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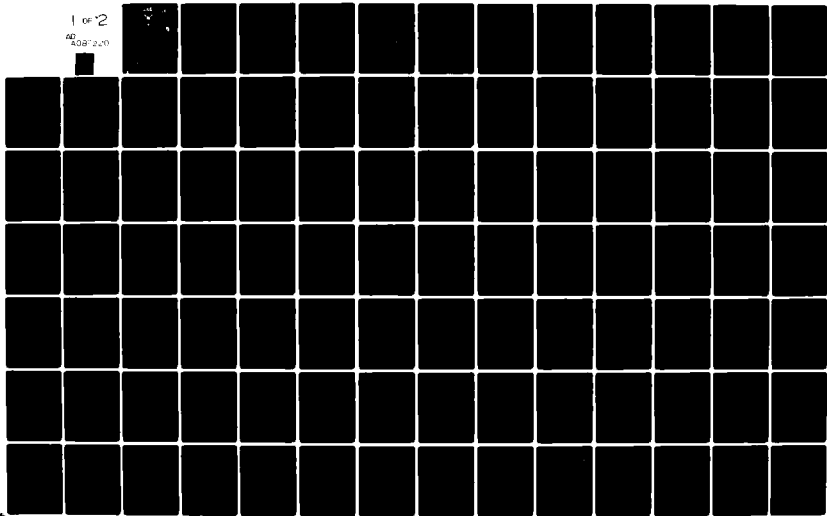
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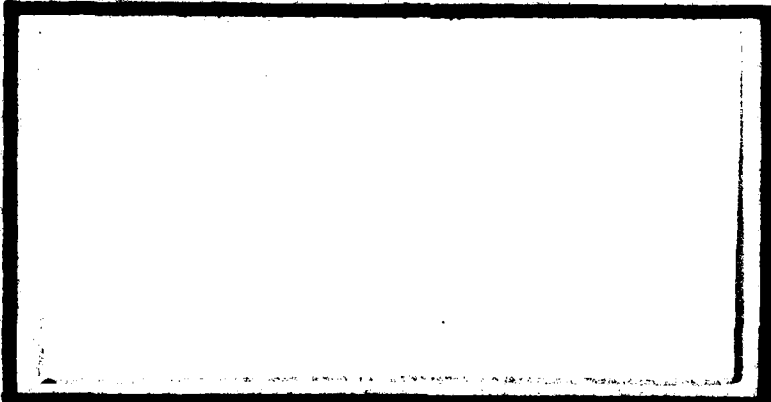
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THE RELATIONSHIP OF SOURCE SELECTION
SENSITIVE DATA TO COMPETITION
AND NEGOTIATIONS

Linda K. Allen, GS-12
Michael J. Hubert, Captain, USAF

LSSR 3-80

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The objective of this research was to determine whether relationships exist between government ownership of source selection sensitive data and the level of competition, the time/cost of the negotiation effort, and the level of incentives/protection. Currently, there is no evidence to indicate the effect of any such relationships on the acquisition of technical data. Interviews conducted with Contracting Officers and contractor representatives revealed that the acquisition of source selection sensitive data can be impacted by the use of a decision model. The model, in the form of a contract clause, designed to protect technical data acquired with unlimited rights prior to formal source selection resulted in a contractor perception of increased willingness to share proprietary data with the government.

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THE RELATIONSHIP OF SOURCE SELECTION
SENSITIVE DATA TO COMPETITION
AND NEGOTIATIONS

A Thesis

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology
Air University

In Partial Fulfillment of the Requirements for the
Degree of Master of Science in Logistics Management

By

Linda K. Allen, BS
GS-12

Michael J. Hubert, BS
Captain, USAF

June 1980

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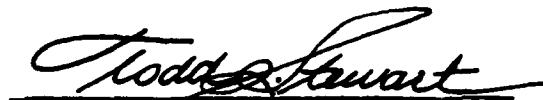
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Captain Michael J. Hubert

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

MASTER OF SCIENCE IN LOGISTICS MANAGEMENT
(CONTRACTING AND ACQUISITION MANAGEMENT MAJOR)

DATE: 9 June 1980

A handwritten signature in cursive script, reading "Todd Stewart", is written over a horizontal line.

COMMITTEE CHAIRMAN

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Chapter 1

INTRODUCTION

Overview

Current contracting directives establish an objective of increased competition between similar or differing systems design concepts throughout the entire acquisition process of a major system (9:4). Along with these directives, policies have been issued which are designed to increase off-the-shelf buys and/or modifications of off-the-shelf items in order to decrease the cost of research and development and increase reliability and accessibility (11). These directives and policies result in requests by the government for technical information at various stages in the acquisition process. This information is frequently the subject of disagreement between the contractor and the government due to the contractor's perception that the data requested are sensitive and, in some cases, not necessary for the intended use of the end item. The government may be experiencing increased reluctance by contractors to grant the Air Force substantial rights in data that could threaten the contractor's perceived competitive edge in commercial and defense programs. This situation may also be causing increased expenditures of time and effort by the

principal contracting officer¹ (PCO) on negotiation and increased cost of end items to the government.

Statement of the Problem

What are the relationships, if any, between government ownership of source selection sensitive data and the following variables:

- (1) the level of competition,
- (2) the time and cost of negotiation effort, and
- (3) the level of incentives?

If relationships exist which have the effects of decreased competition and/or increased time and cost of contract award, what incentives and protection may be offered to the contractor to alleviate the problem?

Background

The purpose of the defense acquisition process is to develop and supply the weapons, equipment, and services required to meet the United States national defense objectives. The major products of the defense industry are described as "weapon systems." This term includes not only technically complex items such as aircraft, missiles, and tanks but also the techniques, hardware, and subsystems needed to operate and support the major items. "Systems

¹For the purposes of this thesis, the term "contracting officer" refers to the person in the contracting office having responsibility for the effort. It could be either the principal contracting officer (PCO) or the buyer.

program management" is the name of the process by which weapon systems are acquired. This term includes all management activity necessary to enable governmental agencies and their contractors to accomplish a program's objectives (5:14).

The acquisition process includes two stages. The first stage includes the responsibilities of planning, research, development, testing, and evaluation. The second stage is production. Within the Air Force, the first stage is carried out by the Air Force Systems Command (AFSC) and the second stage is the responsibility of the Air Force Logistics Command (AFLC). AFSC acquisition functions include purchasing of design studies, research and development, prototypes, engineering development, and initial production. The AFLC acquisition functions consist of purchasing necessary support to operate and maintain the system throughout its life.

The acquisition process in both commands includes purchase request review, solicitation, evaluation, and award. This process is carried out in the Department of Defense (DOD) by either formal advertising or negotiation. The Defense Acquisition Regulation (DAR) recommends formal advertising as the preferred method of contracting. However, only 12 percent of the \$18 billion awarded for Fiscal Year (FY) 78 by the Air Force was awarded through formal advertising (2:32-37). Negotiation resulted in approximately \$16 billion spent by the Air Force in FY 78.

Under some circumstances, it is not practical to conduct government procurements through formal advertising. In the area of research and development, contracts are normally awarded through negotiation allowing the government to evaluate the technical and management capabilities of the contractors, as well as the costs. Negotiations also allow the government more flexibility. Nonetheless, a procurement may only be conducted through negotiation if it falls into one of the following 17 categories and written permission has been received from the appropriate official -- commonly the Secretary of a military department:

1. A national emergency;
2. Public exigency;
3. Purchases not in excess of \$10,000;
4. Personal or professional services;
5. Services of educational institutions;
6. Purchases outside the United States;
7. Medicines or medical supplies;
8. Supplies purchased for authorized resale;
9. Perishable or nonperishable subsistence supplies;
10. Supplies or services for which it is impractical to secure competition by formal advertising;
11. Experimental, developmental, or research work;
12. Classified purchases;
13. Technical equipment requiring standardization and interchangeability of parts;
14. Technical or specialized supplies requiring substantial initial investment or extended period of preparation for manufacture;
15. Negotiation after advertising;
16. Purchases in the interest of national defense or industrial mobilization;
17. Procurement otherwise authorized by law, e.g., architectural or engineering services for preparing specifications for public works, utilities, naval vessels, or aircraft construction [5:253].

Under negotiation, awards can be either sole source or competitive². Office of Management and Budget (OMB) Circular No. A-109, issued 5 April 1976, directs the PCO to emphasize "competitive exploration of alternatives, as relatively inexpensive insurance against premature or pre-ordained choice of a system that may prove to be either more costly or less effective [9:3]." Historically, competition in the acquisition of defense hardware has been very difficult to arrange and to enforce. Competition relies on the abilities of the contractors to design and produce the items that best meet the requirements. The difficulties in securing adequate competition have arisen in government contracting primarily because each weapon system must be designed for a particular purpose thereby incorporating special features of creative engineering, technical innovations, and advanced manufacturing techniques. If the government can assume effective ownership of these special features, it may disseminate the special designs to industry and procure the hardware from other manufacturers. However, if the contractor modifies his own design which was developed at his own expense, he may retain the right to a significant part of the hardware data thereby locking himself into a sole source position as long as that design is effective (8:1).

²The term "competitive" may or may not include price competition. Competition may be based on design excellence, responsiveness to Government requests, or overall quality of contractor proposals, rather than price [5:259].

The level of competition, defined for the purposes of this thesis as the number of offers received in response to the request for proposals (RFP), may be affected significantly by the contractor's ability to retain the data rights to his design either through the use of patents or proprietary rights in data.

The distinction between proprietary data and patents is significant. A "patent" is an explicit license to place a restriction upon the use of the knowledge or techniques after full disclosure. The patent is protected by a limited scope and an enforceable claim. Proprietary rights in data based upon "trade secrets" depend on nondisclosure. If the government uses contractor data to increase competition for specially designed equipment, it is necessary to disclose the details of design and production to potential competitors. If the disclosure includes data for privately-developed concepts utilized in the contractor's commercial business, the problem is compounded. It is not difficult to comprehend the radically differing views on proprietary data by contractors and the government (8:1).

"Technical data" is defined as the means for communication of concepts, plans, descriptions, requirements, and instructions relating to technical projects. The government's policy is to acquire only data and rights essential to meeting the government's needs. The data may be acquired with limited or unlimited rights. Data acquired with

unlimited rights can be used, duplicated, or disclosed by the government for any purpose. Data acquired with limited rights can be used freely within the government but cannot be disclosed to a third party. The determining factor in the decision between limited and unlimited rights is whether the data are developed at private or government expense. Data developed at private expense are normally acquired with limited rights, and data developed at government expense are normally acquired with unlimited rights (6).

