TO WORK PERFORMED THAT WILL CHANGE PREVIOUSLY REPORTED AMOUNTS FOR DIRECT COSTS, INDIRECT COSTS, OR BUDGETS, EXCEPT FOR CORRECTION OF ERRORS AND ROUTINE ACCOUNTING ADJUSTMENTS.			
a. Are retroactive changes to direct costs and indirect costs prohibited except for the correction of errors and routine accounting adjustments?			
b. Are direct or indirect cost adjustments being accomplished according to accounting procedures acceptable to DCAA?			

Appendix E–continued

CHECKLIST ITEMS	YES	NO	REMARKS
c. Are retroactive changes to BCWS and BCWP prohibited except for correction of errors or for normal accounting adjustments?			
4. PREVENT REVISIONS TO THE CONTRACT BUDGET BASE EXCEPT FOR GOVERNMENT-DIRECTED CHANGES TO CONTRACTUAL EFFORT.			
a. Are procedures established to prevent changes to the contract budget base (see definition) other than those authorized by contractual action?			
b. Is authorization of budgets in excess of the contract budget base controlled formally and done with the full knowledge and recognition of the procuring activity? Are the procedures adequate?			
5. DOCUMENT, INTERNALLY, CHANGES TO THE PERFORMANCE MEASUREMENT BASELINE AND, ON A TIMELY BASIS, NOTIFY THE PROCURING ACTIVITY THROUGH PRESCRIBED PROCEDURES.			
a. Are changes to the performance measurement baseline made as a result of contractual redirection, formal reprogramming, internal replanning, application of undistributed budget, or the use of management reserve, properly documented and reflected in the Cost Performance Report?			
b. Are procedures in existence that restrict changes to budgets for open work packages, and are these procedures adhered to?			
c. Are retroactive changes to budgets for completed work specifically prohibited in an established procedure, and is this procedure adhered to?			
d. Are procedures in existence that control replanning of unopened work packages, and are these procedures adhered to?			
6. PROVIDE THE CONTRACTING OFFICER AND DULY AUTHORIZED REPRESENTATIVES ACCESS TO ALL OF THE FOREGOING INFORMATION AND SUPPORTING DOCUMENTS.			
a. Does the contractor provide access to all pertinent records to the C/SCSC Review Team and surveillance personnel?			

Appendix B: Record of Interviews

This appendix summarizes the key points of the interviews. Some areas of the discussion have been deleted (areas referenced by a "*" in the text and areas without unanimous agreement in the evaluation section) in order to protect privileged information.

INTERVIEW 1

Lt Col Thomas L. Bowman (5)
AFIT/LSY (Thesis advisor)
26 September 84 - August 85

PURPOSE

To discuss the progress of the research and to clarify information given by others. Lt Col Bowman also reviewed drafts of the thesis as it was being prepared. His changes and comments are too numerous to list. Therefore, only the comments that are referenced in the text are included in this Record of Interview (ROI).

MAIN POINTS

Explained need for the research done

C/SCSC regulations since 1967
Procurement officials lack familiarity with C/SCSC
Source selection members have difficulty in evaluation
Regulations not clear in regards to evaluation

In reviewing a draft explained that:
"a WBS Index (which is a matrix of which WBS elements compromise the Contract Line Items and End Items) is also required. The WBS, index, and dictionary are required via a single 'Data Item Description'"

Clarified that when contractor submits Comprehensive Plan for C/SCSC, the contractor is certifying that his system satisfies the criteria.

Clarified that the contractor's performance measurement system is not proven or demonstrated as adhering to the C/SCSC concept until after contact award.

INTERVIEW 2

Patrick L. Cyrus (7)
Cost Management Systems Division (ASD/ACCM)
1 May 1985

PURPOSE

Pat has evaluated C/SCSC during several source selections. The interview was to determine how he evaluates the C/SCSC area, and any other comments he has about the C/SCSC evaluation process during source selection.

EVALUATION KEYS

Experience and understanding of C/SCSC is most important.

A lot is learned from past experiences.

Read the plan to make sure it makes sense, little value in preceding if it does not.

Plan must show how contractors system will satisfy C/SCSC.

The plan should provide enough detail to show that contractor understands the C/SCSC concept.

THE JIG checklist identifies what the plan needs to address; however, determining if the plan adequately discusses each criteria is difficult.

Important areas are earned value, material, breaking program down, and applying funds to work.

