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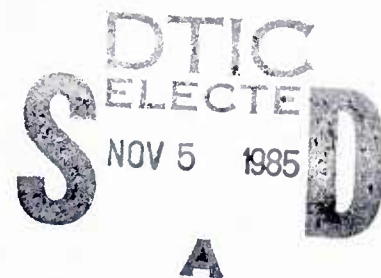
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IDENTIFICATION OF NEGOTIATION TACTICS AND
STRATEGIES OF AIR FORCE CONTRACT NEGOTIATORS

THESIS

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IDENTIFICATION OF NEGOTIATION TACTICS AND STRATEGIES
OF AIR FORCE CONTRACT NEGOTIATORS

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

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Robert M. Catlin

Bernard J. Faenza

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Abstract

This research determined the negotiating tactics and strategies used most often by 278 Air Force Systems Command contract negotiators. Thirty-three tactics and ten strategies were presented to the negotiators to rank in order of frequency used. The negotiators were also asked to rank the strategies by preference under five controlling variables: contract type, dollar amount, type of action, type of program, and degree of competition.

The survey questionnaire method was used to gather data from Air Force Systems Command buying divisions at Hanscom AFB MA, Eglin AFB FL, Wright-Patterson AFB OH, and Los Angeles AFS CA. The data was analyzed using the Statistical Package for the Social Sciences (SPSS) software program employing Kendall-W Coefficient of Concordance and Kendall-Tau Rank Correlation Coefficient non-parametric statistical tests. The Kendall-W tested the sample population for overall consensus on strategies. The Kendall-Tau test was used to test for agreement between paired ranking sets from various demographic groups. Frequency distributions were analyzed to determine the most preferred strategies in the five different contract situations.

The analysis of the negotiating tactics used by AFSC contract negotiators and those the respondents indicate defense contractors use implies the prevalence of an antagonistic negotiating atmosphere. Among all respondents, Bottom Line strategy is the most frequently

used and most preferred of the ten strategies presented. The research also found that neither education, experience, military or civilian status, sex, or formal negotiating training appears to influence the ranking of the ten strategies. Fixed-price and low value contracts appear to influence the selection of Bottom Line strategy, while cost-reimbursement and high value contracts influence increased selection of Statistics and Participation strategies. Experience with sole source contracts was more extensive than with competitive contracts. Finally, a significant number of respondents had no experience with complex contract types or large dollar value contracts.

IDENTIFICATION OF NEGOTIATION TACTICS AND STRATEGIES
OF AIR FORCE CONTRACT NEGOTIATORS

I. Introduction

General Issue

The Department of Defense (DOD) portion of the \$851.8 billion in federal budget outlays for fiscal year (FY) 1984 was \$227.4 billion or approximately 26.7 percent (10:68,74). Entrusted with a sizable portion of the federal budget are government purchasing agents and/or contracting officers who buy the aircraft, missiles, and supplies for our national defense. DOD procurement, as an extension of the public trust, has been scrutinized and criticized in the press and the Congress through highly publicized revelations of cost overruns on major projects and exorbitant prices for items, such as \$700 "toilet seats" and \$7,000 "coffee makers." The criticism of DOD procurement practices shrouds the public trust with suspicions of contractor price gouging and government purchasing incompetence. The question: "How can taxpayers be sure they are getting their money's worth?" forms the nucleus for public concern and criticism.

One answer to this question is that competition is the best means to ensure both quality and economy in government purchasing.

A significant proportion of government contracts involve negotiation, and many are awarded to sole source suppliers. Competition relies on "free enterprise" market forces to determine the fairest and overall lowest prices. In negotiations, on the other hand, the final price is determined more by the strategies, tactics, and personal skills of the government and contractor contract negotiators. Until 1 April 1985, the Federal Acquisition Regulation (FAR) clearly stipulated that competition (i.e., formal advertising -- now called "sealed bids") was the preferred method of contracting. However, trends toward more sophisticated and expensive weapons systems, a shrinking defense industry, and an increased urgency to meet military threats have made the "sealed bids" method impractical, if not impossible in some cases.

Public Law 98-369, the Competition in Contracting Act (CICA) of 1984, raised negotiations of contracts (now called "competitive proposals") from a secondary choice, subordinate to sealed bids, to one equally acceptable as a legitimate competitive process. The FAR incorporates this part of the law as follows:

The competitive procedures available for use in fulfilling the requirements for full and open competition are as follows: (a) Sealed Bids (See 6.401(a.)), (b) Competitive Proposals (See 6.401(b.)) [3:Part 6,6-1].

This change places increased importance on DOD negotiators' skills and the strategies they use in procuring multi-billion dollar weapon systems. It is during negotiations, when DOD contract specialists go head-to-head with highly skilled contractor negotiators, that those billions of dollars are committed to the purchase of military weapons and supplies.

The negotiation process, then, provides the framework in which the public's trust in government to spend money wisely is either validated or not. This public trust is upheld when the government pays fair and reasonable prices for military items.

Specific Problem

Within the Air Force, formal, comprehensive training of contracting personnel in negotiating tactics and strategies does not exist. Although a U.S. Navy workshop is available to Air Force personnel, work schedules and demand for the course limit the number of Air Force contracting personnel who can attend. It appears that contracting personnel are left on their own to learn negotiating tactics and strategies, primarily through trial-and-error experience gained through actual negotiations and only minimal coverage of the topic on other required training courses.

The literature search found that the great bulk of books, articles, and research reports on negotiations deal with the social and psychological aspects of negotiations. Sources were not found that specifically identified the tactics and strategies Air Force contract negotiators use, although several authors discuss tactics and strategies from a very general point of view.

Background

A literature search was conducted using Air Force Institute of Technology (AFIT) library facilities, the Defense Technical Information Center (DTIC), and the Defense Logistics Studies Information Exchange

(DLSIE). As a result, the following categories have been assigned to the literature on negotiations:

Category I: General Negotiations. These publications, consisting of books, journal articles, and research papers, deal with negotiations from a broad viewpoint and cover many aspects of negotiations, but do not concentrate on any specific facet of negotiations.

Category II: Qualifications of Negotiators. Writings in this category deal specifically with the personal characteristics, education, and experience level desired of contract negotiators.

Category III: Negotiation Strategies. This third category of literature deals specifically with the topic of strategies used in negotiations.

An analysis of the literature search supports the contention that few formal writings on negotiation strategies exist and that further research of the literature and of the experience of active contract negotiators will be beneficial.

Objective

The objective of this research is to identify and assess the tactics and strategies used by Air Force contracting personnel in negotiations with defense contractors.

Research Questions

This research is exploratory and, therefore, does not test hypotheses about either current literature or perceptions of Air Force contract negotiators. The following research questions are answered by this research:

1. What does current literature and theory say about negotiating tactics and strategies?

2. What negotiation strategies do Air Force negotiators use and how do these tactics and strategies compare with current literature?

Investigative Questions or Tasks

The following questions and tasks refer to the research questions listed above.

Current Literature.

1. Review the literature on negotiations.
2. Describe any differences or trends in the literature concerning the concept of negotiation.
3. Which literature specifically addresses negotiation strategies as defined in this research?
4. Describe the type of literature reviewed (formal, commercial, research study, etc.)

Negotiation Strategies.

1. What proportion of Air Force Systems Command negotiators indicate they have attended a negotiations workshop or some other formal negotiations training?
2. Which tactics do Air Force Systems Command negotiators use most frequently?
3. Which tactics do Air Force Systems Command negotiators indicate as most often used by DOD contractors?
4. What strategies do Air Force Systems Command contract negotiators use most often?

5. What are the strategies used under specific contract situations?
6. What differences in the ranking of strategies exist among Air Force Systems Command contract negotiators based on education level, military or civilian status, years of contracting experience, sex, and whether or not they have received formal negotiating training?

The answers to these six questions are intended to provide contracting managers insight into the negotiation process within their organizations.

Principal Terms and Definitions

The concept of negotiation, while commonly thought of as a process or event, is represented in the literature in many contexts and perceptions. The following terms are defined explicitly for the purposes of this research to focus on the specific problem previously described.