In keeping with government data policy, technical data in the following categories are normally acquired with unlimited rights:

(i) technical data and computer software resulting directly from performance of experimental, developmental or research work which was specified as an element of performance in this or any other Government contract or subcontract;

(ii) computer software required to be originated or developed under a Government contract, or generated as a necessary part of performing a contract;

(iii) computer data bases, prepared under a Government contract, consisting of information supplied by the Government, information in which the Government has unlimited rights, or information which is in the public domain;

(iv) technical data necessary to enable manufacture of end-items, components and modifications, or to enable the performance of processes, when the end-item, components, modifications or processes have been, or are being, developed under this or any other Government contract or subcontract in which experimental, developmental or research work is, or was specified as an element of contract performance, except technical data pertaining to items, components, processes, or computer software developed at private expense. . . ;

(v) technical data or computer software prepared or required to be delivered under this or any other Government contract or subcontract or constituting corrections or changes to Government-furnished data or computer software;

(vi) technical data pertaining to end-items; components or processes, prepared or required to be delivered under this or any other Government contract or subcontract, for the purpose of identifying source, size, configuration, mating and attachment characteristics, functional characteristics and performance requirements ("form, fit and function" data, e.g., specification control drawings, catalog sheets, envelope drawings, etc.);

(vii) manuals or instructional materials prepared or required to be delivered under this contract or any subcontract hereunder for installation, operation, maintenance or training purposes;

(viii) technical data or computer software which is in the public domain, or has been or is normally released or disclosed by the Contractor or subcontractor without restriction on further disclosure; and

(ix) technical data or computer software listed or described in an agreement incorporated into the schedule of this contract which the parties have predetermined, on the basis of subparagraphs (i) through (viii) above, and agreed will be furnished with unlimited rights [10:7:104-9].

The basic data clause is found in DAR 7-104.9, Rights in Technical Data and Computer Software. With minor exceptions, it is used in every contract in which technical data are specified to be delivered. The government's rights to data furnished under the contract are established by the clause by describing the categories of data in which the government acquires limited and unlimited rights. Any specific data required must be set forth in the contract schedule. The use of the basic data clause in competitive

negotiations in which the contractor perceives the data to be proprietary may be a significant problem in view of current directives aimed at increased competition.

The Office of Management and Budget has expressed through Circular No. A-109 an objective to "depend on, whenever economically beneficial, competition between similar or differing system design concepts throughout the entire acquisition process [9:4]." This goal is leading to complex parallel-development programs exploring various design concepts, e.g., Air-Launched Cruise Missile (ALCM) program and the Cruise Missile Carrier Aircraft (CMCA) program. The government desires to maintain the creative contribution of private industry throughout development while releasing enough design information to satisfy other contractors performing on related subsystem contracts. This dichotomy is going to require a delicate balance between limited government release of "source selection sensitive data" and protection of the contractor's competitive position while maintaining an efficient negotiation process.

The government is eager to preserve competitive options and also to obtain full rights to use what it has paid for. This results in the creation of "source selection sensitive data," defined as data, obtained by the government with full rights, which contain a unique design concept that must be protected prior to the source selection process in order to provide differing alternatives under the guidance of OMB Circular No. A-109.

Every major defense weapon system with development costs expected to exceed \$25 million or production costs exceeding \$100 million must utilize formal source selection procedures. The DOD defines "source selection" as

the process wherein the requirements, facts, recommendations, and Government policy relevant to an award decision in a competitive procurement of a system are examined and the decision is made [5:259].

A formal evaluation of proposals submitted by interested contractors is conducted. The primary objective of the source selection process is

to assure impartial, equitable, and comprehensive evaluation, resulting in the selection of that contractor whose proposal offers optimum satisfaction of the Government's cost, schedule, and performance objectives for the system [5:259].

Without protection of source selection sensitive data, the government could, after a lengthy parallel development program, be evaluating proposals that have lost their unique qualities due to technical transfusion and/or leveling.

The purpose of this study, therefore, is to investigate the relationship between government ownership of source selection sensitive data, the level of competition, and the time/cost of the negotiation process. This investigation will attempt to meet three (3) major objectives by answering eight (8) research questions.

Assumptions

The incentives and/or protection required for source selection sensitive data is a problem which is directly

related to and determined by the contractor's perception of the sensitivity of his data. Whether or not the government position agrees with the contractor's perception, the problem of an adverse effect upon the level of competition and the time/cost of negotiations may exist. While it is recognized that various contractors may view the sensitivity of their technical data differently, it is not considered to be an issue that bears relevance to the problem at hand. This study assumes that a contractor's perception of the sensitivity of his data will not change and explores ways to decrease the contractor's reluctance to share the data when deemed necessary.

Research Objectives/
Research Questions

The primary objectives of this research effort are to:

Objective 1.0 Determine the relationships between the government ownership of source selection sensitive data, the level of competition, the time/cost of the negotiation process, and the level of incentives. To accomplish this objective, the following research questions were answered:

1.1 Does the current method of government acquisition of source selection sensitive data result in decreased competition, increased time/cost of negotiation, and inadequate incentives/protection?

1.2 What factors are considered important in the contractor's decision to compete, and how do they relate to the remaining variables?

1.3 What factors result in increased time/cost of negotiation, and how do they relate to the remaining variables?

1.4 What incentives and/or protection are currently offered to the contractor, and how do they relate to the remaining variables?

Objective 2.0 Develop a decision model which will prescribe the levels of incentives and/or protection which the government must utilize to assure alternative design concepts throughout the acquisition process. To accomplish this objective, the following research questions were answered:

2.1 What constitutes "adequate" incentives and/or protection to assure alternative design concepts?

2.2 What incentives and/or protection can the government offer within the limitations of the DAR?

Objective 3.0 Test the use of the model to determine if its use results in a perceived increase in the level of competition and decrease in the time/cost of negotiations. To accomplish this objective the following research questions were answered:

3.1 Would the use of the incentives and/or protection represented by the decision model have resulted in greater assurance of alternative design concepts through increased competition?

3.2 Would the use of the model have decreased the time and cost of the negotiation process?

Scope and Limitations

This study will be limited to contracting offices within AFSC and the civilian contractors with whom these offices deal. Since AFSC is responsible for the first stage of the acquisition process which includes planning, research, development, testing, and evaluation, this limitation is considered appropriate.

Justification

Since the inception of OMB Circular No. A-109 in April of 1976, a trend toward more complex, interlocking, parallel-development programs is being experienced. However, the Air Force has not identified any new procedures, strategies, and tactics for dealing effectively with the multitude of data involved. As a result, some PCOs have had difficulty handling the complex negotiations of data protection while encouraging increased competition (1). There are no complete records available which indicate the contractors'

concerns and their corresponding reluctance to enter competition on weapon systems and/or subsystems. Neither is there documented evidence of the exact time and cost associated with negotiation of such conflicts between contractors and the government. The magnitude of the problem is only evidenced by the increased requests for assistance by the Office of the Staff Judge Advocate (JAG).

Therefore, JAG has expressed concern over the effectiveness of the current procedures for handling source selection sensitive data. Lieutenant Colonel John A. Ciucci and Captain C. Brandon Gresham Jr., Office of the Staff Judge Advocate, AFLC, have requested a study be conducted to determine the appropriate procedures, strategies, and tactics to deal effectively with source selection sensitive data. Operating level personnel have expressed a concern that the current procedures are not adequate. Captain Steve Lathrop, former Contracting Officer on the Cruise Missile Carrier Aircraft (CMCA) contracts for the Air-Launched Cruise Missile (ALCM), stated that the current procedures often create delays in negotiations due to the contractors' reluctance to grant the government substantial rights in data (7).

Literature Review

This research is an exploratory effort in the area of procedures and strategies for acquisition of the source selection sensitive data involved in complex contract

negotiations involving related and parallel programs.

While no literature is available in the specific topic area, some related data are available in the systems acquisition area. The Defense Acquisition Regulation (DAR) contains the procedures upon which the current method of handling contractor data is based.

The interviews with Captain Gresham (6) defined the problem as contained in the problem statement of this study. The complexities of the negotiation and source selection processes involved in the ALCM contracts and the interrelated CMCA and Cruise Missile Interface (CMI) contracts were discussed at length. Captain Gresham stated that the divisions which have surfaced and will continue to surface during the ALCM/CMCA/CMI negotiations are representative of problems associated not only with a complex contractual process as the ALCM but also any contract associated with parallel development or interlocking subsystems. He also said that the present system of handling source selection sensitive data is to use the standard clauses as contained in the DAR. These standard clauses have not proven to be adequate in resolving problems associated in parallel development and interlocking subsystems contracts (6).

The interview with Captain Lathrop (7) showed that, while the ALCM and related contracts were extremely complex and involved many contractors, the lessons learned can be applied to contracts much less complex. Future of defense

acquisition will contain more off-the-shelf buys of commercial products or modifications of off-the-shelf products. Coupled with the policy of increased competition during all phases of systems acquisition, this increased emphasis on off-the-shelf buys will present contractors with the same problems evidenced in the ALCM negotiation process.

The remaining chapters of this thesis discuss the achievement of our research objectives. Chapter 2 -- Methodology -- discusses the methods which were used for data collection and analysis. Chapter 3 -- Data Summary and Analysis -- presents the results of the interviews conducted and the results of the statistical tests performed. Chapter 4 -- Findings and Recommendations -- discusses our proposed model based upon interview results and provides suggestions for further study.

Chapter 2

METHODOLOGY

This chapter describes the universe, population, and sample from which data were collected for this research, the techniques employed in collecting the data, the statistical tests used in the analysis of the data, the development of the model, and research assumptions and limitations.

Description of Universe, Population and Sample

The universe for this research project consists of all major weapons system contracts within the Air Force. This includes not only contracts involving source selection sensitive data such as parallel development programs, e.g., the group of 8 ALCM contracts, and contracts which include modification of a contractor's design, e.g., the KC-10 contract, but also those contracts in which source selection sensitive data were not involved.

The population of interest within the specified universe originally was designed to include those AFSC contracts which satisfy both of the following criteria:

- (1) the group of contracts associated with a competitive effort, and
- (2) the group of contracts in which time and cost of negotiation effort can be measured.

The contracts associated with a competitive effort are defined as not only those which involved more than one proposal at the evaluation phase of the acquisition process, but also those contracts which were related to parallel development programs in competition for desirable follow-on contracts.

Established weapons systems program offices (SPOs) often do not retain any memory of the initial acquisition process and the details of the negotiation effort. Many of them were established prior to the emphasis upon increased competition as established by OMB Circular No. A-109. Consequently, an attempt was made to limit the primary population to those contracts within AFSC for which the necessary information with regard to the level of competition and the time/cost of the negotiation effort is available.

A deliberate sample of 20 contracts from the primary population was taken. The sample was chosen for both the availability of information and the belief of the JAG office that this group of contracts included a valid cross-section of some typical programs involving the acquisition of data. The criteria for choosing the particular contracts under consideration included:

(1) ten contracts which involved parallel development programs or follow-on competition in which contractors were required to share data which could adversely affect their competitive position; and

(2) ten contracts of comparable value in which no source selection sensitive data was involved.

In addition, the JAG office chose contracts for which information and government contracting personnel were available.

The prime objective in sampling was to select a group of contracts which would provide us with available data in order to determine the relationships between the acquisition of source selection sensitive data and the level of competition and/or time and cost of the negotiation process. The sample was also chosen to provide a cross-section of major weapons system contractors. While we recognize that a purposive non-random sample limits the confidence with which we can make inferences to the population of concern, the sample was chosen with the expert advice of the JAG office and the intent to provide a reasonable cross-section of situations, PCOs, and contractors in order to build meaningful theory for further research.