The evaluator does not rate each criteria separately, either the whole system is acceptable or none of it.

If the contractor claims use of current approved system, always verify.

OTHER COMMENTS

On some occasions the estimated cost is below C/SCSC thresholds, but the proposals exceed the threshold. As a result the RFP must be modified to include C/SCSC clauses.

Check ASD and other procuring organizations for records of contractors' past performance. If contractor has experience with CFSR or C/SSR check quality of information provided.

Look to see if contractor has hired consultants or is using computer programs in establishing performance measurement system. If he has it will be mentioned early in the plan.

Check with plant representative to find out if the contractor has any peculiarities or problems, especially with indirect cost. In some case the the contractor has disputed areas such as forward pricing agreements.

COMMENTS ON LIST

Most important items are included in the list, but need to expand on importance of the criteria listed in the JIG checklist.

INTERVIEW 3

William R. Harper (15)
Cost Management Systems Division (ASD/ACCM)
9 May 1985

PURPOSE

Bill has also evaluated C/SCSC in several source selections. He was asked to explain how C/SCSC is evaluated during source selection and for any additional information on C/SCSC.

EVALUATION KEYS

Look to see whether system description or evidence of validation, CWBS (to account level),CWBS dictionary, list of subcontractors and their effort, and procedures for C/SCSC flowdown are included in proposal. If not included, contractor is asked to provide items.

Completely read the comprehensive description to see that contractor has understanding of the C/SCSC requirements. satisfy the criteria.

The evaluator should determine if the whole system satisfies the C/SCSC requirement. However, remember that a validated system is not required until program is blooming.

Variance reporting, material costing, indirect costing, budgeting, and breakdown of tasks are areas where problems often arise. There should be procedures to describe these areas.

Practical experience is essential in interpreting the contractor's proposed performance measurement system.

The main items of the JIG checklist are a good outline to ensure that all important areas are discussed.

OTHER COMMENTS

Check the files at ASD to verify the validation of a contractors system and also look for other past performance information that may be useful in the evaluation.

Programs under C/S thresholds may require C/S if required by government and stipulated in RFP.

The cost for contractor to establish validated C/SCSC system is approximately 500K.

If the evaluator has questions or concerns with the proposed system, he should check with the contractor to get clarifying information.

If the contractor states the system will work in a specified way, the evaluator has to assume it will, unless he has information to prove the contrary.

When possible, tie technical reports in with the evaluation of the Comprehensive Plan for C/SCSC. This shows whether performance measurement people are working with the technical side of the program.

Do not get impressed by contractors mentioning the use of experts or computers in their description. Each system is unique, therefore, this may not be a benefit.

Evaluation determines if system is acceptable, not which contractor has best system. Even though other bidders have better performance measurement systems, each contractor should be rated on own merits only. However, be sure to explain the risk involved in each contractor's write-up.

COMMENTS ON LIST

Thought all the items listed are important in the evaluation, but suggested rewriting several items.

Would be interested in looking at list, but for list to have impact it should be directed and distributed by ACC.

INTERVIEW 4

James R. Helmig (16)
Chief, Source Selection Division (ASD/PMPS)
9 May 1985

PURPOSE

Jim is very experienced in the source selection process. He was asked to explain the source selection process and how C/SCSC relates to the overall source selection. Many of the areas discussed are explained in the ASD/PMPS handbook. Therefore, these areas are not included in this ROI.

KEY POINTS

Program Makeup
Area (oper utility, readiness support, life cycle cost, design approach, mnfg/program mgmt)
Items - 8-10 per area
Factors - several for each item
Subfactors - seldom used

The program is broken down into smaller parts to allow for easier and accurate evaluation.

There is almost an endless number of items and factors that can be used (provided a list of common names).

All the areas, items, and factors are included in the program's unique source selection plan. The program should not copy the SSP or use the same items and factors as another program. The SPO can use any items and factors it chooses and place any value on the factors, but the SSP must be approved.

The DR process often results from contractors misunderstanding RFP. The contractor is allowed to change only the bad area of proposal. This Process is used because some good contractors could be eliminated because of minor errors without it.

The design approach is normally the most important, LCC is also important in many source selections. Management, where C/SCSC is located, is often ranked low in order of importance.

In a example of a recent major program, C/SCSC was located in "Programming, Management, Planning, and Organization" item along with the "Organizational Responsibilities", "Management Information Systems", "WBS", and "Schedule" factors.