Negotiations, Negotiating, Negotiate: For this research these terms describe the discussions or bargaining between Air Force and industry representatives in order to reach agreement on type, number, and price of military items, and the terms and conditions of the contract, including those relating to legal rights and obligations, delivery, payment, disputes, remedies, and others prescribed by law and/or specifically consented to by both parties.

Military Items: For this research a military item is any product or service, whether or not specifically designed for military purposes,

which is included under the agreement reached between the Government and the contractor.

Strategy: This term means a specific plan designed to achieve some overall objective. Strategic planning involves determining your overall objective(s) before the detailed methods to be employed (tactics) are selected. A strategy may be an individual tactic or an accumulation of tactics employed in negotiations.

Tactic (Technique): For this research a tactic is a particular act or deliberate omission employed to support a predetermined strategy. For example, conceding on minor issues is a tactic generally used to stimulate concessions from the other negotiator, while deliberately avoiding answering a question may be designed to stall the negotiations or test the patience of the other side.

Procurement, Contracting: For this research these terms are used interchangeably because the DOD change in the late 1970s from procurement to contracting was a policy change in terminology and not definition.

II. Literature Review

Overview

The purpose of the literature review is to examine the availability of formal writing on the subject of negotiating tactics and strategies by reviewing current literature on this subject. The survey of literature included formal and informal writings, books, journal or magazine articles, and research papers and theses. The literature search was conducted through the Air Force Institute of Technology (AFIT).

The AFIT School of Systems and Logistics library has access to a wide range of literature on the topic of negotiations through DTIC and DLSIE as well as through its own resources. A research of the AFIT, DTIC and DLSIE publications sources was conducted keying on the terms "negotiations," "contract negotiations," and "negotiated contracts." From this search approximately 100 documents were identified and then reduced to approximately 25 publications that specifically deal with the subject of negotiations. Since the purpose of the literature search was to identify writings about negotiating tactics and strategies, the 25 selections were reduced to approximately 11. These 11 selections were then assigned to either Category I (General), Category II (Negotiator Characteristics), or Category III (Negotiating Tactics and Strategies). These publications are reviewed in some detail;

however, the remaining articles were "screened out" and are not reviewed.

Literature Categories

Category I: General Negotiations. Publications in Category I discuss negotiations or negotiating tactics and strategies in a general manner. The authors of these writings do not, by and large, treat tactics and strategies within specific settings or under varying negotiation environments in detail. Although writings in this category mention certain tactics or strategies, they do not provide in-depth analysis or discourse on how and when to use them in given situations. Other writings in this category deal with negotiations and negotiating tactics and strategies from a strictly psychological and sociological viewpoint. This viewpoint concentrates on the mechanics and motivation behind the behavior exhibited during negotiation processes. Nirenberg, in his book Breaking Through to Each Other (20), for example, presents his discussion more for the discipline of sociology and, in particular, the view of the behaviorist school. Strauss, in his book Negotiations (25), also deals with negotiations as a psycho-socio phenomenon, but stages his discussion within social and political, as well as behavioral, frameworks. In his book, The Negotiating Game, Karrass (14) speaks to the business community about negotiations, but covers the topic in an anecdotal format and discusses "strategies," per se, only in the last part of his book.

Report Summary:

Air Force Contract Negotiations: Importance, Roles, and Major Problems in the United States and Four NATO Countries, by William Gardener. William Gardiner Associates, Inc., June 1982.

The objective of this study was to determine the role and importance of the contract negotiation function as perceived by Air Force acquisition personnel. Special emphasis was placed on negotiation skills in domestic negotiations and on negotiation peculiarities in the overseas environment. The survey population was divided into three groups: negotiators, supervisors, and users. Personnel at four AFSC product divisions, Armament Division (AD), Aeronautical Systems Division (ASD), Electronic Systems Division (ESD), and Space Division (SD), were surveyed. Their perception was that the negotiator function is to hold down prices and insure desired products are delivered on time. Among the wide variety of obstacles to negotiation objectives were excessively rigid time schedules, work overloads, and loss of skilled negotiators. Survey respondents felt that Air Force negotiators need more experience and training to equal their counterparts in industry. The section on overseas NATO negotiation presents the effects of cultural aspects on contract negotiations (13).

Book Reviews:

Breaking Through to Each Other, by Jesse S. Nirenberg, Ph.D. Harper and Row, Publishers, New York, 1976.

Nirenberg's book is an excellent primer for the layman to understand interpersonal relationships and the dynamics of conversation. The author introduces and demonstrates psychological concepts

in case-study format using commonly experienced situations within the home and work lives of, presumably, the "average" person. He intersperses analytical or explanatory remarks within typical conversation examples. This format creates a tutorial structure that allows the reader to immediately compare his or her own interpretation with that of the author. Dr. Nirenberg avoids over-using the trade jargon of psychologists by enveloping his concepts in constructs of everyday experiences. His book is included under Category I because it provides insight into behavior of people engaged in face-to-face negotiations even though the negotiations are not of the genre of "classical" business bargaining over commodities and prices. Nirenberg's book is, however, an example of a common treatment of the topic of negotiations within the disciplines of psychology and sociology. That is, it is valuable in terms of general education and preparation for dealing with other people, but offers no firm guidance on developing and carrying out negotiating tactics and strategies (20).

Negotiations (Varieties, Contexts, Processes, and Social Order), by Anselm Strauss. Jossey-Bass Publishers, San Francisco, 1978.

Strauss provides an even clearer example of the handling of "negotiations" as a topic within the field of sociology. He describes his purpose as follows: "This book is about negotiation in relation to social orders." He continues later in his introduction and firmly dictates the milieu of the rest of the book:

Negotiations is therefore addressed not only to people who are directly concerned with negotiation itself but also to those who work with an eye on the larger issues of organizational and societal order.

Finally, Strauss' treatment of the topic is further highlighted in the following chapter headings: "Coercive Institutions and Individual Commitment," "Bureaucracy, Unofficial Norms, and Functionalism," and "Pluralistic Theory, Urban Politics, and Political Influence." The author's approach characterizes an extremely formal discourse of negotiations as a social convention and not as a plan of tactics and strategies in business negotiations (25).

The Negotiating Game, by Chester L. Karrass. The World Publishing Company, New York, 1970.

Karrass, in his first major publication on negotiations presents the topic in three parts. The first part develops a historical perspective, for example, by detailing Britain's Prime Minister Chamberlain's and Germany's Adolph Hitler's negotiations of the eventual fate of Czechoslovakia before World War II. Continuing in part one, Karrass outlines the qualities good negotiators must have and those characteristics that identify "winners and losers." The second part explores functions of people in the negotiations process: their roles, motivations, and expectations. In the third part of his book Dr. Karrass outlines general strategies and tactics, "do's and don'ts" advice, and commentary on the nature of negotiations.

The Negotiating Game covers a wide range of perspectives of negotiations and is useful as an introduction to the topic. Yet, the apparent subordinate position of the book's treatment of strategies is insufficient to be placed in Category III (14).

Category II: Negotiator Characteristics. This category contains writings on the qualifications and personality characteristics desired in contract negotiators. Research papers in this category report findings from surveys of Air Force contract negotiators and supervisors who ranked the negotiator qualities the survey respondents felt were most desirable.

Report Summaries:

Identification of Personal Characteristics of Air Force Contract Negotiators, by Captain Theodore J. Novak, Jr. and Captain Russell V. Whitley, Air Force Institute of Technology, September 1976.

This thesis focuses on the problem of identifying and rank-ordering the most important characteristics of Air Force contract negotiators. It addresses the underlying issue that the selection process for Air Force contract negotiators may be improved by identifying important personal characteristics of negotiators. A consensus of the most important personal characteristics was obtained from active duty Air Force procurement personnel serving in AFSC/ASD. Among the conclusions of this research was a contention that the Air Force needs to look at other characteristics besides education and experience when selecting their negotiators. It suggested that Air Force policy needed to be modified to give the negotiator a distinct Air Force Specialty Code within the procurement career field (21).

Personal Characteristics of Air Force Contract Negotiators, by Captain James G. Bearden and Captain John C. Chipman. Air Force Institute of Technology, June 1977.