Data Collection

Data collection was performed in two phases. The first phase involved the identification and definition of the factors important in answering the research questions associated with research objectives 1.0 and 2.0. The second phase involved verification of a model by answering the research questions associated with research objective 3.0.

Phase I. The first step was identification and definition of the factors involved in the analysis of the impact of source selection sensitive data on the acquisition process. The data were obtained through a survey of PCOs and contractors involved in the negotiation of the contracts chosen for the sample. The survey was conducted by using structured personal and telephone interviews. While some of the data could have been obtained by abstractions of information from the contract files, much of the data required insight into the perception of the individuals involved in the negotiation process. Therefore, the use of interviews added the benefit of obtaining obscure data from people knowledgeable in the area. The interview technique also allowed for the use of some questions of interest which were open-ended and subjective. These questions solicited judgments and opinions from the interviewees. In addition, some of the terms and concepts utilized were vague and ambiguous and required discussion with the interviewees in order to clarify the operational definitions.

While personal interviewing provided the advantages of "depth and detail of information" and "far exceeds, in volume and quality, the information we can usually secure from telephone and mail surveys," both personal and telephone interviews were conducted [3:268]. Due to the wide geographic dispersion of the sample interviewees, personal interviews were not possible with all of the PCOs and

contractors due to the limitation on time and funds. Consequently, personal interviews were conducted with individuals located at Wright-Patterson AFB, and telephone interviews were conducted with those people located elsewhere.

In addition to cost, bias is one of the two major problems encountered in personal interviewing. A number of studies have indicated that "an interviewer can distort the results of any survey by inappropriate suggestions, word emphasis, tone of voice, and question rephrasing [3:277]." The presence of a personal interviewer was not considered to be a problem due to the professional nature of the questions and the consistent use of the same interview guides for both personal and telephone interviews (See Appendices C and D).

The interview guides included a cover letter designed to introduce and explain the research effort and a list of questions designed to identify pertinent background information on the sample contracts. This information included data on the level of competition, the length of the negotiation effort, and the cost of contracts involving the acquisition of source selection sensitive data as compared to those contracts in which no source selection sensitive data were acquired.

Recommendations for improved procedures were solicited when warranted by the responses to the questions listed

in the interview guides. The requests for recommendations focused primarily on identifying potential contractual instruments which would provide incentives and protection to the contractor to alleviate any perceived problems.

The primary purpose of the interviews was to provide the data necessary to answer the research questions associated with research objectives 1.0 and 2.0.

Objective 1.0. The interviews with PCOs were designed to provide data on the level of competition, the time and cost of the negotiation, and whether incentives were involved in each of the contracts sampled. The "level of competition" was measured by the number of offers received in response to the RFP. The "time of negotiation effort" was measured in days from receipt of the purchase request through contract award. The "cost of the negotiation" was measured in dollars by comparing the engineering estimate of the contract cost included in the purchase request with the actual negotiated cost. The "incentives" were measured by the inclusion or omission of a specific clause for protection of data rights in the contractual document.

The data collected were to be compared to the average number of competitors and length of the average acquisition cycle for similar negotiated contracts in order to answer research question 1.1. The interviews with PCOs, however, showed that there was no average length of an acquisition cycle for major weapon systems against which to

compare the data. Only one PCO felt that his program had taken longer to negotiate than what he considered to be a normal time. The additional time required was not attributable to the negotiation process, but was due to delays in Defense System Acquisition Review Council (DSARC) action. Since most PCOs felt that their negotiation process required a "normal" period of time and written records are not maintained to reflect the length of the negotiation effort, the data collected to represent the "time of negotiation effort" were found to be sketchy and subjective. Specific answers are addressed in Chapter 3.

In addition, the contractor was queried with regard to whether or not the inclusion of source selection sensitive data in the contract resulted in a higher cost in order to provide some financial protection.

The interviews with PCOs provided information with regard to the number of contractors solicited and their identity in order to ascertain the reasons for some not submitting offers. Along with this information, interviews with contractors provided the factors considered important in the decision to compete in order to answer research question 1.2. In addition both PCOs and contractors were asked to relate factors which they perceived affected the time and cost of the contract negotiations to which they were a party. This data would provide the answer for research question 1.3. Finally, both groups were asked to discuss

their perception of how incentives and/or protection related to the other variables of government ownership of source selection sensitive data, the time/cost of negotiations, and the level of competition. Data acquired in this process were used to answer research question 1.4.

Objective 2.0. In order to answer research question 2.1, the interviews with contractors required that they define their perception of "adequate" incentives and/or protection when source selection sensitive data are involved. PCOs were asked to define the limits of incentives and protection which the government can offer to contractors in negotiations where source selection sensitive data were involved. Contracting officers were also asked whether the incentives and protection which they offered to contractors were sufficient to insure alternate design concepts throughout the acquisition process. The information gathered in this last series of interviews provided the answer to research question 2.2.

The key to acquiring the data necessary to answer research questions 1.1 through 2.2 was the quality and accuracy of the interview guide. The interview guide was tested prior to its use. A test ensures that

. . . the questions meet the objectives of the survey; all important phases of the survey have been adequately covered; the questions stimulate respondent cooperation; the questions are in satisfactory order; and the questions are completely understood by the respondents [4:2-3].

The test was conducted at the Air Force Institute of Technology (AFIT) with contracting and acquisition instructors from the graduate and continuing education programs. After a personal interview, the questions were discussed with the interviewees in order to "determine what their feelings, confusions, and reactions are to the questioning process and to specific questions [3:207]." The AFIT instructors are familiar with both contracting policies and procedures and proper research techniques. Therefore, the AFIT instructors were considered to be a valid test group. Changes which were recommended by the test group were considered for revision of the interview guide.

In order to obtain the support and cooperation of the interviewees, the interviewers provided all interviewees with advanced notice of the interview and established a convenient time for the interview.

The data generated by the interviews were analyzed in order to determine the relationships between the government acquisition of source selection sensitive data, the level of competition, the time/cost of the negotiation process, and levels of incentives and protection. Data revealed that a relationship does exist between the government acquisition of source selection sensitive data and increased cost for contract negotiation. The level of competition appeared to be unaffected, and data results for the time relationship were inconclusive. The information obtained in Phase I was

utilized to develop a decision model which was verified in Phase II of data analysis.

Phase II. Phase II involved the verification of the decision model derived from analysis of the results of Phase I. Information concerning the effectiveness of the decision model was solicited from the PCOs and contractors involved in those contracts investigated in Phase I which included acquisition of source selection sensitive data.

Objective 3.0. The ten sample contracts including source selection sensitive data were reconsidered by the PCOs and contractors in order to determine if utilization of the decision model would have resulted in greater possibility of alternate design concepts which would have increased the level of competition. This portion of the interviews was used to answer research question 3.1. In order to answer research question 3.2, PCOs and contractors were asked if use of the decision model would have resulted in decreased time and cost of the negotiation process for the contracts with which they were involved.

Data Analysis

Data analysis was performed in two phases with each phase corresponding to a data collection phase.

Phase I. Objective 1.0. The information which was obtained during the first phase of interviews was analyzed to determine if relationships exist between the government

acquisition of source selection sensitive data, the level of competition, the time/cost of negotiations, and the level of incentives and/or protection. The data were examined in two groups:

(1) Contracts in which source selection sensitive data were not involved, and

(2) Contracts in which acquisition of source selection sensitive data was an issue.

The mean time and cost of negotiations and the mean number of offers were calculated for each group. The difference between the means was tested to determine if the perceived sensitivity of data involved in the acquisition process affected the level of competition and/or the time and cost of negotiations. The test was performed using an SPSS T-TEST program.

The T-TEST is a measure of the value of the population mean μ . In this study, the T-TEST was used to determine if a difference exists between the means in the two groups as measured by the interviewers. The hypothesis tested was:

$H_0: \mu_2 - \mu_1 = 0$; No relationship exists

$H_1: \mu_2 - \mu_1 \neq 0$; Relationship does exist.

The 90 percent confidence level was used for the T-TEST. Therefore, through the use of this test, a 90 percent confidence interval was calculated which permitted the

rejection of the null hypothesis. This rejection provided a valid basis for further study in Phase II of the research effort. Detailed analysis is contained in Chapter 3.

Objective 2.0. The data acquired in Phase I were also analyzed to assist in the development of a decision model. The contractors' definitions of "adequate" incentives and the limits of incentives and protection which the government can offer to contractors were considered in the construction of the decision model. Due to the subjective nature of question fifteen of the PCO interview guide and question eight of the contractor's interview guide, the decision model was developed consistent with a consensus of the recommendations obtained during interviews.

Phase II. Objective 3.0. Data collected in the second phase were analyzed to determine whether or not the use of the decision model resulted in increased competition and/or decreased time and cost of negotiations. The differences were determined through comparison of the actual levels of competition, time and cost of negotiation, and levels of incentives and/or protection of the contracts sampled with the perceived values of those same variables which would have been experienced by using the model. Results discussed in Chapter 3 indicate that use of the model would have provided incentives and protection resulting in decreased time and cost of negotiations for seventy percent of the contractors interviewed.

Assumptions

(1) The deliberate sample was representative of the typical programs involving the acquisition of data.

(2) The T-TEST was appropriate for the type and nature of the data obtained.

(3) Interviewers provided honest answers based upon valid opinions and information.

Limitations

(1) Time and resources available to the researchers.

(2) Time available to interviewees.

(3) Access to contracts for major weapons systems in which source selection sensitive data were an issue and contracts in which they were not for comparison purposes.

Chapter 3

DATA SUMMARY AND ANALYSIS

This chapter discusses the data collected and the analysis of the data. This discussion includes a consideration of the interview questions, a statistical and descriptive summary of the interview results, and an analysis of the statistical tests performed on the interview results. Our findings and recommendations based upon those results are contained in Chapter 4.

Interview Procedures

Interviews were conducted with PCOs and industry contracting personnel in accordance with the research design outlined in Chapter 2. Twenty interviews were conducted with PCOs corresponding to the 20 contracts included in the deliberate sample. Ten interviews were conducted with industry personnel representing 10 major weapons system contractors. As mentioned earlier, JAG selected the 20 contracts to reflect a reasonable cross-section of situations, PCOs, and contractors.

The interviewees were extremely helpful and cooperative and, wherever possible, made their historical files and records available to us in order to obtain precise dates and cost figures. Sixty percent of the interviews were personal

interviews, and the remaining forty percent were telephone interviews. On the average, the interviews lasted approximately 45 minutes. Despite busy schedules, all of the interviewees were willing to spend the time necessary to answer all of the interview questions.

Interview Questions - PCOs

The interviews with contracting officers consisted of 15 basic questions as outlined in the interview guide (Appendix C). The questions were asked in the order shown on the guide deviating only to clarify responses and issues as necessary. The responses were summarized by question to determine relationships and answers to specific research questions associated with our research objectives.

Question # 1. How many offers did you solicit on this procurement and to which contractors were RFPs issued?