INTERVIEW 5

Stanley J. Nesivich (18)
Chief, Cost Management Systems Division (ASD/ACCM)
14 May 1985

PURPOSE

Stan evaluated proposals before becoming chief. He was asked to explain the evaluation process and provide any other comments on how C/SCSC is evaluated during source selection.

KEY POINTS

Make sure the plan makes sense before preceding with detailed evaluation. The plan helps the government determine if the contractor understands the C/SCSC concept.

Ideally look at all criteria, but often cannot fully evaluate to system is in use. The big type items in the JIG checklist are a good guide for determining what is important.

Key criteria areas are: earned value techniques, variance reporting, and material costing.

Evaluator experience is key in successful evaluations. Before working on source selection, the evaluator participates in several C/SCSC reviews.

If any part of the contractor's plan cannot be modified to be acceptable than the whole plan is unacceptable.

Get proof that contractor is actually using a validated system, when it is claimed.

OTHER COMMENTS

Normally only person works a source selection. Because the evaluators are all highly trained and experienced, they are able to make reasonable decisions about the acceptability of the proposal

Must have time to adequately review and write-up all evaluations. Limitation on review caused by time, number of proposal, and number of evaluators. Time is distributed proportionately to help ensure fairness.

Normally, time is not a problem because the design and cost areas are more difficult to evaluate. Their standards differ with every program and the evaluators are often inexperienced, while the C/SCSC area is relatively stable.

Source selection only determines an understanding of C/SCSC. Actual compliance is not required until three months or longer after contract award.

Most factors receive green ratings, especially after the DR process. There is no rule for determining how many red or yellow factors are needed to rate an item or area less than green.

The evaluator must explain the evaluation carefully in the write-up to help the higher levels evaluate.

Management panel has less pull than cost and technical panels.

Hiring of consultants or experts is not necessarily a benefit since they may not be familiar with contractor's existing performance measurement system. Computer programs are not necessarily a benefit either.

ESD, SD, & AD evaluate C/SCSC basically the same way.

COMMENTS ON LIST

Liked the areas in the list, but suggested either discussing the criteria as a whole or discussing every criteria, not just key criteria.

Even though the ACCM people are experienced, the list could benefit them and would definitely help inexperienced people see what is included in C/SCSC.

INTERVIEW 6

Donald A. Osborne (19)
Chief, Resources Validation Division (ASD/ACCC)
27 March 1985

PURPOSE

To determine if ACCC has any responsibilities in regards to C/SCSC, and to discuss how Life Cycle Cost is evaluated.

KEY POINTS

ACCC does not get involved in C/SCSC.

Life Cycle Cost area evaluated by ACCC and SPO.

SPO people often chosen for source selection by availability instead of experience.

Approximately half of the evaluators in a cost panel have source selection experience.

Standard instruction for LCC in RFP.

LCC area should be realistic and complete.

LCC also determines O&S cost based on design.

LCC summarized by most probable cost.

INTERVIEW 7

Daniel Schild (20)
C/SCSC Consultant, TASC
15 May 1985

PURPOSE

Dan was former chief of ACCM, he now consults with ASD. He was asked to describe how he would evaluate C/SCSC during source selection and for any other comments on C/SCSC.

KEY POINTS

System needs to minimally satisfy each of the 35 criteria.

All the criteria are equally important.

Smart contractor will include filled out JIG checklist cross-referenced with the proposal to help the evaluator.

Need experience and training to properly evaluate.

Best way to evaluate is to use bold face items of checklist.

First read proposal to get familiar with contractors performance measurement system.

System either satisfies factor or it does not. The write-up should explain reasons for rating.

The evaluator should verify that the contractor is using an validated system.

OTHER COMMENTS

Some criteria may seem more important during source selection but in the validation review any of the criteria can cause the system to be unacceptable.

When system is bad and contractor refuses to change to meet requirements, the evaluator should make sure that others know of problem. Can attempt to have contractor removed from competition, but this can be overruled by others.

Evaluator may be timid about giving a contractor a bad review and making a big deal about it but experience helps in making judgments.

Check with other DOD procuring organizations for past performance information on contractor.

FAR clause 7000.2 provides assurance that contractor intends to use the performance measurement system described in proposal.

The source selection does not always identify potential problems with the performance measurement system.