This research was a direct follow-on of the Novak and Whitley Study. It added Air Force procurement personnel at the Electronic

Systems Division (ESD) and Space and Missile Systems Office (SAMSO), now known as Space Division (SD), to the previous study and resulted in a rank-order list of 27 personal characteristics in terms of relative importance of each characteristic to a successful Air Force contract negotiator (1).

The Effects of Personality and Simulated Negotiation on Negotiation Effectiveness, by Lieutenant Commander John D. Mullen, Naval Postgraduate School, December 1978.

This research sought to determine what effect the primary personality characteristics exhibited by contract negotiators had on negotiation outcome. It also sought to determine what effect the buyer's engaging in preparatory mock negotiations had on negotiation outcome. Data was collected from 70 negotiations involving 45 contract negotiators at 11 DOD activities. This data included the prices negotiated and an assessment of each negotiator's personality. The author's analysis of this data lead to the conclusion that neither personality characteristics exhibited by the negotiators, nor the buyer's engaging in preparatory mock negotiation affected negotiation outcomes significantly (17).

Category III: Negotiating Tactics and Strategies. After reviewing the literature, the definition of strategy was found to be often confused with negotiator characteristics, tactics, and ploys. One problem contributing to this confusion may be generated by the term "strategy" itself, which has many connotations. Schelling (23) and others draw their concept of strategy from game theory -- describing strategy as dependent on the interaction of the game players. Others,

such as Pace (22), refer to strategy as a plan, while Shea (24) substitutes the word "approaches" for "strategy." All of these authors are correct, at least in part. A number of writings reserve entire chapters to discuss various negotiation approaches, but most serve only to catalogue tactics individually rather than develop scenarios employing overall strategic negotiating plans. The publications reviewed here present a broad range of individual tactics and strategies often used in commercial as well as government negotiations.

Report Summaries:

Handbook for Air Force Negotiators, by Major Rex L. Fuller, III. Air Command and Staff College, May 1981.

This handbook was intended to fill the needs of the inexperienced negotiator. It covers basic theory of negotiation authority and then focuses on the techniques (tactics) of negotiation. These techniques are divided into three phases: pre-negotiation or preparation, at-the-table techniques, and the post-negotiation or management phase (12).

An Analysis of the Control and Importance of Strategy Factors in Planning for Negotiation of Procurement Contracts, by Lieutenant Colonel Henry W. Waldman and Major John K. Rutledge. Air Force Institute of Technology, August 1975.

This study conducted an exploration into the awareness and agreement among contracting personnel regarding the relative importance and functional control of strategy employed in Air Force contract negotiations. The findings implied a general knowledge and recognition of the strategy factors by contracting personnel. There were further implications that the management in the procurement organizations do not consistently manage the strategy factors (26).

The Analysis of Strategy and Tactics Employed in Contract Negotiations, by Captain Harvey A. Marshall and Captain Robert J. Pratt. Air Force Institute of Technology, August 1974.

This research effort examined the assumption that personnel at all levels of a procurement organization are aware of and agree upon the strategic and tactical factors to be employed in conducting contract negotiations. The authors found this assumption to be unsubstantiated in the literature. The study conducted an exploration into the awareness and agreement among contracting personnel regarding strategy and tactics employed in Air Force contract negotiations. Agreement among upper and lower level managers with regard to strategy was supported statistically, but not practically. Agreement among upper and lower level managers with regard to tactics was supported statistically and practically (16).

Book Review:

Give and Take (The Complete Guide to Negotiating Strategies and Tactics), by Chester L. Karrass. Thomas Y. Crowell Company, New York, 1974.

Dr. Karrass follows up his very successful The Negotiating Game, published in 1970, with his second major writing on the topic. Give and Take is an extensive compendium of over 200 negotiating techniques and maneuvers. Some of these describe the verbal exchange between buyers and sellers in a variety of situations, while some examples define and prescribe "step-by-step" methods for obtaining a specific negotiations result. Dr. Karrass provides both offensive and defensive strategies. He advises on recognizing cues to possible bad situations,

such as controlling the negotiations through rules, about which he says: "Bad rules can stack against you." Rules governing who may ask questions, eating times, seating arrangements, security measures, and appeal procedures are given as examples, to which Dr. Karrass advises, "watch out." But if only one section of Give and Take was saved for posterity, the section entitled "Dumb Mistakes I've Made at Least Once" should serve future negotiators well. Dr. Karrass recounts forty-five errors in either judgment or action he had made in various negotiations. The following examples highlight the type of mistakes he means: "Don't be intimidated by status," "Never accept the first offer," "Deadlock is unpleasant for both parties, not only yourself," and "Don't talk. Listen."

Despite the usefulness of the tactics and strategies cataloged in Give and Take, it still lacks detailed negotiating strategy planning, and has no well-defined way to package the individual approaches and techniques into an overall scheme for negotiations (15).

Summary

Based on this literature review, it was concluded that the topic of negotiating tactics and strategies does not have a broad base of formal writing, particularly as we have used the term here to mean employing tactics and techniques in an overall plan to achieve specific objectives. This research seeks to establish an information base by determining what strategies Air Force contracting personnel use in negotiations with defense contractors, whether the strategies they use

are the same as those reported in the literature, and whether certain strategies are preferred over others. The answers to these questions will be sought through a survey of Air Force personnel with contract negotiating experience. The survey approach will be described in greater detail in Chapter III, Research Methods.

III. Research Methods

Description of Population

The population of interest for this study are 218 military and 833 civilian contract negotiators (with either current or past experience) in four Air Force System Command (AFSC) acquisition divisions:

1. 65 military and 200 civilians at Electronic Systems Division (ESD), Hanscom AFB MA.
2. 109 military and 506 civilians at Aeronautical Systems Division (ASD), Wright-Patterson AFB OH.
3. 21 military and 60 civilians at Armament Division (AD), Eglin AFB FL.
4. 23 military and 67 civilians at Space Division (SD), Los Angeles AFS CA.

The Deputies of Contracting and Manufacturing at each division (ESD/PK, ASD/PM, AD/PM, and SD/PM) provided points of contact who then provided the numbers of military and civilian contracting personnel with negotiating experience assigned to their organizations.

Background Information of Population

The mission of AFSC is to advance aerospace systems development and improvement; and acquire qualitatively superior, cost-effective and supportable aerospace systems and equipment needed to accomplish the Air Force mission [5:1].

The following figures were obtained from AFSC Business Statistics briefing slides provided by ASD/PM (see appendices A, B, and C).

AFSC contractual actions in FY84 totaled 18,660 with \$26.2 billion in contractual obligations. To accomplish this mission AFSC is supported by several divisions with responsibilities in specific functional areas.

This study focused on four of the acquisition divisions with the following missions:

1. The mission of ESD is to plan, manage, and conduct technological development (including research, exploratory, advanced, and engineering development), acquisition, installation, and delivery of command, control, communications, and intelligence systems and ground electronic systems for AFSC (7). ESD had \$2.245 billion in FY84 contractual obligations for 1,139 contractual actions. ESD's obligations represent 9 percent of AFSC's total.

2. ASD's mission is to plan and manage the acquisition of aeronautical systems, subsystems, and associated equipment. This includes systems engineering and technical direction; development, test and evaluation (DT&E); research, exploratory, advanced, and engineering development; logistics support during acquisition; aircraft flight testing; and international and DOD acquisition support (4). ASD had \$16.688 billion in FY84 contractual obligations for 9,944 contractual actions. ASD's obligations represent 64 percent of AFSC's total.

3. AD's mission is to plan, program, conduct, and manage technology development, test and evaluation, and acquisition programs for air armament to include tactical and air defense air-launch missiles, guided weapons, non-nuclear munitions, aircraft guns and ammunition, and related equipment; technology development, test and

acquisition programs for aerial targets; range instrumentation and electronic warfare threat simulators (6). AD had \$547 million in FY84 contractual obligations for 764 contractual actions. AD's obligations represent 2 percent of AFSC's total.

4. The mission of SD is to plan, program, and manage systems programs to acquire space systems, subsystems, support equipment, and related hardware and software; provide for the maintenance, construction, or alteration of launch, tracking, and support facilities; conduct advanced development technology programs to support future space missions; and provide for launch, flight test support and command and control for space programs (8). SD had \$3.2 billion in FY84 contractual obligations for 2,415 contractual actions. SD's obligations represent 12 percent of AFSC's total.