In order to clarify the competitive nature of the contracts, each interview was begun with a discussion of the number of contractors solicited. The contractors were identified to aid in compiling the list of industry interviewees. In all cases, this information was readily available.

Question # 2. How many offers did you receive?

The second question dealt with the number of offers received as a result of the solicitation. Parallel development contracts were also identified with this question.

The responses to these first two questions were tabulated into two groups representing those contracts which did not involve source selection sensitive data and those contracts in which the acquisition of source selection sensitive data was an issue. A comparison of the two groups sought to determine any existing relationship between the government ownership of source selection sensitive data and the level of competition in response to research objective 1.0. (Statistical analyses appear in the data analysis section of this chapter). We were unable to support the contention that the current method of government acquisition of source selection sensitive data results in decreased competition. In answer to research question 1.2, ninety-five percent of the PCOs indicated that major weapons system contractors were eager to win large government contracts and did not appear to be reluctant to submit proposals in response to the solicitations. If the contractor was concerned about specific data, the proposal would include a request to protect the data by granting the government only limited rights. This issue would then be addressed at some later date in discussions between the contractor and the government.

Another consideration brought to our attention by the PCOs was the fact that only a limited number of contractors are qualified for solicitation on major weapons system RFPs, resulting in a mailing list which includes two

or three contractors. Due to the public nature of government contracts, these contractors have been preparing for release of this RFP for months or, in some cases, for years. In several instances, all of the contractors solicited responded with a proposal. Due to the size of the potential contract and the infrequency of major weapons system buys, the contractors are compelled to present a proposal to the government whenever the opportunity arises.

Question # 3. How many days elapsed between receipt of purchase request and contract award in this procurement?

This question was designed to answer research question 1.3 and to measure the precise number of days required for the acquisition process on the contract under discussion. The acquisition process, for the purposes of this research effort, was defined as the period beginning with receipt of the purchase request and ending with contract award. The date utilized for contract award was the date on the Certificate of Current Cost and Pricing Data. We found that in most cases these data were either unavailable, despite personal interviews with the government contracting personnel who had been directly involved, or the dates were so affected by a variety of events that any results would be inconclusive. In major weapons system acquisition, some of these events include formal source selection procedures, DSARC reviews, and budgetary delays. In many cases, there

was no purchase request, and no record was maintained of a precise date for initiation of the acquisition process. The first recorded date was often the release date for the RFP. Likewise, no record was maintained to reflect actual negotiations with the contractors. PCOs indicated that, in the case of parallel development programs, negotiations were continuous from receipt of the proposal to contract award.

Question # 4. What is the average length of negotiation time for similar contracts?

The fourth question attempted to establish an average length of time for negotiation of similar contracts. The difference between the answers to this question and the third question would then indicate any relationships that might exist between the government acquisition of source selection sensitive data and the length of time required for contract negotiation. However, the lack of information to answer the previous question coupled with the PCO's inability or reluctance to specify an average negotiation time made it impossible to conduct any meaningful comparison. Consequently, we were also unable to support the contention that the current method of acquiring source selection sensitive data results in an increase in the length of the negotiation process. On the other hand, we were also unable to conclude that the time associated with negotiation is unaffected. Unless the necessary information is captured

on future acquisitions, it will be difficult to answer this research question with any significant degree of certainty or confidence.

Six PCO interviews did suggest that negotiation of a data rights clause was a time-consuming element in the overall negotiation process. In one case, a PCO indicated that ten days of valuable negotiation time had been lost while the government team and the contractor team quibbled over the meaning of one word in a tailored special provision dealing with data rights. In another case, disagreements over data rights and other technicalities resulted in the negotiation of a complex interface document detailing precautionary measures designed to protect source selection sensitive data until a source decision was made. It appears that the associated variance in the distribution of time is so wide that the average is not necessarily a meaningful point estimator of time.

Question # 5. What was the engineering estimate of the contract cost contained in the purchase request?

Another relationship sought by research objective 1.0 was between the government ownership of source selection sensitive data and the cost arrived at as a result of the negotiation process. This question was designed to provide the government engineering estimate for the effort called for by the RFP. These estimates are generally based upon

engineering expertise and recent experience on similar contracts often with the same contractors being solicited. In most cases, we were able to obtain the information sought by the question. In two instances, the programs were so dependent upon budget considerations that the required effort was dictated by the funds available at the time of negotiation. These programs did not attempt to establish an engineering estimate early in the program. The responses to this question were then compared to the responses to question # 6 to determine if a relationship exists.

Question # 6. What was the actual negotiated contract cost?

The actual negotiated contract cost is a matter of public record and was available in all cases. The data collected as a result of the fifth and sixth questions were divided into groups in accordance with the research design outlined in Chapter 2. The difference between the engineering estimate and the actual negotiated cost was calculated in each case both for the contracts in the group involving the acquisition of source selection sensitive data and for the contracts in the group in which source selection sensitive data were not an issue. The calculated differences were compared, and a relationship was recognized indicating that government ownership of source selection sensitive data does tend to result in increased program costs

after negotiation. The statistical analysis to support this hypothesis appears in the data analysis section of this chapter.

In answer to research question 1.3, the interviews with PCOs indicated that, in the case of parallel development programs, complex interface documents cost money to draft and to implement. In one example, a PCO cited a contract in which 29 extra people were required in order to assure that certain key people would not have access to both contractors' technical data thereby increasing the likelihood of inadvertent leaks and technical transfusion prior to source selection.

Competitive programs in which source selection sensitive data were not an issue followed a pattern resulting in a contract award at a lower price than originally estimated. On the other hand, those negotiations in which data protection was a concern resulted in a higher price for the government than originally estimated in all but one case. Interviews indicated that while contractors definitely want the awards, they are reluctant to make any major concessions that would jeopardize not only their competitive positions with respect to the current source selection but also with respect to future source selections and commercial ventures.

Question # 7. Of the technical proposals submitted, were any identified as containing source selection sensitive material?

To further establish the validity of the deliberate sample, the PCOs were asked whether the technical proposals submitted in response to the subject RFPs contained any source selection sensitive material identified within the proposal itself or orally by the contractor. In every case, the PCO verified the JAG groupings which established that our sample included 10 contracts with source selection sensitive data problems and 10 contracts with no data problems.

Question # 8. Have you detected a reluctance on the part of contractors to submit technical proposals containing their state-of-the-art technology?

This question was of a general nature calling upon the PCO's experience in order to establish whether contractors tend to be reluctant to submit technical proposals containing their state-of-the-art technology. Sixty-five percent of the PCOs interviewed have detected a reluctance on the part of contractors to share this information with the government in their proposals. One PCO indicated that this problem does not only apply to prime contractors but to subcontractors as well. Some subcontractors have even refused to bid because of the flowdown of contractual terms and conditions referring to unlimited rights in technical data. Limited rights clauses are not frequently accepted by major weapons system PCOs. One PCO even enlists the aid of the Administrative Contracting Officer (ACO) and the Defense

Contract Audit Agency (DCAA) to collect concrete proof of money spent at private expense in development of specific technology before allowing a limited rights clause in his contract.

The PCOs who had experienced contractor reluctance tried to clarify technology questions during negotiations but were often faced with evasive answers. One contractor even openly stated that it had no intention to share its proprietary information regarding technological advances.

The PCOs who indicated that they did not detect any contractor reluctance generally qualified their answers with the statement, "they don't like it, but they want the contract enough to give us what we ask for." This in itself indicated some degree of reluctance. These contractors differed from the others when they made a management decision to take a chance by divulging their technology early in the program.

Question # 9. Have any contractors discussed with you the problem of disclosure of their technical proposals which could contain state-of-the-art technology?

Only fifty-five percent of the PCOs interviewed have been approached by contractors to discuss the potential problem of disclosure of portions of their technical proposals which could contain state-of-the-art technology. One PCO indicated that, while contractors are reluctant to share

their data with the government, they are not eager to risk insulting the PCO by insinuating that he or she might be party to charges of technical transfusion. At least one of the concerned contractors had good reason to be concerned. A Freedom of Information request for cost data included in one of its proposals had been granted, and the contractor was fearful that technical data would be next.

Question # 10. Have you experienced difficulty evaluating technical proposals in which the contractor has apparently withheld some technical information?

In view of the responses to question # 8, the PCOs were asked if they had experienced any difficulty evaluating proposals in which the contractor had apparently withheld some technical information. This did not seem to present a major problem to the PCOs. Only twenty-five percent had sensed that technical questions remained unanswered after fact-finding discussions had been conducted with the contractor. The PCOs included in the twenty-five percent had found it necessary to go back to the contractor numerous times to extract the needed information one bit at a time for both prime contractors and subcontractors. One PCO, in desperation, had resorted to a \$ 5-million system definition contract in an attempt to tie down a more definite plan and more definite information. However, this degree of difficulty did not appear to be widespread. Once

again, PCOs reiterated that the contractors wanted the contract enough to cooperate.

Question # 11. Do you feel that your source selection was affected by a contractor's reluctance to reveal technological information in his proposal?

This question sought the PCOs' opinions concerning the affect of contractor reluctance to reveal technological information. In consonance with the previous question, only twenty-five percent felt that this contractor reluctance had affected the source selection process in any way. These PCOs believed that the length of time required for the source selection process had been increased and the costs had escalated. However, we were unable to uncover any evidence to suggest a general magnitude of such time and cost expenses for the entire group of contracts. The relative magnitudes are discussed in the data analysis section of this chapter.

Question # 12. If you knew that a contractor withheld technical information from his technical proposal would this lessen his chances of winning the contract?

Next a more general question was asked of the interviewees. If a PCO was faced with a situation in which it was known that a contractor had withheld technical information, would this lessen the contractor's chances of

winning the award? The responses strengthened our original belief that a problem does exist. Fifty-five percent of the PCOs indicated that if the government believed that the technical information was significant and was desired, the contractor's relative position would be in jeopardy. Question # 8 reflected sixty-five percent of the PCOs having direct experience with contractor reluctance to divulge this requested technical information. Question # 10 indicated that twenty-five percent of the PCOs were experiencing difficulty in technically evaluating contractor proposals because of the withholding of technical information. This places the contractor in a position of being forced to cooperate by sharing technical information with the government in order to protect its relative competitive position. However, if the contractor has reason to believe that these data will not be adequately protected from disclosure, its relative competitive position may be jeopardized by such cooperation. This could present the contractor with quite a dilemma.

An unexpected response to this question indicated that, while fifty-five percent of the PCOs interviewed believed that the withholding of technical information could lessen a contractor's chances for award, an additional thirty percent believed that technical information is not an issue in many cases because the award decision is primarily a political decision. These PCOs stated that the RFP is

issued only to qualified contractors. Any technical questions or difficulties can be resolved after the award has been made.

Question # 13. Do you feel that you can offer contractors the level of incentives and protection necessary to insure that state-of-the-art technology is included in their technical proposals?