Even experienced evaluators can be fooled. Some contractors submit comprehensive plans wrote by other organizations, without adequate planning on how to integrate C/SCSC system with existing system.

When time permits, visit facility to see how system actually works.

Hard to determine effect of bad C/SCSC rating on items, areas, and overall evaluation. Therefore, the write-ups, that include risk assessment, are very important.

Lack of interface between evaluators and SSAC causes single factors to sometimes go unnoticed. Normally only critical summary information is presented to higher levels of source selection management.

By evaluating C/SCSC during source selection, the government reduces the probability that a contractor without proper performance measurement procedures will be awarded a contract.

COMMENTS ON LIST

Thought the list would be useful for those without C/SCSC background.

INTERVIEW 8

Lt Col Connie O. Teetz (22)
Chief, Cost Information Systems Division (AFSC/ACCI)
21 March 1985

PURPOSE

Lt Col Teetz's division is the Air Force's focal point for C/SCSC. He was asked questions dealing with how the Air Force evaluates C/SCSC during source selection.

KEY POINTS

There is not an Air Force focal point in charge of source selection. Each procuring division has the freedom to establish source selection guidelines as long as they are consistent with the regulations.

ASD and ESD are the only two product divisions that have full time source selection people, however, these people are involved in organization, not the selection itself.

Different products divisions can require different information to examine non-validated systems, but the C/SCSC requirements must be consistent with the FAR and AFR 70-15.

Proposal must reference approved system or explain general procedures for performance measurement.

There is no AFSC guideline for evaluating C/SCSC during source selection.

AFSC keeps up with what the product divisions do, and there is little difference in the way that C/SCSC is evaluated during source selection.

Validated systems do not receive an advantage over non-validated systems in the source selection.

SPECIAL COMMENT

David Graham and Ron Phillips of the same office (AFSC/ACCI) as Lt Col Teetz were also interviewed by telephone. All three explained the same information. Since Lt Col Teetz is the division chief, he is referenced in the text.

INTERVIEW 9

John A. Wohlman (25)
Cost Management Systems Divisions (ASD/ACCM)
18 April 1985

PURPOSE

John has evaluated the C/SCSC related areas on several source selections. He was asked to explain how he evaluates the C/SCSC related areas and for other comments that deal with C/SCSC during source selection.

KEY POINTS

Always independently verify that contractor is using a validated system when it is claimed.

Experience is needed to make judgments in determining if minimum requirements are met.

The plan either satisfies the standard or it does not, if their is a fuzzy area talk with contractor.

Contractors need to show understanding of C/SCSC, not full compliance with the criteria.

JIG checklist is a nice guideline, but very difficult to evaluate several of the items.

Key items are those that frequently cause problems during demonstration reviews, some of these are earned value, material costing, overhead, breaking down the work, and applying funds to the work package.

OTHER COMMENTS

ASD has large data bank of contractors past performance with regards to performance measurement.

Most contractors have bid on DOD programs before. Therefore, they know how to structure the response.

Smaller companies have difficulty understanding the process and often have to adjust their proposal.

ACCM evaluates C/SCSC, WBS, and Program Control section of organizational responsibilities factor during source selection.

The standards are the same for all programs (provided copy of standards).

All RFPs are brought through ACCM for review prior to release, to ensure that proper performance measurement clauses are included. Though SPO can design RFP to meet the needs of program, but regulations must be followed. On programs that include C/SCSC, FAR clause 7000.1 is included.

The contractor must submit a comprehensive description of the performance measurement system or evidence of validation, WBS and WBS dictionary, and information on subcontractors and subcontracted effort. A summary WBS is given to the contractor, who must extend the WBS to cost account level.

Even though comprehensive description of performance measurement is acceptable in source selection, it does not mean system will be acceptable to a validation team.

An initially unacceptable response to a factor can be corrected via the DR process or face-to-face interview before the final rating.

All ACCM people are experienced enough to evaluate in source selection. Normally only one person looks at this section of proposal.

A validated system can be evaluated in a half-day, while a comprehensive description takes three to five days, but this includes time to clarify responses.

COMMENTS ON LIST

A checklist would be useful for those who evaluate performance measurement on smaller programs.

He liked the items in the checklist, but made a few minor corrections and suggested that the WBS area be expanded.