Selection of Data Collection Plan

A census mail survey approach was selected to accomplish the objective of establishing an information base on the tactics and strategies used by Air Force contracting personnel.

The major weakness of the mail survey approach is that it is subject to a strong bias of nonresponse. However, a population census reduces the impact of such a bias. The size of the population and its physical dispersion dictates the use of mail surveys. No other data-gathering procedure could accommodate such a large, dispersed population in a timely manner. A mail survey allows the respondent more time to collect facts and gather thoughts than do telephone or

personal interviews. Mail surveys also provide more anonymity than other communication modes (9:307-308).

Description of the Survey Instrument

The questionnaire used for this research has two parts (see Appendix D). Part I requested contract negotiators to indicate their age, sex, military rank or civilian grade, years of federal service, years in contracting, education level, professional training, how often they negotiate contracts, current position, type of organization currently assigned to, and estimated number of negotiations conducted or attended. Part II consists of three sections. Section one contains a list of 33 negotiating tactics selected from Dr. Karras, various other literature, and from personal experience. Each respondent was asked to rank the five tactics he or she uses most often and the five tactics their contractor counterparts use most often, including any write-in tactics not listed in the survey. Section two requested individuals to rank ten strategies in order of frequency of use and again in order of preference. Section three requested contract negotiators to indicate their most preferred strategy under the following contract situations: contract type, dollar value, type contractual action, type of acquisition or program, and the degree of competition. Each part and section is designed to provide data for further analysis. The rationale for the structure of this questionnaire is explained below.

Information from Part I was used to determine the relationships, if any, between such variables as age, sex, experience, education, or

formal contract negotiating training and the ranking of strategies or tactics. Contracting managers may find this information useful, for example, if they decide that a high frequency of use of a particular strategy is undesirable. In this case, they may decide to make changes to training or assignment programs. Part II, sections one and two, allowed determination of the most frequently used and preferred strategies and tactics among those responding to the survey. Also, the strategies used by DOD contractors may be inferred from the tactics they most often use, as perceived by Air Force negotiators. Finally, Part II, section three revealed relationships between various contracting situations and the most preferred negotiating strategy. From a manager's viewpoint, any strong relationship between the type of contract, dollar value, etc., and the strategy preferred by contract negotiators may be helpful in acquisition planning.

Validation of Survey Instrument

After the development of the first draft of the questionnaire was accomplished, it was tested among five AFIT graduate students and ten AFIT faculty members with negotiating experience and one faculty member with extensive experience in the development of questionnaires in general. The questionnaire was also sent to HQ AFSC/PMP (Contracting Policy) where five HQ AFSC staff members reviewed and completed the questionnaire. The test population was asked to provide comments and suggestions about the structure and content of the questionnaire and to keep the following questions in mind when completing it:

1. Is the question stated in terms of a shared vocabulary?
2. Is the question clear?
3. Are there unstated or misleading assumptions?
4. Is there biased wording?
5. Is there the right degree of personalization?
6. Are adequate alternatives presented?

Twenty questionnaires (95%) were returned with twelve (57%) being fully completed. The major changes as a result of the test responses were the reorganization of the demographic questions so the trend of thought goes from personal to more job related, and the simplification of the instructions throughout the questionnaire.

After obtaining the appropriate approvals within AFIT, the questionnaire was sent to the Air Force Manpower and Personnel Center, Personnel Survey Branch (HQ AFMPC/MPCYPS) for the required reviews and approvals to survey civilian and military Air Force employees. As a result of this review, several additional changes were made to the questionnaire such as increasing choices on several questions and further clarifying the questionnaire instructions. Formal approval of the survey instrument was received from the HQ AFMPC/MPCYPS letter dated 5 June 1985 (see Appendix E).

Collection Procedure

The points of contact at three divisions (ESD, AD, and SD), who were identified by their respective Deputies of Contracting and Manufacturing, were then sent the appropriate number of surveys. These points of contact distributed the surveys to those contracting

personnel identified as having negotiation experience. Return addressed envelopes were provided with each survey to facilitate their return (see cover letter in Appendix D).

After briefing and obtaining ASD/PM's support, the surveys were hand delivered at Wright-Patterson AFB to the appropriate directors at each program office. These, too, had return envelopes to facilitate their return.

Selection of Statistical Package for Social Sciences

The Statistical Package for Social Sciences (SPSS) was used in the analysis of the survey data. SPSS is an integrated system of computer programs specifically designed for the analysis of social science data. It is a comprehensive package that enables the user to analyze data in a simple and convenient manner. SPSS allows for flexibility in the format, transformation, and manipulation of data. It offers a large number of statistical routines commonly used in the social sciences, including the three statistical tests subsequently described (19:1).

Several factors led to the selection of SPSS over other statistical packages that were available, e.g., SAS and BMDP. The first factor was that SPSS was the only package available on the AFIT Harris 800 computer system in Building 641. The Harris system is essentially dedicated to the support of the School of Systems and Logistics (LS). The Harris 800 system also had an on-site consultant who was available to assist with program and system problems. Second was the fairly wide use and knowledge of SPSS among the AFIT/LS faculty and students. This also facilitated the development and execution of

programs. The third factor was the comprehensiveness and flexibility of SPSS, particularly for the categorical type data typical with surveys.

Justification of Statistical Test Chosen

This research analyzes whether the respondents to the survey tend to agree on the negotiation tactics and strategies they use or prefer to use. With the sample size of 278, perfect agreement among all the respondents is beyond reasonable expectations, but within groups of individuals, overall consensus based on averaging the tactics of strategy frequencies can be measured by several non-parametric statistical tests. Two such procedures were selected for this research: the Kendall Coefficient of Concordance ω , and the Kendall "Tau" (τ). The tests were performed using the Harris 800 computer and the Statistical Package for the Social Sciences (SPSS) software program available at the Air Force Institute of Technology. Each test is discussed below concerning description of the procedure, applicability to this research, assumptions, formulae, hypotheses, test statistics, decision rules, and interpretations of the test results.

The Kendall Coefficient of Concordance ω . The Kendall ω test is used to measure "agreement among several ['m'] . . . sets of rankings of 'n' objects or individuals" (2:326).

Applicability to this research: The first research question under negotiation strategies, in Chapter I, asks "What strategies do Air Force System Command contract negotiators use most often?" The Kendall ω test was used to determine if there is agreement among the

survey respondents in their ranking of the ten strategies listed in the questionnaire. Since the Kendall ω test is especially suited for "m by n" ranking matrices where "m" is greater than two (e.g., three or more matched sets of rankings) and, since the ranking of strategies among the survey respondents comprises a "278 by 10" matrix, the Kendall ω test was determined appropriate for this research.

Assumptions:

- a. The data consist of 'm' complete sets of observations or measurements on 'n' objects or individuals.
- b. The measurement scale is at least ordinal.
- c. The observations as collected or recorded may consist of ranks . . . or be capable of being converted to ranks. [2:327]

Formula:

$$\omega = \frac{12 \sum R_i^2 - 3m^2 (n-1)^2}{m^2 \times n (n^2 - 1)}$$

However, the SPSS software program computes both the Kendall statistic and "chi square" (χ^2), so manual calculations were not used in this analysis.

Hypotheses: The general hypotheses for the Kendall ω are:

H_0 - the 'm' sets of rankings are not associated.

H_a - the 'm' sets of rankings are associated. [2:327]

Test statistic: The Kendall ω computed in the above formula is a real number with a value between 0 and +1. For relatively small problems, where "m" is less than 15 and "n" is less than 5, the critical values for Kendall ω can be found in most texts and references

for non-parametric statistics. For larger problems the χ^2 large sample approximation is used. The χ^2 is approximated by multiplying the computed Kendall ω by $[m(n-1)]$. The critical value at $(n-1)$ degrees of freedom can be found in χ^2 tables in most statistics texts. The SPSS computer program for the Kendall Coefficient of Concordance ω provides both the Kendall ω statistic and the χ^2 and its associated significance level (P). Since the χ^2 degrees of freedom for our sample is 9, the critical value at "alpha" (α) equal to .01 is 21.666.