Our purpose in asking this question was to determine the government's ability to offer the contractor the level of incentives and protection necessary to insure that state-of-the-art technology is included in their technical proposals. In an attempt to answer research objective 1.0 and research question 1.4, the PCOs were asked to give us their opinions. Only one PCO felt that he was unable to provide an adequate level of incentives/protection. This PCO had experienced reluctance by contractors to share technical information with the government and believed that an adequate level of incentives/protection would serve to diminish this reluctance. Despite this PCO's logic, ninety-five percent of the interviewees felt that they were equipped to offer the contractors adequate incentives/protection. Upon further questioning, only four of these PCOs were relying upon the standard data clauses. The remaining 15 PCOs were using an array of tools ranging from tailored special provisions to complex interface or integration documents. Several of

them indicated that they had created whatever clauses seemed to encourage the contractors and would still survive JAG review. They admitted that JAG had approved some of the clauses because they were totally harmless to the government and totally ineffective for the contractors.

Question # 14. Are there any comments you would like to make concerning contractor technical proposals and the withholding of some technical information/capability from those proposals?

This question allowed the PCOs the opportunity to expound on any opinions or comments concerning contractor technical proposals and the withholding of technical information by contractors. Several of the PCOs felt that the contractual instrument was not the only method for providing more incentives/protection to the contractor. The source selection process itself was considered to be suspect in the search for reasons for contractor reluctance to provide technical data to the government. The PCOs believed that the number of individuals involved who had access to contractor information was excessive. One PCO even developed an elaborate plan for subdividing the contractor's information and assigning each subdivision to an appropriate team. In this way, he was able to limit the number of individuals having access to all of the contractor's technical data to three people. Another PCO stated that with so many

individuals involved, it would be impossible to eliminate technical transfusion entirely. This, he believed, stemmed from a basic difference in philosophies. The engineer's main concern is to get the best product for the government, while the PCO's main objective is to get the best buy for the government -- all things considered.

The other factor mentioned that has an effect on the contractor and its concern for its technical data is the political consideration. Some of the PCOs felt that the contractors must be aware that technical considerations are not always the only key capable of opening the door to an award. Politics also plays a role. This must have some effect on the contractor's reluctance to divulge certain state-of-the-art technology.

Question # 15. Do you have any recommendations in regard to specific contractual instruments which could be employed or developed to insure state-of-the-art technology is not withheld from technical proposals?

When the PCOs were asked for recommendations for specific contractual instruments which could be used to incentivize and protect the contractor, each suggested his or her own specialized clause. These were collected and studied to aid in the development of a model clause to be used in Phase II of our research.

Interview Questions - Contractors

The interviews with contractors consisted of 8 basic questions which are outlined in the interview guide (Appendix D). The interviews were conducted in the same manner as contracting officer interviews. The questions were asked in the order shown on the guide, and the responses, which were of a subjective nature, were summarized by question to answer specific research questions associated with our research objectives.

Question # 1. How many proposals (solicited and unsolicited) did you submit to the Air Force during FY 79?

In order to classify the contractors interviewed, each interviewee was first asked the number of proposals submitted to the Air Force in FY 79. In every case, the number exceeded 100, enabling us to document the respondents' participation in government contracting and acquisition. The contractors interviewed were also listed by the PCOs as major aerospace contractors with which they frequently negotiated.

Question # 2. Of the proposals which were submitted, did any contain what you perceived to be state-of-the-art technology, which your competitors probably did not possess?

One hundred percent of the contractors interviewed stated that they do submit source selection sensitive data

to the government in their proposals. In all cases, the contractors believe that some of this information definitely contains technology beyond the capabilities of their competition.

Question # 3.a. Has the possibility that anyone may obtain copies of your technical proposals from the Air Force led you to refrain from submitting a proposal on a procurement which you otherwise would have bid upon?

Despite the earlier contention by the PCOs that the contractors are so eager for business that they would not even consider refraining from submitting a proposal, sixty percent of the industry respondents stated that they do refrain when they believe that success is predicated upon proper timing. An example would be a two-phase program in which the second phase is highly desirable. If a contractor believes that the revelation of technical data from the first phase may enable the competition to compete successfully on the second phase, the contractor may elect to wait for the second phase while continuing to develop its concept with IR&D (Independent Research & Development) money and technical information being developed during the first phase.

One contractor indicated that, while the possibility of release of technical data is not the sole reason for refraining from submission of a proposal, it contributes significantly to such a decision. This problem is not, he

continued, confined to the data of prime contractors. The contractors also stated that the technical data of subcontractors contribute to the dilemma. One respondent cited a case in which his company's inability to provide detailed information about a subcontractor's process caused his company to lose the competition even though he believed that the information was not required by the government in order to technically evaluate the proposal.

Question # 3.b. Has the possibility of release of your technical proposals led you to alter your final price in a procurement?

None of the contractors believed that the possibility of release of technical data has had an effect upon the final negotiated price on any of their contracts. This answer, however, is of special interest when compared to the answers to the c. portion of this question.

Question # 3.c. Do you perceive that the possibility of release of technical proposals has led your competition to alter their final price in a procurement?

Thirty percent of the interviewees believed that their competition does alter price in an attempt to recover a portion of the loss incurred by government release of technical data to competitors. They contended that this practice is more prevalent, in their opinion, for sole source and

parallel development programs. Without the threat of competition and the possibility of losing the contract due to price, the respondents believed that some of their competitors have included extra dollars in order to compensate for the loss of valuable technical data.

Question # 3.d. Has the possibility of release of your technical proposals substantially affected the negotiation time on procurements in which you submitted proposals?

Thirty percent of the contractors had experienced protracted negotiations due to a perception of insufficient protection for source selection sensitive data. These contractors, however, estimated that ten to twenty percent of the delays in negotiations are directly attributable to data questions. One contractor cited an example in which negotiations took so long that the funding was lost in a budget cut before agreement was reached. The program manager was so angry that the contractor expressed real concern that future competitions in which his company becomes involved, may be in jeopardy. He believed that a request for use of the clause entitled "Limited Rights in Technical Data" (DAR 7-104.9) is considered by government personnel to be an insult to their integrity.

The Limited Rights clause defines limited rights as rights to use, duplicate, or disclose technical data in whole or in part by or for the Government, with the express limitation that such

technical data may not be released outside the Government, or used, duplicated, or disclosed, in whole or in part, for manufacture or procurement, except for . . . and . . . released to a foreign government . . . [10:7:104-9].

The use of the clause is proposed by the contractor in its proposal to protect data developed at private expense.

Question # 4. Do you identify source selection sensitive material in your technical proposals through restrictive legend or other means?

The unanimous response to this question can be summarized in the words of one of the interviewees, "You're damned right we do!" However, even though the use of a restrictive legend seems relatively straightforward, problems arise here as well.

Inconsistencies between agencies seem to be widespread. The DAR calls for the use of a specific restrictive legend on each proposal page containing proprietary data. This legend can be found in DAR 3-507 and limits the government's right to use that data only for evaluation purposes. All of the contractors believed, due to discouraging comments from government personnel, that a proposal including several pages marked with the restrictive legend would be discriminated against during the technical evaluation phase of the acquisition. In order to avoid this demerit, the interviewees indicated several procedures for handling the problem:

(1) Gamble on the increased chances of winning a competition by not marking data considered to be proprietary and/or source selection sensitive;

(2) Include the restrictive legend for proposal purposes without requesting the limited rights clause in any resultant contract;

(3) Mark the source selection sensitive data "For Government Use Only" as a compromise. This alerts the government to the sensitive nature of the data without formally restricting their use; or

(4) Include both the restrictive legend and the limited rights clause in the proposal optimistic that they will not earn a demerit during the evaluation process.

The contractors also stated that some PCOs, as standard operating procedure, include a clause in their RFPs which forbids the use of the limited rights clause in any proposal. The use of such a clause will result in the proposal being declared non-responsive. Needless to say, the contractors resent this restriction by the PCOs.

Forty percent of the respondents mentioned that data rights disagreements often stem from a subcontractor's reluctance to allow the prime to share technical data with the government. The subcontractor's requirement to include the limited rights clause can place the prime in an impossible position.

The responses to this question served to indicate the level of incentives and/or protection currently offered

to the contractor in answer to research question 1.4. The remainder of the questions were designed to investigate research objective 2.0:

Develop a decision model which will prescribe the levels of incentives and/or protection which the government must utilize to assure alternative design concepts throughout the acquisition process.

Question # 5. Do you know of instances where the government has released technical proposals, or portions thereof, that you have submitted that contain what you consider proprietary technical information?

Fifty percent of the interviewees knew of specific cases in which source selection sensitive data were released to competitors. One of the cases was under the auspices of the Freedom of Information Act. The remainder of the examples cited were instances in which technical transfusion resulted from conscious or unconscious actions on the part of government personnel. These known cases coupled with rumors circulated in contracting circles appeared to be cause for great concern to the contractors interviewed.

Question # 6. Has the information that the Air Force released enabled another company to compete with you in procurements in which they could not compete prior to the release?

The same contractors that responded affirmatively to question # 5 believed that their competitive position had been damaged by the government release of source selection sensitive data. This concern explains the reluctance by sixty percent of the interviewees to submit technical proposals to the government unless they believed that the timing was right for a profitable award.

Question # 7. Is there a level of protection/incentives which the Government must offer before you will submit a proposal which contains source selection sensitive data?

All of the contractors qualified their answers to this question by indicating that some data are considered to be more sensitive than others. The relative sensitivity of the data, as well as the relative importance and timing of the solicitation, contributes significantly to the contractor's decision to submit a proposal. The greater the rewards associated with winning a contract, the greater are the risks the contractors are willing to take.

One hundred percent of the interviewees, however, suggested preferred government methods of protecting their source selection sensitive data in answer to research question 2.1. These methods include:

- (1) Allowing the usage of the limited rights clause in those instances involving data developed at private expense;

(2) Obtaining contractual government agreement not to release source selection sensitive data prior to formal source selection;

(3) Clearly stating an official government policy and vigorously enforcing it;

(4) Restricting reference to sensitive data for a period of two years;

(5) Handling sensitive contractor data in the same manner that contractors are required to handle classified material (use of hand receipts, return of all copies or destruction certificates, use of source selection sensitive cover sheets);

(6) Notifying contractors openly of any Air Force intention to use technical transfusion during fact finding; and

(7) Requiring all individuals handling the source selection sensitive data to sign written statements pledging secrecy.

Question # 8. Do you have any recommendations in regard to contractual instruments which the Government should employ or develop which would reduce any reluctance you may have to include state-of-the-art technology in your technical proposals?

The proper utilization of the limited rights clause was discussed by all of the contractors interviewed for

protection of data developed at private expense. The use of a contractual clause designed to protect source selection sensitive data prior to formal source selection was suggested by fifty percent of the respondents for data considered to be competition-sensitive but not developed at private expense. They suggested the development of a standard clause within the limitations of the DAR in response to research question 2.2.

Data Analysis

As discussed in Chapter 2, our purpose in obtaining the number of competing offers and the costs before and after negotiation for both groups of contracts was to determine if relationships exist between government ownership of source selection sensitive data and cost and competition. The relationship with time was to be considered in this analysis. However, it was found that a basis for comparison did not exist since all but one of the PCOs felt that their negotiations were of normal lengths.