APPENDIX C: ASD Evaluation Standards
(reprinted from information provided by John Wohlman (25))

ITEM: Management M.3

FACTOR: Program Control M.3.10

DESCRIPTION: This item considers the definitive plans for the offerors application of management tools and techniques required by the S.O.W.

The offerors planned implementation and utilization of a Cost/Schedule Management System will be evaluated to assess the capability to plan cost and schedule elements and to measure performance against these elements. This system to be capable of demonstrating compliance with DODI 7000.2 and meets the criteria of AFSCP 173-5.

The CWBS proposed by the offeror will expand the PWBS to the lowest level and include all work on the contract. Offerors' CWBS will satisfy the intent of MIL-STD-881A.

ITEM: Management M.3

FACTOR: Cost Schedule Control Systems M.3.10.1

DESCRIPTION: This item considers the contractors' proposed Cost Management System designed to measure contract performance in accordance with DODI 7000.2, Performance Measurement For Selected Acquisitions and meet the criteria in AFSCP 173-5.

STANDARD: The standard is met when:

Complete documentation is provided pertaining to the system for accumulation of data to prepare and submit cost performance reports. The documentation should be in the form of a comprehensive system description applicable to R&D or production efforts and compliant with DODI 7000.2.

If the bidder proposes to operate under a DOD validated system for either or both R&D and production, the validation of the system may be established by providing a copy of the validation letter or memorandum of understanding to that effect.

Identify major subcontractors or subcontracted effort planned for application of the criteria. Describe the proposed procedure for administration of the criteria as applied to subcontractors.

ITEM: Management M.3

FACTOR: Work Breakdown Structure M.3.10.2

DESCRIPTION: This considers the expansion of the PWBS to the lowest level CWBS. The CWBS should comply with the procedures and policies contained in MIL-STD-881A.

STANDARD: The standard is met when:

The CWBS and dictionary is based upon and is an extension of the PWBS and satisfies the intent of MIL-STD-881A.

The CWBS and dictionary satisfactorily expands the PWBS.

The CWBS represents all costs in the contract.

All subcontracted elements are identified in the CWBS.

Elements of the CWBS are clearly defined so that duplication of effort within and between organizations will not occur.

Appendix D: Evaluation Write-ups
Reprinted from (1:99-105)

FOR OFFICIAL USE ONLY

DETAILED NARRATIVE ANALYSIS

SOURCE SELECTION EVALUATION BOARD

(1)

ITEM

(2)

FACTOR

(3)

SUBFACTOR

(4)

COMPANY

(5)

(6)

I. DESCRIPTION. (Brief description of what the contractor proposed - Include operational impact, if applicable.)

II. ANALYSIS.

A. Strengths
B. Weaknesses
C. Risks

These paragraphs should address the following:

- Relevant Past Performance
- Understanding of the Problem
- Soundness of Proposed Approach
- Compliance with Requirements
- Suitability of Best Commercial Practices, if applicable
- Deficiencies and Correction Potential

(7)

III. SUMMARY. (Scrubbed down Paragraph II).

IV. RATING. (+ Exceeds Minimum)
(✓ Meets Minimum)
(- Below Minimum)

(8)

ASD FORM DEC 74 356

FOR OFFICIAL USE ONLY

DETAILED NARRATIVE ANALYSIS (PREPARATION OF)

PURPOSE: This form is used to furnish the SSAC and the SSA a description of what the company proposed in a satisfaction of an element of the evaluation and to report the extent that the company's submission meets the standard for that element. While it must contain enough information to present a clear picture to the review authorities, it must not contain detailed description of the company's data or aircraft, nor is it necessary to delve into the extremely detailed analysis in the justification of your findings. In other words, be complete but concise. Fill in each block in accordance with the following instructions.

(1) Indicate the name and short title, if assigned, of the SSEB or SSEC.
Example: Long Range Turbo-Prop
Aircraft (MX)

(2) Indicate the numerical and descriptive designator of item involved.
Example: Item H Logistics Support
Item A Systems Analysis

(3) Indicate the factor numerical and descriptive designator.
Example: Factor B.1 Range
Factor H.3 Logistics Analysis

(4) If sub-factors have been identified as a shred-out of the factor, and standards have been prepared for them at the sub-factor level, indicate the numerical and descriptive designator.
Example: Sub-factor T.1.1 Master Plan
B.1.3 Ferry

(5) Indicate the company's name.

(6) Include the narrative analysis of the element for that company. Preface each paragraph of the narrative with the proper security classification and downgrading group.