Critical values for this research: The α significance level for all statistical tests for this research effort has been selected as .01. At this α the rejection of the null hypothesis may be accompanied by the following statement. The probability of randomly observing a value greater than or equal to the test statistic (W, P, or χ^2) is less than .01.

Decision rule: When the observed sets of rankings are in close agreement, ω tends to be large. One may reject the null hypothesis (H_0) at the α level of significance if the test statistic is larger than the critical value in the appropriate table, or the probability associated with the test statistic is less than or equal to α (2:329).

Interpretation of test results: If the null hypothesis is rejected, then the alternate hypothesis may be accepted, and one may conclude that there is consensus among the sets of rankings. If the test statistic is not in the rejection region (either ω is not large enough or α is not small enough), then there is insufficient information to reject the null hypothesis. In particular, the rejection of the null hypothesis in this research indicates agreement

or consensus among the individual respondents' rankings of tactics or strategies. The relative strength of the association may be inferred by comparing the computed χ^2 test statistic to the critical value, 16,919. For example, a computed χ^2 of 100 or more would indicate a fairly strong association among the sets of rankings.

The Kendall τ Test. The second statistical test used is called the Kendall "Tau" (τ), which is another test of association for a configuration of (m x n) sets of rankings where n = 2. Again, the SPSS program provides for the computations of the data through built-in algorithms.

Applicability to this research: The answer to the first research question leads to follow-on questions about possible agreement between different groups of respondents within the sample population. For example, questions could be phrased: "Do contract negotiators use the strategies they would prefer to use?" or "Is there agreement between the tactics used by Air Force System Command negotiators and those that the respondents indicated contractors use?" The Kendall τ test indicates whether there is a direct (positive) or an inverse (negative) association between two sets of rankings.

Assumptions:

- a. The data consist of a random sample of 'n' observations pairs (X_i , Y_i) of numeric or nonnumeric observations. Each pair of observations represents two measurements taken on the same unit of association.
 - b. The data are measured on at least an ordinal scale.
- [2:327]

Formula:

$$\tau = \frac{S}{n(n-1)_2}$$

Hypotheses:

H_o : X and Y are independent; no association ($\tau = 0$)

H_a : X and Y are dependent; associated ($\tau \neq 0$)

The hypotheses may be restated as:

H_o : The two sets of rankings are not in agreement

H_a : The two sets of rankings are in agreement

Test statistic: The Kendall τ test statistic is between -1 and +1. A +1 indicates a perfectly positive agreement and a -1 indicates a perfectly inverse agreement between two sets of ranks.

Critical values for this research: For this research, the critical values are $\tau = .600$ for "n = 10" for tests of sets of rankings of the ten strategies in the questionnaire, or .280 for "n = 34" for tests of agreement on the 33 tactics listed and any write-ins which were ranked by the respondents. The alpha level selected is .01.

Decision rule: Reject H_o at the α significance level if the computed value of τ is either positive and larger than τ^* or τ is negative and smaller than τ^* (where τ^* is the τ statistic found in typical Kendall τ tables). Again, the SPSS program provides both the Kendall τ and its associated α significance level (2:327).

Additional Non-Parametric Statistical Procedures. The Spearman Rank Correlation Coefficient r_s is also a test for agreement between two sets of rankings using the squared difference between pairs of

rankings. The test statistic is similar to the Kendall τ in that it may range between -1 and +1 and indicates the same relationships. The Spearman r_s generally provides a somewhat less efficient statistic than Kendall τ . Specifically, τ "provides an unbiased estimator of a population parameter, while the sample statistic [r_s] does not provide an estimate of a population coefficient of rank correlation" (2:306). The test design for this research does not include the Spearman r_s except that the r_s statistic is obtained from the SPSS run along with Kendall τ . The assumptions, hypothesis, decision rule, and interpretation are all similar to the Kendall τ . While the Spearman r_s was not selected as the statistical test procedure for this research, since it was provided along with Kendall τ on the computer output, it served to confirm the Kendall τ results.

Data Preparation for the Statistical Tests. The following conventions were employed in preparing the data file for the Kendall ω and τ procedures.

Kendall ω : The data file (Appendix G) is described in the data file code key (Appendix F). The Kendall ω test was run on the field indicating the frequency of strategies used, columns 58 through 68, and on the field indicating strategies preferred in columns 69-79. Since the assumptions of the Kendall ω test require complete sets of rankings, only those survey respondents who ranked the ten strategies 1 through 10 and did not leave blanks or write in alternative strategies were used in the test sample set. The sample population was thereby reduced to 212 from 278. The test programs identified as PROG9 and

PROG10 in Appendix H were run against the reduced data file, which produced the Kendall τ results.

Kendall τ : The data file was modified for the Kendall τ in several ways. In order to run the Kendall τ it was necessary to run the Kendall ω test in the SPSS program, which provided mean values for each strategy. This mean value, based on individual ranks assigned to each strategy was then considered to be an average rank-score for each strategy. The average rank-scores for the ten strategies were then ranked from lowest to highest (since a ranking of 1 by an individual indicated the most frequently used or most preferred strategy). The ten strategies and their corresponding ranking based on average rank-scores were input to a "dummy" data file such that each strategy assumed the status of an individual and the set of rankings for strategy frequency and strategy preference assumed the status of the object being ranked. The Kendall τ test was also performed on tactics used by Air Force and contractor negotiators as indicated by the survey respondents. The ranking of tactics is based on the tactics indicated most often among the top five used by Air Force and by contractor negotiators. The tactics were ranked from 1 to 34, with 1 indicating most often observed and 34 the least. Another "dummy" data file was created in a manner similar to that used for strategies, whereby each tactic was input as an individual record and the program variables ATAC1 and ATAC2 (columns 46 through 49) were input with the rankings of each tactic for Air Force and contractor negotiators, respectively. The Kendall τ test was run on this data file to measure the agreement

between the frequency rankings for tactics used by Air Force personnel and those used by contractors.

Summary. The Kendall Coefficient of Concordance ω and Kendall τ statistical tests were performed to determine if there was consensus on the negotiations tactics and strategies used among the contract negotiators responding to this survey. The Kendall ω test was used to determine if the average ranking of the strategies for various sub-populations are associated, and what the association or relationship was. In the chapter entitled "Findings and Analysis" the specific application of these tests is discussed more thoroughly along with the results of the hypotheses testing.

IV. Findings and Analysis

The following analysis can be categorized into two general types: demographic analysis of the survey respondents population and data analysis to answer the specific investigative questions for negotiation tactics and strategies listed in Chapter I.

A demographic analysis of the contract negotiators who responded to the survey was conducted in order to provide a distinct illustration of the survey respondents population. The analysis of data was accomplished by referring to the appropriate investigative question which is indicated prior to analysis, with the exception of Investigative Question Number 1, which is demographic in nature and is answered in the demographic analysis.

Demographic Analysis

Respondent Population. Out of 1,051 questionnaires sent to contract negotiators in the four AFSC buying divisions described in Chapter III, 278 responded. This results in a survey response rate of 26.45 percent. The response rate for each AFSC division was:

- * Aeronautical Systems Division (ASD) - 34.5 percent, resulting from 212 respondents out of 615 contract negotiators.
- * Space Division (SD) - 30 percent, resulting from 27 respondents out of 90 contract negotiators.

* Armament Division (AD) - 28.4 percent, resulting from 23 respondents out of 81 contract negotiators.

* Electronic Systems Division (ESD) - 6 percent, resulting from 16 respondents out of 265 contract negotiators.

Of the total 278 respondents, ASD represented 76.2 percent, SD represented 9.7 percent, AD represented 8.3 percent, and ESD represented 5.8 percent. ASD's high percentage of total respondents was attributed to the fact that ASD had by far the largest percentage of the original population and that ASD's close proximity to AFIT facilitated the briefing of ASD/PM and a majority of the program office Directors of Contracting prior to the distribution of the survey.

Table I represents the frequency distribution of age categories for the respondents. Sixty percent of the respondents were between 26 and 40 years of age, inclusive of the end points.