The existence of relationships between the variables was tested through the use of the T-test described in detail in Chapter 2. In performing the test, we used the standard SPSS subprogram T-test. Therefore, test statistics were not computed manually; however, a listing of the applicable formulae for the tests is shown in Appendix E. In using this test, we established a data file of the information acquired during the PCO interviews and included

directly in the computer program. The file contained the number of cases (interviews) and consisted of three variables. The first data entry in each case was the number of competing offers. The second variable was the cost of negotiation which was computed as the difference between the contract cost estimated before negotiation and the cost after negotiation. The third entry signified the group to which the contract belonged; that is, A (1) signified contracts which had problems with source selection sensitive data while A (2) signified contracts in which data were not identified as a problem. For example, the data file for interview number one was as follows:

1 3.1 1

A complete listing of all data files, the programs used to run the T-tests, and the program output are contained in Appendix F.

The range in values for the competition variable was a low of (1) to a high of (8) in the group of contracts in which source selection sensitive data were not an issue. The group which had data problems received from (1) to (4) offers. As discussed earlier in this chapter, the number of contractors qualified to perform on a particular contract is believed to be more dependent on the type of system or item the Government was trying to buy than upon any other factor. The cost figures were also dependent upon the system involved

although to a lesser degree. Contracts which involved large production runs were more susceptible to decreases in cost following negotiation while those involving a smaller number of high technology, state-of-the-art, production items tended to increase cost. In the group of contracts in which source selection sensitive data were an issue the cost figures ranged from a low of (-1.5) million dollars to a high of (17) million dollars. One of the factors which increased costs was a number of additional people required to support parallel testing and evaluation which in one program amounted to (29) additional people and accounted for (3) million dollars in increased costs. Another factor which increased costs was the requirement for complicated interface documents which delineated contractors' responsibilities in the sharing of data. In one program, for example, the cost of preparing the interface document alone was over (60,000) dollars.

In the group of contracts in which data were not considered a problem, cost savings were evidenced in (7) out of (10) contracts. As seen in the data, the values for cost ranged from (-98) million dollars to (+.8) million dollars. The 98 million dollar figure was the savings resulting from negotiation of a large production contract and was rather unique due to its magnitude. While cost savings were realized in seven contracts in this group, as compared to only one in the group which experienced data problems, the task

was to determine if the difference was significant at the (90) percent level of confidence. The (90) percent level was chosen by the researchers as an appropriate level of risk for this research situation due to the subjective nature of the questions and the information we were attempting to capture.

The hypotheses used in both tests as stated in Chapter 2 were:

$H_0: \mu_2 - \mu_1 = 0$; no relationship exists

$H_1: \mu_2 - \mu_1 \neq 0$; relationship exists.

In order to use the T-test procedure some important assumptions must be made and were made in this research effort. The first was that the two populations from which the samples were drawn were normal or the departures were not too marked. The second assumption that was made was that the two populations had the same variance. Finally, independent random samples must be drawn from the two populations. As discussed in Chapter 2, we recognize that a purposive non-random sample limits the confidence with which we can make inferences to the populations of concern. Yet the samples were chosen with the intent to provide a reasonable cross-section of contract situations and will be treated as independent random samples for the purposes of these tests.

The first test performed was to test if a relationship existed between source selection sensitive data and the

number of offers received for the contract situations of concern. The α value used was (.10) since we are looking at a (90) percent confidence level. The test results are shown on page 2 of Appendix F. Since we have assumed equal variances, the pooled variance estimate was used in the interpretation of results. As seen in the results, there was little difference in the means of the two samples. The group of contracts that had no data problems had a mean of (3.0) while the group with data problems had (2.4) as the mean number of offers.

The first portion of the test for significance was to develop a confidence interval around the suspected difference between the means. The formulas used were:

$$L \leq \mu_2 - \mu_1 \leq U$$

where $L = \bar{D} - t(1-\alpha/2; n_1 + n_2 - 2) S(\bar{D})$

$$U = \bar{D} + t(1-\alpha/2; n_1 + n_2 - 2) S(\bar{D})$$

The two-tailed test was appropriate as called for in the hypotheses. For an $\alpha/2$ of (.05) and 18 degrees of freedom the critical value of t as listed in a statistical table of values was (1.734). The resulting confidence interval was $-.9337 \leq \mu_2 - \mu_1 < 2.1137$ which encompasses the value of \emptyset . As a result we could not reject the null hypothesis. We performed three more tests to insure that we had made the proper conclusion.

The second test that we made was a check of the probability values. The α for the test was (.10) and was

compared to the two-tailed probability taken from the computer output in Appendix F. Since the two-tailed probability in the test results was (.506), which was greater than the α of (.10), we once again concluded H_0 .

The third check was a comparison of the t value contained in the test results with a set of action limits. By referring to a statistical table of critical values for the t distribution, at an $\alpha/2$ of (.05) and (18) degrees of freedom, the critical value of t was determined to be (1.734). Thus, for a two-tailed test we could reject the null only if the test value fell outside the limits -1.734 to 1.734. As seen in the results, the value of the test statistic t^* is (.68) which is well within the limits. Figure 1 illustrates where the t^* value falls in the distribution and shows the action limits which have the t values:

$$A_1 = -1.734 \text{ and } A_2 = +1.734.$$

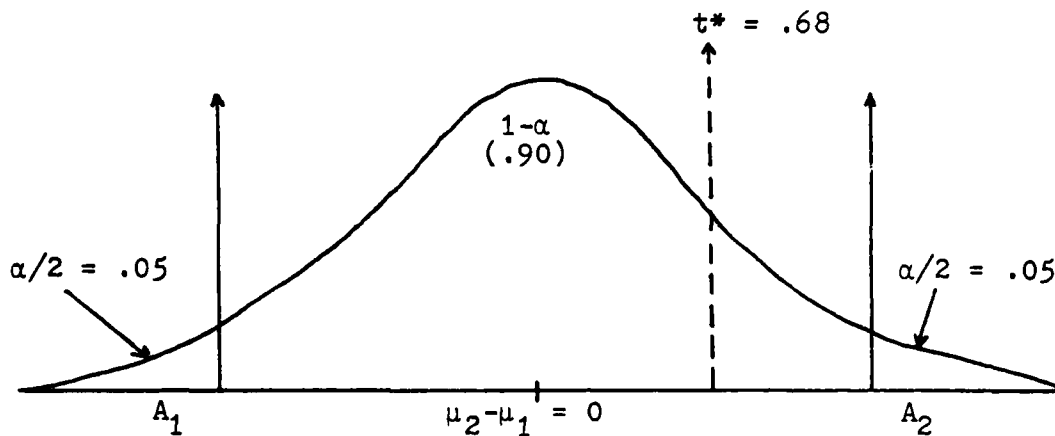
The final step was to check the results with a decision rule. The construction of the decision rule entailed the placement of the action limits as shown in Figure 1.

Thus the decision rule used was:

If $-1.534 \leq \bar{D} \leq 1.534$ conclude H_0

If $-1.534 > \bar{D}$ or $\bar{D} > 1.534$ conclude H_1

The calculated value of the difference of means is (.6) which, according to our decision rule, is within the action limits. Thus we must conclude H_0 , since there is insufficient



$$A_1 = \bar{D} - t(1-\alpha/2; n_1 + n_2 - 2) S(\bar{D})$$

$$A_1 = -t(.95; 18)(.8845)$$

$$A_1 = -1.534$$

$$A_2 = \bar{D} + t(1-\alpha/2; n_1 + n_2 - 2) S(\bar{D})$$

$$A_2 = + t(.95; 18)(.8845)$$

$$A_2 = 1.534$$

Figure 1. Competition Test

evidence to suggest that at the (.10) level of significance a relationship exists between source selection sensitive data and the level of competition of the populations of concern.

The second relationship which we tested was to determine if a statistically significant difference existed between the costs of negotiation of the two groups of contracts. The test results for cost are displayed on page 3

of Appendix F. The same tests were performed during the interpretation of the cost results as were used in the level of competition analysis. The difference in means between the two groups was calculated to be (-18.572) million dollars.

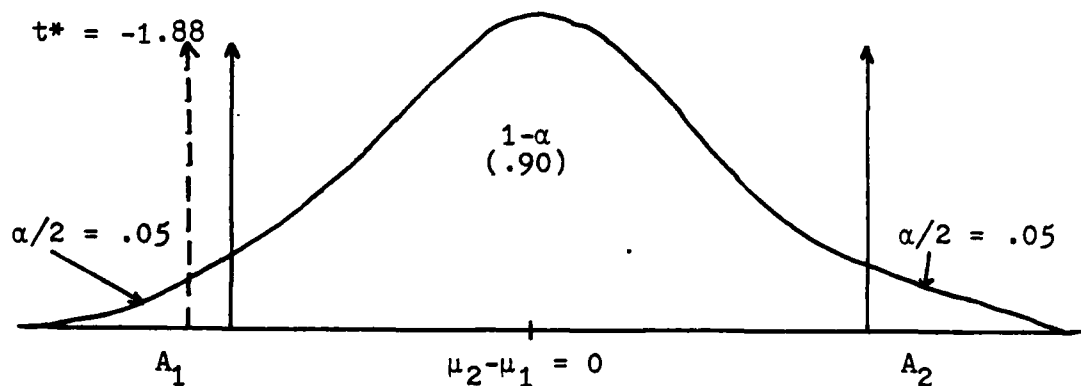
The development of a 90 percent confidence around the expected difference between the two means was the first step in the test for significance. Again, a two-tailed test was appropriate. Thus, the formulas previously used for calculating the confidence interval for the number of offers were used in this case. From a statistical table of values for the t distribution we obtained for an $\alpha/2$ of (.05) and (18) degrees of freedom a critical value of (1.734). The resulting confidence interval with a mean difference of (-18.572) was $-35.698 \leq \mu_2 - \mu_1 \leq -1.445$. Since the 90 percent confidence interval does not encompass the value of \emptyset we rejected the null hypothesis (H_0). However, three more steps were taken to check our conclusion.

A test of probability values was the second step of our test of significance. The α for this test was (.10) which was compared to the two-tailed probability contained in the pooled variance estimate portion of the results on page 3 of Appendix F. The value calculated was (.076). Since the test value of (.076) was less than the α of (.10) we concluded H_1 again.

The third check involved comparison of the value of the test statistic with a set of action limits. The critical

value of t for $\alpha/2$ of (.05) and (18) degrees of freedom was (1.734). We could reject the null hypothesis only if the value of the test statistic t^* fell outside the critical action limits of $A_1 = -1.734$ and $A_2 = +1.734$. The value of t^* as shown in the results was (-1.88). Thus we can reject the null since the test statistic was found to be less than action limit A_1 . Figure 2 depicts where t^* fell within the \bar{D} distribution.