(7) Indicate the symbolic and adjectival designator in parenthesis, immediately following the end of the past paragraph of the narrative analysis.
Example:

. . . . were presented in proper order. (Meets Minimum).

Example:

. . . . although it affects the acceptability, it can be easily corrected. (Below Minimum -).

(8) Place the highest overall classification at the top and bottom of the sheet. Include the statement "FOR OFFICIAL USE ONLY" at the top and bottom of the page notwithstanding other security classifications.

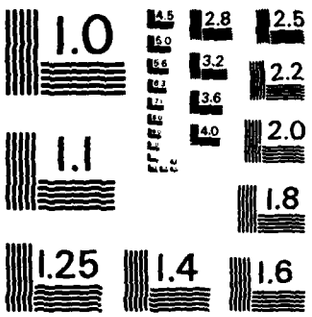
ITEM SUMMARY
SOURCE SELECTION EVALUATION BOARD (1)
ITEM (2)
COMPANY (3)
(4) (5) (6)

ASD FORM DEC 74 357

AD-A161 649 EVALUATION OF PROCEDURES EMPLOYED DURING SOURCE SELECTION FOR CONTRACTS I..(U) AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH SCHOOL OF SYST.. J E PUGH

2/2

UNCLASSIFIED SEP 85 AFIT/GSM/LSY/85S-30 FFG 5/1 NL



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS - 1963 - A

ITEM SUMMARY (PREPARATION OF)

PURPOSE: The Item Summary, which is used in the Summary Report, must furnish the SSAC ant the SSA a concise summation of the strong and weak points of the company's proposal which was evaluated. Fill in each block in accordance with the following instructions.

(1) Indicate the name and short title (if assigned) of the SSEB or SSEC.
Example: Long Range Turbo-Prop Aircraft (MX)

(2) Indicate the designators for the item.
Example: L.1 Logistics Support

(3) Indicate the name of the company.
Example: The XXX Company

(4) Narrative of the summarized findings. Include the security classification and downgrading grouping for each paragraph.

(5) Type the adjective rating and numerical score assigned (in parenthesis) immediately following the end of the last paragraph of the item summary.
Example: . . . were presented in proper sequence.
(Meets Minimum - 5)
(Below Minimum - 4)

(6) Indicate the highest security classification at top and bottom of the page. Include the statement "FOR OFFICIAL USE ONLY" at top and bottom of the page notwithstanding other security classification.

AREA SUMMARY	
SOURCE SELECTION EVALUATION BOARD	
(1)	(2)
COMPANY	
(3)	
(4)	

ASD FORM DEC 74 359

AREA SUMMARY (PREPARATION OF)

PURPOSE: The area summary document is prepared for each area by the Area Chief with assistance of team captains. The summary contains a brief resume of the findings of the teams of the area and includes statements pertaining to the interaction af these item findings to the area evaluation. Normally, the summary briefly states how the company approaches the solution to the problem considered to be most critical to the area and how well, in the judgment of the Area Chief, this solution solves the problem. Major outstanding features should be cited as well as major deficiencies and weaknesses and high risk approaches. Because of the type of information contained in these summaries, they become a prime tool in the selection process. As such, they require care in preparation and intensive coordination. Fill in each block in accordance with the following instructions.

(1) Indicate the name and short title (if assigned) of the SSEB or SSEC.
Example: Long Range Turbo-Prop
Aircraft (MX)

(2) Insert the numerical and descriptive designator for the area.
Example: T.0 Technical Area
L.0 Logistics Area
C.0 Cost to the Government Area

(3) Indicate the name of the company.
Example: The XXX Company.

(4) In narrative style, indicate a summary of findings. Preface each paragraph with the security classification of the page at the top and bottom of the sheet. Include the statement "FOR OFFICIAL USE ONLY" at top and bottom of the page notwithstanding other security classifications.

Bibliography

1. Aeronautical Systems Division/Source Selection Division (ASD/PMPS). The Source Selection Process. Wright-Patterson AFB OH: HQ ASD, June 1981.

2. Air Force Institute of Technology (AU). Proceedings of the 1983 AFIT Curriculum Review for Department of Systems Acquisition Management. Wright-Patterson AFB OH, 18 January 1984.

3. Air Force Systems Command. Acquisition Management Program Control -- Financial. AFSC Supplement 1 to AFR 800-6. Andrews AFB MD: HQ AFSC, 13 October 1981.