TABLE I
Age Frequency Distribution

Category	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Up to 25 years old	24	8.6	8.6
26 to 30 years old	54	19.4	28.1
31 to 35 years old	52	18.7	46.8
36 to 40 years old	62	22.3	69.1
41 to 45 years old	25	9.0	78.1
46 to 50 years old	21	7.6	85.6
51 years and older	40	14.4	100.0
TOTAL	278	100.0	

Table II represents the frequency distribution of military rank and civilian grade. It also indicates that 18.8 percent of the respondents were military and 81.2 percent were civilian.

TABLE II
Military Rank and Civilian Grade Frequency Distribution

Category	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
2nd Lieutenant	8	2.9	2.9
1st Lieutenant	6	2.2	5.1
Captain	21	7.6	12.7
Major	10	3.6	16.3
Lieutenant Colonel	2	0.7	17.0
Colonel	4	1.4	18.4
Enlisted	1	0.4	18.8
GS-8 and below	19	6.8	25.6
GS-9	20	7.2	32.8
GS-11	26	9.4	42.2
GS-12	101	36.3	78.5
GS-13	39	14.0	92.5
GS-14	16	5.8	98.3
GS-15	4	1.4	99.7
Did not indicate	1	0.3	100.0
TOTAL	278	100.0	

Table III indicates the amount of federal service of the respondents. It shows that exactly 50 percent of the respondents had ten or fewer years experience with the Government.

TABLE III
Years of Federal Service

Category	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
10 years or less	139	50.0	50.0
11 to 20 years	75	27.0	77.0
21 to 30 years	52	18.7	95.7
31 or more years	12	4.3	100.0
TOTAL	278	100.0	

Table IV indicates the amount of contracting experience of the respondents. It shows an even larger proportion (64.7%) had ten or fewer years experience.

TABLE IV
Years in Contracting

Category	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
10 years or less	180	64.7	64.7
11 to 20 years	58	20.9	85.6
21 to 30 years	34	12.2	97.8
31 or more years	6	2.2	100.0
TOTAL	278	100.0	

Table V indicates the education level of the respondents. It shows a large proportion of respondents had at least a bachelors degree (90.3%) and almost 40 percent had a master's degree or higher.

TABLE V
Education Level

Category	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
High school graduate	3	1.1	1.1
Some college, no degree	24	8.6	9.7
Bachelor degree	93	33.5	43.2
Some graduate work	47	16.9	60.1
Master's degree	77	27.7	87.8
Some postgraduate work	27	9.7	97.5
Doctorate degree	7	2.5	100.0
TOTAL	278	100.0	

Table VI indicates the proportion of respondents who have had a formal course in negotiations and answers Investigative Question Number 1 from Chapter I. A majority of respondents (69.8%) have attended such a course. This is distinguished from those courses where negotiation was one of several topics covered.

TABLE VI
Negotiation Training Course Attendance

Category	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Not Attended	84	30.2	30.2
Attended	194	69.8	100.0
TOTAL	278	100.0	

Table VII indicates that the proportion of male to female respondents was almost three to one.

TABLE VII
Proportion of Male and Female Respondents

Category	Absolute Frequency	Relative Frequency (%)	Cumulative Frequency (%)
Male	202	72.7	72.7
Female	76	27.3	100.0
TOTAL	278	100.0	

Summary of Demographic Analysis. Based on an analysis of the sample population demographic data, the "typical" AFSC contract negotiator who responded to the survey was a 37 year-old male. He was a GS-12 with 13 years federal service and 10 years experience in

contracting. He had a bachelor's degree and had attended a course in contract negotiations.

This very simplistic description of the "typical" respondent is provided to illustrate that the following data analysis is based on the input of many different people who really cannot be typified.

Ranking of Tactics

Investigative Questions Two and Three. During the 1985 Aeronautical Systems Division Pricing Symposium held in Dayton, Ohio, Air Force contracting professionals and defense industry representatives met to discuss issues affecting their mutual concerns. A common theme among many of the speeches and presentations was a desire to reduce the adversarial relationship believed to exist between the Government and defense contractors. The second and third research questions focused on this relationship by determining what negotiating tactics both Air Force and contractor negotiators use most frequently. The survey questionnaire provided a list of tactics gleaned from various publications on negotiating tactics from which respondents could choose. Since this list could not include every possible tactic, respondents were asked to write in tactics not listed.

Table VIII shows how frequently each tactic was listed among the top five tactics used by Air Force and contractor (KTR) negotiators as indicated by the survey respondents. Also shown is the corresponding rank for each tactic. Tactics that were not indicated are ranked as tied for last place. This ranking data was used to conduct Kendall τ tests for independence or agreement between the rankings indicated as used most often by Air Force negotiators versus contractors.

TABLE VIII

Frequency and Ranking of Tactics

Tactic Code and Name	Frequencies		Rankings	
	A.F.	KTR	A.F.	KTR
1. Adjust the thermostat	8	0	26	32.5
2. Allow face-saving exits	95	4	4	29.0
3. Appeal to patriotism	25	3	17	30.0
4. Ask for lots of data	115	6	1	27.0
5. Belabor fair and reasonable	103	21	2	19.0
6. "Bogey" budget limits	36	8	13	24.0
7. Call frequent caucuses	68	35	6	16.0
8. Change negotiators	3	14	30	21.0
9. "Cherry-pick" the best deal	11	12	24	22.0
10. Deadlock the negotiations	25	63	18	7.0
11. Deliberate errors left in offers	17	51	21	10.0
12. Deliberately expose notes or papers	10	2	25	31.0
13. Embarrass your opponent	5	9	28	23.0
14. Escalate to opponent's boss	59	27	9	18.0
15. Escalate to your boss	55	36	10	15.0
16. "Good-guy/bad-guy" roles	45	39	11	13.0
17. "High-ball" offers	1	106	32	3.0
18. Impose "no smoking rule"	4	0	29	32.5
19. "Low-ball" offers	64	7	7	26.0
20. Make an offer they must refuse	20	39	20	14.0
21. Massage opponent's ego	33	30	14	17.0
22. "Must be on contract by ...!"	24	77	19	5.0
23. "My plane leaves at ... o'clock."	2	41	31	12.0
24. Negotiate with limited authority	32	113	15	2.0
25. "Off the record" discussions	74	64	5	6.0
26. Personal attack	1	19	33	20.0
27. Play hard to get	16	46	22	11.0
28. Refer to firm's past poor performance	41	6	12	28.0
29. Refer to your side's generosity	63	58	8	8.0
30. Reverse auctioning	6	8	27	25.0
31. "Split-the-difference" offers	97	142	3	1.0
32. "Take it or leave it" offers	32	88	16	4.0
33. Threaten to walk out	16	53	23	9.0
34. Other write-in tactics	-	-	-	-

The miscellaneous group of "other write-in tactics" was not included in this ranking scheme. The rationale for omitting the write-in tactics is that only a few such entries were indicated by more than one respondent, and those that were did not exhibit the same qualities that were represented in the listed tactics. For example, the terms "honesty," "sincerity," "integrity," and "professionalism" tend to be descriptive of personality traits or motivations and are not, as the term "tactic" is defined in this research, "any specific action, words, or gestures." Although insignificant in number, the write-in tactics are enlightening in their variety. Many of the write-in tactics were accompanied by comments that decried the tactics listed in the survey questionnaire as "negative" in tone. In fact, a considerable number of the write-in tactics were obviously positive in tone. However, such tactics as "threaten to nationalize the firm" or "all requested info must be furnished within 24 hours" hardly convey a positive attitude. Some of the write-in tactics expand or modify ones that were listed. The write-in tactics were indicated in 42 of the 278 surveys received, or roughly 15 percent. Therefore, while presenting several tactics not included in the questionnaire, the write-in tactics had very limited impact on the research results.

The question of interest is whether or not Air Force and contractor negotiators use the listed negotiating tactics in the same frequency, as indicated by the frequency-based ranking of all the choices and other write-in tactics. The bias associated with this procedure is that the data only reflect the observations of Air Force

negotiators and not the observations of contractors or a disinterested third party.

The results of all subsequent tests are presented in the following format:

- a. Name of test
- b. Hypotheses (null, " H_0 " and alternative " H_a ")
- c. Level of significance (α)
- d. Critical Value (CV). Either chi square (χ^2) or significance level (P) will be used.