The final step was the construction of the decision rule. Figure 2 shows the calculations of the action limits.



$$A_1 = \bar{\mu} - t(1-\alpha/2; n_1 + n_2 - 2) S(\bar{D})$$

$$A_1 = -t(.95; 18)(9.877)$$

$$A_1 = -17.127$$

$$A_2 = \bar{\mu} + t(1-\alpha/2; n_1 + n_2 - 2) S(\bar{D})$$

$$A_2 = + t(.95; 18)(9.877)$$

$$A_2 = +17.127$$

Figure 2. Cost Test

Thus the decision rule used was:

If $-17.127 \leq \bar{D} \leq 17.127$ conclude H_0

If $-17.127 > \bar{D}$ or $\bar{D} > 17.127$ conclude H_1

The calculated difference in means, as stated previously, was (-18.572). Thus we again can reject H_0 and conclude H_1 since $\bar{D} \leq -17.127$. The test results have indicated that we can be 90 percent confident that a relationship exists between the presence of source selection sensitive data problems during contract negotiations and increased costs for those negotiations. For the contracts which we studied there was a mean difference of over 18 million dollars between those contracts which experienced source selection sensitive data problems and those that had no such problems. We found that the mean number of offers received in contract situations in which source selection sensitive data were not a problem was higher than contract situations which had data problems. However, we found that, at the 90 percent level of confidence, the difference was not statistically significant. Thus we could not determine that a relationship existed.

Model Development

As discussed in Chapter 2, the data acquired and analyzed as part of the Phase I effort were considered in the construction of a decision model. The decision model, in the form of a clause designed to protect contractors'

source selection sensitive data prior to formal source selection was developed consistent with a consensus of the recommendations obtained during the interviews. The contractors' definitions of "adequate" incentives and the limits of incentives and protection which the government can offer to contractors assisted in the formulation of a contractual clause.

The decision model developed for Phase II of the research effort is embodied in the following clause:

In the event an exchange of information/data during the conduct of this contract results in access to source selection sensitive data, the Government hereby agrees not to utilize such data to acquire from others improved designs or components prior to formal source selection.

Test of the Model

To test the decision model, the ten contractors were asked to review the clause and provide comments on its perceived effect upon past negotiations in which data problems had surfaced. The contractors' subjective comments were then analyzed to determine the perceived impact of the clause on the level of competition and the time/cost of negotiations. The results of the Phase II data collection and analysis are presented below.

Decision Model Test Results

As discussed earlier, the model clause was developed incorporating the suggestions of eighty percent of the contractors interviewed.

In the event an exchange of information/data during the conduct of this contract results in access to source selection sensitive data, the Government hereby agrees not to utilize such data to acquire from others improved designs or components prior to formal source selection.

The model was then tested by asking the industry representatives to consider the perceived impact of the clause upon the level of competition and the time and cost of the negotiation process. Two basic questions, research questions 3.1 and 3.2, were asked.

Research Question 3.1. Would the use of the incentives and/or protection required by the decision model have resulted in greater assurance of alternative design concepts through increased competition?

There was general agreement among the respondents that the use of the model would not have any significant impact on a contractor's decision to submit a proposal in response to an RFP. If the model clause was contained in the RFP, the decision to submit would still be dependent on the relative timing and value of the proposed program effort. At the proposal stage, the contractors are more concerned about the engineering personnel involved in the technical evaluation than about the PCO. While none of the interviewees objected to the inclusion of the clause, none perceived any real benefit. Sixty percent mentioned the perception that the engineering goal is to pursue the development of the best possible product often to the point of,

consciously or unconsciously, participating in technical transfusion. One contractor even stated a belief that conscious experiments have been conducted to assess the advantages and disadvantages of technical transfusion. The general consensus of opinion was that little would be gained by the use of the model at the RFP stage because few technical personnel read the RFP that closely.

Research Question 3.2. Would the use of the model have decreased the time and cost of the negotiation process?

Sixty percent of the contractors perceived that use of the model during negotiations would have decreased the length of the negotiation process. The introduction of the clause would have been considered an act of good faith on the part of the government. Although its real value and enforceability were considered suspect, to question its contribution would be to question the integrity of the government personnel involved in the decision-making process as well as the technical effort itself. In a competitive atmosphere, this could result in a demerit.

Another benefit associated with the use of the model is the introduction of the government policy into the negotiation process while all concerned personnel, including the technical staff, are present. The contractors, in general, had very little complaint about the official government policy regarding source selection sensitive data, e.g.,

the confidential treatment of data submitted to the government for evaluation. However, they felt that the proper implementation of the policy is neglected at lower levels in varying degrees.

Although the general consensus of contractor opinions did not reflect a belief that the final negotiated contract price was affected by the submission of source selection sensitive data in our initial Phase I interviews, our research findings indicated that a relationship does exist. The interviewees were questioned again in Phase II to determine if the use of the model clause would result in the decreased cost of the negotiation process. There was general agreement among the contractors that a decrease in the length of negotiations would result in a decrease in the cost as well. The rationale behind this perception is the belief that, if the contractor becomes involved in protracted negotiations as the result of a disagreement about source selection sensitive data, the contractor may not be as agreeable about price negotiations. Another general conclusion of the interviewees is that time is money in a major weapons system acquisition. Many high level individuals are tied up; travel expenses are costly; and the acquisition of necessary equipment is delayed. Also, the result of a lengthy negotiation may be a more costly solution designed to protect the data. These views were expressed by only thirty percent of the contractors, however.

Chapter 4

FINDINGS AND RECOMMENDATIONS

This chapter discusses our overall findings and how they related to the research objectives and questions, our recommendations for a policy designed to protect source selection sensitive data, other related observations, and our recommendation for further study.

Achievement of Objectives/ Questions

The results of this research effort only partially met our objectives. The first objective was to determine the relationships between the government ownership of source selection sensitive data, the level of competition, the time/cost of the negotiation process, and the level of incentives. This study revealed that:

(1) a relationship between sensitive data and a decreased level of competition does appear to exist; however, for the purposes of this research effort, the relationship was determined to be insignificant due to our decision to statistically test the data at the 90% confidence level. This decision does not prove that no relationship exists.

(2) a relationship cannot be measured between government ownership of sensitive data and the length of time

required for the negotiation process without the implementation of procedures designed to capture more detailed information about some key dates during negotiations;

(3) a definite direct relationship does exist between the acquisition of source selection sensitive data and increased costs associated with the negotiation process; and

(4) an increased level of incentives/protection does increase government acquisition of source selection sensitive data by decreasing the contractor's reluctance to share such data with the government.

This first objective was met with the exception of the measurement of time required for negotiation. The difference of opinions between the PCOs and the contractors in this area, coupled with the contractor perception that the use of the decision model would result in a decreased time for negotiations, led to our belief that this area warrants further study. More detailed information about the time involved in the negotiation process could be captured on future acquisitions in order to determine the validity of the PCO and contractor perceptions.

The second objective was to develop a decision model which would prescribe a level of incentives and/or protection which the government must utilize to assure more willingness on the part of the contractor to share alternative design concepts throughout the acquisition process. Based upon the responses of the interviewees during Phase I, we did develop a model in the form of a clause used during Phase II of the research.

The third objective was to test the model to determine if its use resulted in a perceived increase in the level of competition and decrease in the time/cost of negotiations. During Phase II of the research, we did test the model. Although a majority opinion was obtained, the results were evaluated against the background of the subjective nature of the responses. Based upon this analysis, we believe that the use of our model would result in a decrease in the time of negotiation. This, in turn, could result in a decrease in the cost of negotiation; however, this area warrants further study. Our research indicates that a decrease in the length of the negotiation process may result in a decrease in cost. More data should be collected to determine whether such a relationship does exist. However, first it would be necessary to capture more detailed data on the times associated with negotiations.

Findings

Our research was approached with the intent of collecting enough data to support or refute our a priori expectations. Our findings tended toward support of some expectations and refutation of others. A summary of these findings includes:

- (1) AFSC PCOs and contractors appear to have significant differences of opinion regarding the impact of government ownership of source selection sensitive data on competition and negotiations.

(2) Government ownership of source selection sensitive data does significantly impact contractor decisions throughout the entire acquisition process.

(3) The level of incentives/protection offered by the government does affect the contractor's willingness to share sensitive data with the government.

Recommendations for Management
Action

In addition to our research findings, several observations were derived from the comments of the interviewees:

(1) AFSC should critically examine its policy regarding sensitive data. Some PCOs are forbidding the use of the limited rights clause in contractor proposals with a penalty of a declaration of nonresponsiveness for any violation.

(2) Earlier participation of the contractors at the Mission Element Needs Statement (MENS) stage should result in increased data-sharing by the contractors.

(3) Proper use of draft RFPs increases the visibility of potential data problems prior to the solicitation, creating the opportunity to solve any disagreements before becoming involved in a lengthy, and costly negotiation.

(4) Source selection procedures should strive for the highest level of secrecy possible, limiting the individuals involved to as few as absolutely necessary.

(5) PCOs should adhere to the "private expense" test for determination of limited rights calling upon the Administrative Contracting Officer (ACO) and auditor to verify that funds were actually expended for development of the data in question.

Significance of Findings

Test results of the model clause confirmed our a priori expectations. As mentioned earlier, of the contractors interviewed, sixty percent were aware of specific instances of data problems which led to decreased competition, increased time, or increased cost associated with negotiations. After testing the model, six of the contractors perceived that use of the clause would have had a favorable impact on the resolution of the contractor's specific data problems. Although the results were not dramatic, our research indicates that a level of incentives and protection does exist which is capable of impacting the contractor's decision to share source selection sensitive data with the government.

Recommendations for Further Study

During our research effort, our model was tested on a minimum number of contractors by using their subjective judgment. As a result of this preliminary research, it should now be possible to measure PCO and contractor opinions less subjectively. This, in turn, would open the door to additional statistical treatments which could provide

insight into this system, e.g., the inferred existence and nature of additional relationships. The decision model could be refined by developing alternative clauses. These clauses could then be ranked. This ranking process could be accomplished in the following manner:

(1) Several clauses could be developed using the suggestions and observations of this research effort. These clauses would provide a basis for the recommendations of future interviewees.

(2) A 7- or 9- point Likert scale could be developed to weigh each clause against the other clauses or against its contribution to the level of competition and the time/cost of the negotiation process.

(3) A questionnaire could be developed in order to provide a larger sample comprised of PCOs, contractors, and attorneys.

In addition, a procedure could be developed to capture more detailed information regarding the length of the actual negotiation process and/or the time consumed on data problems per se.

Related Findings

Another area related to source selection sensitive data is the area of limited rights. AFSC applies the official government policy regarding limited rights inconsistently. This seems to be partially due to a difference in

interpretation and partially due to a combined zeal for data and search for an easy way out of data disagreements. This area, too, warrants further study.

APPENDICES

APPENDIX A
LETTER FROM HQ/AFLC/JANO

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE LOGISTICS COMMAND
WRIGHT-PATTERSON AIR FORCE BASE OHIO 45433



REPLY TO
ATTN OF: JANO

24 MAY 1978

SUBJECT: Suggested Research Topic

TO: AFIT/LSGM (Lt Col Larry Smith)

1. This is in response to your request for research topics in the May issue of the NCMA (Dayton Chapter) Newsletter. It is suggested that you examine the appropriate strategies, tactics and procedures for handling data that is generated under contracts during long-term parallel development programs where the data is sensitive with respect to those competitions.