4. Arthur D. Little, Program Systems Management Company. Survey Relating to the Implementation of Cost/Schedule Control Systems Criteria Within the Department of Defense and Industry. 5 December 1983.

5. Bowman, Lt Col Thomas L., Instructor (C/SCSC Courses). Personal interviews. Air Force Institute of Technology (AU), Wright-Patterson AFB OH, 26 September 1984 through 29 August 1985.

6. Christle, Gary E., Office of the Assistant Secretary of Defense. "DOD SAIMS Requirements," Cost/ Schedule Control Systems -- Proceedings of the Conference held in San Francisco. 75-90. American Institute of Aeronautics and Astronautics, Santa Monica CA, 1-3 December 1982.

7. Cyrus, L. Patrick, Cost Management Systems Division. Personal interview. ASD/ACCM, Wright-Patterson AFB OH, 1 May 1985.

8. Department of the Air Force. Source Selection Policy and Procedures. AF Regulation 70-15. Washington: Government Printing Office, 22 February 1984.

9. Department of Defense. DOD Federal Acquisition Regulation Supplement Parts 1-12 (Looseleaf Edition). Chicago: Commercial Clearing House, Inc., 26 September 1984.

10. Department of Defense. Performance Measurement for Selected Acquisitions. DOD Instruction 7000.2. Washington: Government Printing Office, 10 June 1977.

11. Department of Defense. Work Breakdown Structures for Defense Material Items. Military Standard 881A. Washington: Government Printing Office, 25 April 1975.

12. Departments of the Air Force, Army, Navy, and Defense Logistics Agency. C/SCSC Joint Implementation Guide. Washington: Government Printing Office, 1 October 1980.

13. Friedenberg, Marvin F., Head, Cost Performance Management Branch, Naval Material Command. "Navy Implementation," Cost/ Schedule Control Systems -- Proceedings of the Conference held in San Francisco. 237-58. American Institute of Aeronautics and Astronautics, Santa Monica CA, 1-3 December 1982.

14. Gadeken, Owen C. & Tison, Thomas S. "The Cost of C/SCSC," Program Manager, 12:13-18 (July-August 1983).

15. Harper, William R., Cost Management Systems Division. Personal interview. ASD/ACCM, Wright-Patterson AFB OH, 9 May 1985.

16. Helmig, James R., Chief, Source Selection Division. Personal interview. ASD/PMPS, Wright-Patterson AFB OH, 2 April 1985.

17. Kemps, Robert R., Director of Program/Project Management and Operations Division, Department of Energy. Cost/ Schedule Control Systems -- Proceedings of the Conference held in San Francisco. 91-179. American Institute of Aeronautics and Astronautics, Santa Monica CA, 1-3 December 1982.

18. Nesivich, Stanley J., Chief, Cost Management Systems Division. Personal interview. ASD/ACCM, Wright-Patterson AFB OH, 14 May 1985.

19. Osborne, Donald A., Chief, Resources Validation Division. Personal interview. ASD/ACCC, Wright-Patterson AFB OH, 27 March 1985.

20. Schild, Daniel, C/SCSC Consultant. Personal interview. The Analytic Sciences Corporation (TASC), Fairborn OH, 15 May 1985.

21. Stone, L. A., Contract Cost Management Division, U.S. Army. "Army C/SCSC Implementation," Cost/ Schedule Control Systems -- Proceedings of the Conference held in San Francisco. 223-35. American Institute of Aeronautics and Astronautics, Santa Monica CA, 1-3 December 1982.

22. Teetz, Lt Col Connie O., Chief, Cost Information Systems Division. Telephone interview. AFSC/ACCI, Andrews AFB MD, 21 March 1985.

23. Toufexis, Anastasia. "Cracking Down on Contractors," Time, 125:20 (8 April 1985).

24. Varady, Joseph R. & Lumer, Mark J. "Taking the Heartburn out of CS^2," Program Manager, 12:11-12 (July-August 1983).

25. Wohlman, John A., Cost Management Systems Division. Personal interview. ASD/ACCM, Wright-Patterson AFB OH, 18 April 1985.