Note: The following abbreviations and symbols will be used hereafter in all the analyses:

= - equal to	[=] - approximately equal to
> - greater than	< - less than
\geq - greater than or equal to	\leq - less than or equal to

- e. Decision rule
- f. SPSS-run results: Kendall ω , chi square (χ^2), significance level (P). (Note: P is the probability of observing a value greater than the value computed from the sample data randomly, e.g., by chance.)

- g. Decision (rejection/non-rejection of H_0)
- h. Interpretation

Test for Agreement between Air Force and Contractor Tactics.

a. Name of test: Kendall τ

b. Hypotheses:

H_0 : The two sets of rankings are independent, e.g.,
not in agreement

H_a : The two sets of rankings are not independent,
they tend to agree with each other

c. Level of significance: $\alpha = .01$

d. Critical Value: τ from Kendall τ tables for $n = 33$ of .288
at $P = .01$.

e. Decision rule: Reject H_0 if $\tau > .288$ or $P < .01$.

f. SPSS-run results: $\tau = .0766$, $P = 0.262$ ($r_s = .1157$, $P = .257$).

g. Decision: There is insufficient evidence to reject H_0 . While the Spearman r_s is still positive, both τ and r_s are relatively close to zero, indicating only slight positive association.

h. Interpretation: One cannot say there is an inverse relationship even though some of the pairs of rankings in Table VIII show nearly perfectly inverse rankings between Air Force and contractor negotiators (e.g., Tactics 2, 4, and 17). However, some pairs of rankings are highly positively related (e.g., Tactics 25, 29, and 31). The inference is that, based on the survey respondents' observations, both the Air Force and contractor negotiators use some of the same tactics while at the same time they use many differing tactics.

i. Additional information: A Kendall τ test was run on the tactics including "other write-ins." The results were as follows: $\tau = .0644$, $P = .299$ ($r_s = .0979$, $P = .294$). Only slight statistical

difference can be discerned between the Kendall τ tests, either including or excluding "write-ins."

Frequency and Preference of Strategy Use

Investigative Question Four. One of the primary interests of this research concerned the way Air Force contract negotiators conducted negotiations, specifically, what strategies they use most often. The survey questionnaire presented ten negotiating strategies which the respondents were asked to rank first by frequency of use, and then by preference. The primary purpose of this approach was to record a factual depiction of day-to-day AFSC negotiating activity. A secondary purpose for this response design was to determine if the respondents were using the type of strategy they preferred to use. The responses were tested for "concordance," hereafter referred to as "consensus" using the Kendall Coefficient of Concordance ω (Kendall ω) non-parametric procedure.

Test for Strategies: Frequency of Use.

a. Test name: Kendall ω

b. Hypotheses:

H_0 : The rankings assigned to the ten strategies by survey respondents are not in agreement (do not form a consensus).

H_a : There is consensus among the survey respondents on the rankings of the ten strategies.

c. Level of significance: $\alpha = .01$. This α was selected because the interpretations of the findings may make broad, albeit cautious,

inferences about contract negotiators in general, and a high degree of confidence was desired for this purpose.

d. Critical Value (CV): $CV = 21.666$. Since most statistics texts or references do not have Kendall ω tables for large sample size, the χ^2 approximation is used (2:326-328). At nine degrees of freedom (df, where $df = n - 1$ and $n =$ number of items to be ranked) the χ^2 critical equals 21.666 at $(1 - \alpha) = .99$.

e. Decision rule: Reject H_0 if the χ^2 calculated from the data is larger than 21.666, or if the significance level, P , calculated by the SPSS program is less than .0100.

f. SPSS-run results: Table IX shows the mean or average rank-score (ARS) for each strategy, the relative rank of each strategy based on the ARS, and the statistical test results:

TABLE IX
Average Rank Scores and ARS Ranking of Strategy Frequency

Strategy	A R S	ARS-Rank
1. Combination	5.04688	4
2. Coverage/Bottom Line	2.86458	1
3. Definite Action	5.89583	7
4. Limits	5.51563	6
5. Participation	4.68229	3
6. Patience	6.57813	8
7. Surprise	7.39583	10
8. Reversal	7.25521	9
9. Statistics	4.48438	2
10. Step-by-Step	5.37500	5

Kendall $\omega = .19818$

$\chi^2 = 348.17837$

$P < 0.00001$

g. Decision: Since $\chi^2 > 21.666$; $P < .01$, reject H_0 and accept H_a .

h. Interpretation: There appears to be a strong consensus among the survey respondents on the ranking of the ten strategies in the questionnaire. This is indicated by the probability of obtaining a χ^2 as high or higher than 348.17837 is less than 0.00001. The magnitude of the χ^2 from the data compared to the critical value 21.666 indicates the agreement/consensus is quite strong. The contract negotiators in AFSC who responded tend to use Bottom Line negotiating more frequently than any other single strategy. Bottom Line (or Coverage) strategy means negotiating on a total cost or total price basis and not item-by-item. The next most frequently used strategy, Statistics, indicates that negotiators rely heavily on quantitative methods and records to support their negotiating positions. The third most frequently used strategy, Participation, involves either including or excluding technical or other experts from the negotiating team to narrow or broaden areas for negotiation. On the other hand, the Surprise strategy, whereby the negotiator takes sudden and unexpected actions to gain concessions, is used least frequently and infers that this strategy is the least desirable among the ten.

Test for Strategies: Preference for Use.

a. Test name: Kendall ω

b. Hypotheses:

H_0 : The rankings assigned to the ten strategies by
survey respondents are not in agreement (do not
form a consensus).

H_a : There is consensus among the survey respondents
on the rankings of the ten strategies.

c. Level of significance: $\alpha = .01$.

d. Critical Value (CV): $\chi^2 = 21.666$; $P < \alpha$.

e. Decision rule: Reject H_0 if SPSS-run $\chi^2 > 21.666$ or $P < .01$.

f. SPSS-run results: Table X shows the ARS and ARS Rank for the
ten strategies preferred by the respondents.

TABLE X

Average Rank Scores and ARS Ranking of Strategy Preference

Strategy	A R S	ARS-Rank
1. Combination	5.08854	4
2. Bottom Line	3.42188	1
3. Definite Action	5.75000	6
4. Limits	6.04167	7
5. Participation	4.13542	2
6. Patience	6.50521	8
7. Surprise	7.43750	10
8. Reversal	7.31771	9
9. Statistics	4.29167	3
10. Step-by-Step	5.21875	5

Kendall $\omega = .19238$

$\chi^2 = 336.31131$

$P < 0.00001$

g. Decision: Since $\chi^2 > 21.666$ and $P < .01$, reject H_0 and accept H_a .

h. Interpretation: There appears to be a strong consensus among the survey respondents on the ranking of strategies by preference. Bottom Line strategy is preferred foremost, followed by Participation and Statistics, in order. The respondents indicated that Surprise is least preferred of the ten strategies. A comparison of the computed test statistics, χ^2 and P (336 and 0.00001, respectively), to the critical values ($\chi^2 = 21.666$, $P = .01$), indicates the magnitude of the strength of the agreement among respondents' rankings of strategies.

Test for Strategies: Used Versus Preferred. If the rankings of strategies for use and preference are known, the next logical question might ask whether or not the two sets of rankings agree. The answer infers that contract negotiators may or may not use strategies they prefer. A second non-parametric test, the Kendall τ test for association, was performed. This test is similar to the Spearman Rank Correlation test in that it measures the agreement between two sets of rankings. It was used to test whether matched sets of ARS Rankings for various ranking factors were in agreement. In the immediate case, it measured the agreement between rankings of strategies based on frequency of use and preference.

a. Test name: Kendall τ

b. Hypotheses:

H_0 : There is no association (agreement) between the
two sets of rankings.