2. For example, the Air Force is currently conducting the Design Definition Phase of the Cruise Missile Carrier Aircraft Program (CMCA). There are three contractors participating in this phase. All three of these contractors are manufacturers of wide bodied commercial aircraft, Boeing, Lockheed and McDonnell Douglas.

There are two concerns with data. The Air Force would like to use all the information provided under these contracts to produce the RFP's for the following contracts and in the source selections resulting from those RFP's. Much of this data is data initially generated for their commercial aircraft programs. Since the contractor's wish to protect their perceived competitive edge in the commercial programs as well as the CMCA program they are reluctant to grant the Air Force substantial rights in this data.

Compounding this problem is the existence of the Air Launched Cruise Missile (ALCM) Competitive fly-off Program. Boeing and General Dynamics (GD) are building missiles for that program and, McDonnell Douglas is providing the navigation/guidance package. GD and McDonnell Douglas are reluctant to provide missile and guidance information to Boeing even though Boeing needs that information in order to modify the B-52 launch aircraft.

All of the contractors on the ALCM fly-off Program are reluctant to release data to the CMCA contractors.

This is one small look at a set of interlocking, competitive programs which stretch over a multi year period. As OMB Circular A-109 receives more attention this problem will become more acute. It is vital that the Air Force identify the appropriate procedures strategies and tactics to deal effectively with these problems as soon as possible.

3. If you desire additional information with respect to this recommendation please feel free to contact Captain C. Brandon Gresham Jr., extension 55270.

FOR THE COMMANDER



JOHN A. CIUCCI, Lt Col, USAF
Chief, Procurement Opinion Division
Directorate of Procurement Law
Office of the Staff Judge Advocate

APPENDIX B
LETTER TO INTERVIEWEES

DEPARTMENT OF THE AIR FORCE
AIR FORCE BUSINESS RESEARCH MANAGEMENT CENTER (ATC)
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433



You have been selected, as a contracting officer (industry representative) to participate in an Air Force Institute of Technology (AFIT) research thesis on the relationships of source selection sensitive data to the level of competition and the time/cost of negotiation efforts in a major systems contract process. The objective of this research thesis is to develop a decision model which will predict the levels of incentives and/or protection which the government must utilize to insure increased levels of competition and decreased time/cost of negotiations.

Within the next three weeks, Ms. Linda Allen or Captain Michael J. Hubert will contact you to arrange for a convenient time for a personal interview with you on this subject. The interview will last approximately one hour and will follow the attached interview guide. Since the validity of the research results will depend, in part, on the independence of the responses, please do not discuss the interview questions with others in your office. Your responses will be kept confidential. All responses will be reported by categories only so that no specific response will be attributed to any individual.

This research effort is in response to research needs of the Air Force Business Research Management Center and the AFLC Judge Advocate General's office both at Wright-Patterson AFB, Ohio. Questions regarding the interview should be directed to: Captain Michael J. Hubert or Ms. Linda Allen, AFIT/LS, Area Code 513-255-6569 or 513-879-1167.

Your cooperation and support of this effort would be greatly appreciated.

A handwritten signature in cursive script, reading "Martin D. Martin", is positioned above the typed name.

MARTIN D. MARTIN, Col, USAF
Executive Director

1 Atch
Interview Guide

APPENDIX C
INTERVIEW GUIDE FOR CONTRACTING OFFICERS

AD-A087 220

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OH SCHOOL--ETC F/6 15/5
THE RELATIONSHIP OF SOURCE SELECTION SENSITIVE DATA TO COMPETIT--ETC(U)
JUN 80 L K ALLEN, M J HUBERT

UNCLASSIFIED

AFIT-LSSR-3-80

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1. How many offers did you solicit on this procurement and to which contractors were RFPs issued?

2. How many offers did you receive?

3. How many days elapsed between receipt of purchase request to contract award in this procurement?

4. What is the average length of negotiation time for similar contracts?

5. What was the engineering estimate of the contract cost contained in the purchase request?

6. What was the actual negotiated contract cost?

7. Of the technical proposals submitted, were any identified as containing source selection sensitive material?

Yes _____ No _____

If yes, can you give some examples?

8. Have you detected a reluctance on the part of contractors to submit technical proposals containing their state-of-the-art technology?

Yes _____ No _____

If yes, how did you detect this reluctance?

9. Have any contractors discussed with you the problem of disclosure of their technical proposals which could contain state-of-the-art technology?

Yes _____ No _____

If yes, what were their ideas?

10. Have you experienced difficulty evaluating technical proposals in which the contractor has apparently withheld some technical information?

Yes _____ No _____

If yes, please give examples.

11. Do you feel that your source selection was affected by a contractor's reluctance to reveal technological information in his proposal?

Yes _____ No _____

If yes, please explain how your source selection was affected, especially in terms of time and cost.

12. If you knew that a contractor withheld technical information from his technical proposal would this lessen his chances of winning the contract?

Yes _____ No _____

If yes, please explain.

13. Do you feel that you can offer contractors the level of incentives and protection necessary to insure that state-of-the-art technology is included in their technical proposals?

Yes _____ No _____

If no please explain what incentives/protection are necessary to insure this.

14. Are there any comments you would like to make concerning contractor technical proposals and the withholding of some technical information/capability from those proposals?

15. Do you have any recommendations in regard to specific contractual instruments which could be employed or developed to insure state-of-the-art technology is not withheld from technical proposals?

APPENDIX D
INTERVIEW GUIDE FOR CONTRACTORS

1. How many proposals (solicited and unsolicited) did you submit to the Air Force during FY 1979?

2. Of the proposals which were submitted, did any contain what you perceived to be state-of-the-art technology which your competitors probably did not possess?

Yes _____ No _____

3. a. Has the possibility that anyone may obtain copies of your technical proposals from the Air Force led you to refrain from submitting a proposal on a procurement which you otherwise would have bid upon?

Yes _____ No _____

b. Has the possibility of release of your technical proposals led you to alter your final price in a procurement?

Yes _____ No _____

c. Do you perceive that the possibility of release of technical proposals has led your competition to alter their final price in a procurement?

Yes _____ No _____

d. Has the possibility of release of your technical proposals substantially affected the negotiation time on procurements in which you submitted proposals?

Yes _____ No _____

4. Do you identify source selection sensitive material in your technical proposals through restrictive legends or other means?

Yes _____ No _____

If yes, what type of material do you consider source selection sensitive material?

5. Do you know of instances where the Government has released technical proposals, or portions thereof, that you have submitted that contain what you consider proprietary technical information?

Yes _____ No _____

6. Has the information that the Air Force released (Refer to question 5) enabled another company to compete with you in procurements in which they could not compete prior to the release?

Yes _____ No _____

7. Is there a level of protection/incentives which the Government must offer before you will submit a proposal which contains source selection sensitive data?

Yes _____ No _____

If yes, please define that level of protection/incentives which you require or deem adequate and give examples.

8. Do you have any recommendations in regard to contractual instruments which the Government should employ or develop which would reduce any reluctance you may have to include state-of-the-art technology in your technical proposals?

APPENDIX E
APPLICABLE FORMULAE

$$E(\bar{D}) = \mu_2 - \mu_1$$

$$S_c^2 = \frac{(n_1-1)S_1^2 + (n_2-1)S_2^2}{(n_1-1) + (n_2-1)}$$

$$S^2(\bar{D}) = S_c^2 \left(\frac{1}{n_2} + \frac{1}{n_1} \right)$$

$$\frac{\bar{D} - (\mu_2 - \mu_1)}{S(\bar{D})} = t(n_1 + n_2 - 2)$$

where: μ_1 = the mean of the group of contracts that had data problems

μ_2 = the mean of the group of contracts that had no data problems

n_1 = sample of data problem contracts

n_2 = sample of no data problem contracts

S_c^2 = pooled variance estimator

\bar{D} = point estimator of difference of two sample means

$S^2(\bar{D})$ = variance estimator of \bar{D}

APPENDIX F
COMPUTER PROGRAM AND OUTPUT

```

0010##S,R(SL) : ,8,16; , ,16
0020$: IDENT:WP1186, AFIT/LS HUBERT/ALLEN
0030$: SELECT: SPSS/SPSS
0040$: PRMFL: DT, W, S, 80A065/SPOUT
0050RUN NAME: T-TEST COMPARISON OF MEANS
0060VARIABLE LIST; COMP, COST, GROUP
0070INPUT FORMAT; FREEFIELD
0080N OF CASES; 20
0090VAR LABELS; COMP, NUMBER OF COMPETING OFFERS/
0100; COST, COST OF NEGOTIATION PROCESS IN MILLIONS/
0110; GROUP, CONTRACT GROUP
0120VALUE LABELS; GROUP (1) CONTRACTS WITH DATA PROBLEMS/
0130; (2) CONTRACTS WITHOUT DATA PROBLEMS
0140T-TEST; GROUPS=GROUP (2)/VARIABLES=COMP
0150READ INPUT DATA
0160 1 3.1 1
0170 2 17 1
0180 2 17 1
0190 3 0.06 1
0200 3 0.1 1
0210 3 0.28 1
0220 2 -1.5 1
0230 4 0.5 1
0240 2 6.8 1
0250 2 12.2 1
0260 8 0.05 2
0270 1 -98 2
0280 1 -10 2
0290 1 0.8 2
0300 1 -.33 2
0310 7 -6 2
0320 1 -16 2
0330 4 -0.5 2
0340 4 -0.7 2
0350 2 0.5 2
0360T-TEST; GROUPS=GROUP (2)/VARIABLES=COST
0370FINISH
0380$END JOB

```

SPSS T-test Program

----- T - T E S T -----
 GROUP 1 - GROUP GE 2.
 GROUP 2 - GROUP LT 2.

VARIABLE	NUMBER OF CASES	MEAN	STANDARD DEVIATION	STANDARD ERROR	F VALUE	2-TAIL PROB.
COMP	NUMBER OF COMPETING OFFERS					
GROUP 1	10	3.0000	2.667	0.843	10.00	0.002
GROUP 2	10	2.4000	0.843	0.267		

POOLED VARIANCE ESTIMATE			SEPARATE VARIANCE ESTIMATE		
T VALUE	DEGREES OF FREEDOM	2-TAIL PROB.	T VALUE	DEGREES OF FREEDOM	2-TAIL PROB.
0.68	18	0.506	0.68	10.78	0.512

Test Results For Competition

----- T - T E S T -----

GROUP 1 - GROUP	GE	2.					
GROUP 2 - GROUP	LT	2.					

VARIABLE	NUMBER OF CASES	MEAN	STANDARD DEVIATION	STANDARD ERROR	F VALUE	2-TAIL PROB.

COST	COST OF NEGOTIATION PROCESS IN MILLIONS					
GROUP 1	10	-13.0180	30.374	9.605		
GROUP 2	10	5.5540	7.279	2.302	17.41	0.000

POOLED VARIANCE ESTIMATE			SEPARATE VARIANCE ESTIMATE		
T VALUE	DEGREES OF FREEDOM	2-TAIL PROB.	T VALUE	DEGREES OF FREEDOM	2-TAIL PROB.
-1.88	18	0.076	-1.88	10.03	0.089

Test Results For Cost

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