VITA

Captain James E. Pugh was born on 25 July 1958 in Columbia City, Indiana. He graduated from Columbia City Joint High School in 1976 and attended Purdue University from where he received the degree of Bachelor of Science in Industrial Management in May 1980. After graduation, he received a commission in the USAF through Officers Training School in January 1981. Upon entering active duty, he was assigned to the Electronic Systems Division at Hanscom AFB, MA where he was a program analyst in the Missile Warning Systems Program Office. He entered the School of Systems and Logistics, Air Force Institute of Technology in May 1984.

Permanent address: 408 Forest Parkway
Columbia City, Indiana 46725

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE

AD-A161 649

REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION: UNCLASSIFIED	1b. RESTRICTIVE MARKINGS
2a. SECURITY CLASSIFICATION AUTHORITY	3. DISTRIBUTION/AVAILABILITY OF REPORT: Approved for public release; distribution unlimited.
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE	
4. PERFORMING ORGANIZATION REPORT NUMBER(S): AFIT/GSM/LSY/85S-30	5. MONITORING ORGANIZATION REPORT NUMBER(S)
6a. NAME OF PERFORMING ORGANIZATION: School of Systems and Logistics; 6b. OFFICE SYMBOL (If applicable): AFIT/LS	7a. NAME OF MONITORING ORGANIZATION
6c. ADDRESS (City, State and ZIP Code): Air Force Institute of Technology, Wright-Patterson AFB, OH 45433	7b. ADDRESS (City, State and ZIP Code)
8a. NAME OF FUNDING/SPONSORING ORGANIZATION; 8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER
8c. ADDRESS (City, State and ZIP Code)	10. SOURCE OF FUNDING NOS. — PROGRAM ELEMENT NO. / PROJECT NO. / TASK NO. / WORK UNIT NO.
11. TITLE (Include Security Classification): See Box 19	
12. PERSONAL AUTHOR(S): James E. Pugh, Capt, USAF	
13a. TYPE OF REPORT: MS Thesis; 13b. TIME COVERED: FROM _____ TO _____; 14. DATE OF REPORT (Yr., Mo., Day): 1985 September; 15. PAGE COUNT: 103	
16. SUPPLEMENTARY NOTATION	

17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)
FIELD	GROUP	SUB. GR.	Performance measurement, Management, Military procurement, Systems Management, Contract Proposa
05	01		
11	01		

19. ABSTRACT (Continue on reverse if necessary and identify by block number)

TITLE: EVALUATION OF PROCEDURES EMPLOYED DURING SOURCE SELECTION FOR CONTRACTS INCLUDING CLAUSES REQUIRING COST/SCHEDULE CONTROL SYSTEMS CRITERIA (C/SCSC)

THESIS ADVISOR: Thomas L. Bowman, Lt Col, USAF

Approved for public release: IAW AFR 190-1.

Lynn Wolaver 11 Sept 85

Dean for Research and Development

Air Force Institute of Technology (AU)

Wright-Patterson AFB OH 45433

20. DISTRIBUTION/AVAILABILITY OF ABSTRACT	21. ABSTRACT SECURITY CLASSIFICATION
UNCLASSIFIED/UNLIMITED ☒ SAME AS RPT. ☐ DTIC USERS ☐	UNCLASSIFIED

22a. NAME OF RESPONSIBLE INDIVIDUAL	22b. TELEPHONE NUMBER (Include Area Code)	22c. OFFICE SYMBOL
Thomas L. Bowman, Lt Col, USAF	513-255-2632	AFIT/LSY

DD FORM 1473, 83 APR — EDITION OF 1 JAN 73 IS OBSOLETE

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE

To effectively manage Research and Development, and full-scale production programs, the DOD requires contractors to submit performance measurement information. Performance measurement information is produced by management systems for control purposes and is verified as valid and timely by its adherence to the Cost/Schedule Control Systems Criteria (C/SCSC). This research effort examines how performance measurement systems are evaluated during source selection. This thesis explains: the C/SCSC-related items of a DOD solicitation and the resulting requirement placed on a contractor's proposal; how the source selection process works; the importance of C/SCSC in regard to the overall source selection; and how the contractor's C/SCSC plan is evaluated during source selection.

The research is based primarily on interviews with Aeronautical Systems Division personnel. Those interviewed were chosen based on their position, experience, and training. The general agreement among those interviewed provides a basis for developing a list of important items to consider during source selection when evaluating contracts which include C/SCSC clauses.

U.S.Government Printing Office: 1985 - 646-047/20373

END

FILMED

1-86

DTIC