H_a : The two sets of rankings are in agreement.

c. Level of significance: $\alpha = .01$.

d. Critical Value (CV): Kendall τ statistic found in most non-parametric statistics texts and references, and ranges from 0 to +1, where +1 indicates perfect agreement. Since "n", the number of items ranked, equals 10, the CV for the strategies Kendall τ tests is $\tau = .600$ at $\alpha = .01$.

e. Decision rule: Reject H_0 if the computed τ is greater than .600.

f. SPSS-run results: The Kendall $\tau = .9111$ at $P = .001$ (Spearman $r_s = .9758$ at $P = .001$). (Note: for all Kendall τ results the SPSS also prints the Spearman Rank Correlation Coefficient r_s . The r_s statistic also indicates correlation between the paired rankings in the two sets and is seldom the same number as the τ . Because the r_s is given along with the τ , it has been indicated for all Kendall τ test results, but it is not otherwise addressed here.)

g. Decision: Since the SPSS-run τ of .9111 is greater than the CV, $\tau = .600$, reject H_0 and accept H_a .

h. Interpretation: There appears a strong agreement between the ranking of strategies based on frequency of use and preference. The probability of observing a value for τ greater than .9111 is less than .001. Table XI depicts the rankings of strategies preferred to those used based on the survey responses.

TABLE XI
Ranking of Strategies Used to Strategies Preferred

Strategy	Rank by Frequency	Rank by Preference
1. Combination	4	4
2. Bottom Line	1	1
3. Definite Action	7	6
4. Limits	6	7
5. Participation	3	2
6. Patience	8	8
7. Surprise	10	10
8. Reversal	9	9
9. Statistics	2	3
10. Step-by-Step	5	5

The significance of this presentation is the confirmation that the differences between the two sets of ranks are very small.

Preferred Strategies in Various Contract Situations

Investigative Question Five. The questionnaire asked contract negotiators to indicate the contract strategy they preferred to use given that a specific contractual situation was the decisive factor in strategy selection. Each respondent was asked to select a strategy from the ten listed in the survey or substitute another of their own choice and to write it in the appropriate given situation. Respondents were also asked to indicate if they had no experience with or no strategy preference in the situations most influenced by contract type, dollar value, type of contractual action, type of acquisition, and the

degree of competition. Several points of interest were selected to illustrate the influence of the various contract situations:

1. The most frequently selected strategies for each situation.
2. The proportion of respondents who indicate no experience with a particular situation.
3. The proportion of respondents who had no preference among the strategies based on the situations presented.
4. The shifts of strategy preferences, if noted, from one situation to another.

This analysis follows the order of situations as they appear in the questionnaire, which begins with type of contract.

Contract Type.

1. Fixed Price Type Contracts. "Coverage" (hereafter referred to as "Bottom Line") strategy is the most preferred strategy for firm-fixed price (FFP) contracts; "Statistics" is next, followed by "Other" strategy combinations, and "No Preference." Percentages were as follows:

- * Bottom Line strategy was chosen by 37.4 percent of the respondents (104 of 278).
- * Combination and Statistics strategies are approximately equally preferred at 10.8 percent (30 of 278) and 12.6 percent (35 of 278), respectively.
- * No preference was indicated by 11.5 percent (32 of 278).
- * No experience with FFP type contracts was indicated by 3.6 percent (10 of 278).

For fixed price incentive (FPI) type contracts, the distribution shifts away from the clear dominance of the Bottom Line strategy for FFP type contracts. Statistics, selected by 41 (14.7%) respondents, Bottom Line by 44 (15.8%), and Combination by 31 (11.2%) comprise a group representing 41.7 percent of the total number of respondents. The number of individuals with no preference increased slightly from 32 (11.5%) to 38 (13.7%). However, fifty negotiators indicated no experience with FPI contracts and make up 18 percent of the sample set.

Fixed-price type of contracts (FFP and FPI) appear to encourage the selection of Bottom Line negotiations as the first choice, followed by Statistics and Combination. FPI contracts are somewhat more complex and are less frequently used by the respondents than FFP types, as implied by the dramatic increase in the number of people who have no experience with FPI contracts. In fact, the term "fixed-price" typically focuses the negotiation on a single Bottom Line price for the total contract effort. However, the cost reimbursement type contracts inherently are focused on the individual items of cost detailed in the contractor's proposal and would be expected to imply somewhat different strategies than for fixed price types.

2. Cost Reimbursement Type Contracts. Indeed, the distribution of strategies the respondents indicated for cost reimbursement type contracts is decidedly more evenly spread among the strategies listed. For Cost Plus Fixed Fee (CPFF), the Bottom Line strategy is preferred by 35 (12.6%) individuals and Statistics by 31 (11.2%), both showing a decline in popularity. The Participation strategy is indicated by 27 (9.7%) individuals, Step-by-Step and Combination by 16 (5.8%) each, and

Definite Action by 14 (5.0%). Those who have no preference remained at about the same number (37 [13.3%] versus 38 [13.7%] for FPI and 32 [11.5%] for FFP). The number of respondents who have no experience with CPFF increased to 60 (21.6%) from 10 (3.6%) for FFP and 50 (18%) for FPI.

The shift noted from fixed-price to cost-plus type contracts continued in the responses for Cost Plus Incentive Fee (CPIF) type contracts. Again, the change from a fixed-fee to incentive-fee basis for determining the price of the contract implies an increase in complexity and a decrease in use indicated by the experience factor. For example, 60 (21.6%) individuals indicated no experience with CPFF type contracts, compared to 97 (34.9%) for CPIF contracts. All other strategies showed significant decreases, except for Statistics, which decreased from 31 (11.2%) to 29 (10.4%).

Cost Plus Award Fee (CPAF) contracts are the most rare of contract types, according to the indications of preference for use among the survey respondents. One hundred twelve individuals, 40.3 percent of the respondents, have no experience with CPAF contracts. Those with no preference total 36 (12.9%) and those who prefer "other" strategies remained the same (33 - 11.9%) for all three cost type contracts. Statistics and Participation were tied at 22 (7.9%) each, as the most preferred strategies for CPAF type contracts.

Summary of Contract Type. There appears to be a decided shift of preference from Bottom Line strategy for both FFP and FPI type contracts to Statistics and Participation for Cost Reimbursement type contracts, as shown in Table XII.

TABLE XII

Frequencies of Strategies Under Different Contract Types

Strategy	FFP	FPI	CPFF	CPIF	CPAF
1. Combination	30	31	16	14	10*
2. Bottom Line	104	44	35	16	15*
3. Definite Action	5	5	14	16	11
4. Limits	3	4	6	7	6
5. Participation	9	14	27	19	22*
6. Patience	3	1	1	2	2
7. Surprise	0	0	0	1	0
8. Reversal	3	6	2	4	2
9. Statistics	35	41	31	29	22*
10. Step-by-Step	9	11	16	9	7
11. No Preference	32	38	37	41	36
12. No Experience	10	50	60	97	112*
13. Other Strategies	35	33	33	33	33

*Strategies with significant changes in selection frequency.

The distribution among the ten strategies presented in the questionnaire also tends to become more evenly distributed for cost type compared to fixed price type contracts. A significant number of contract negotiators indicate a lack of experience with FPI and all the cost-plus type contracts. Finally, about 25 percent of the respondents either have no strategy preference based on contract type or prefer strategies other than the ones listed in the questionnaire. In the majority of cases, individuals indicated strategies that were combinations of two or more from among the ten presented, such as combining Statistics and Bottom Line into a single strategy. It should be noted that Surprise strategy was indicated by only one of the 278 respondents. Based on the survey responses, fixed price type contracts

appear to influence individuals to use Bottom Line negotiation strategy more than any other single strategy, but cost type contracts appear to influence the selection of a particular strategy to a far lesser degree. Type of contract is one consideration influencing the strategy(ies) used in negotiation, yet the dollar amount of Government contracts is often a key focus of both critics and supporters of DOD procurement. This factor is examined next to measure its influence on strategy preference.

Contract Dollar Value. Contract dollar values serve important functions as signposts indicating levels of authority, review, and approval within the DOD procurement system. For example, contracts valued at up to \$25,000 are considered "small purchases" and are subject to very limited review, but contracts valued over \$100,000 require much greater levels of review and approval, or often more in-depth audit and analysis. Respondents were asked to indicate the strategy they most preferred to use given that the dollar value of the contract was the most influential factor.

Bottom Line strategy was selected by 106 (38.1%) of the respondents for contracts up to \$25,000. Among the other nine strategies listed, Statistics was selected by 19 individuals (6.8%), Combination by 16 (5.8%), and Definite Action by 12 (4.3%). Fifty individuals (18%) had no preference, and 38 (13.7%) persons preferred other strategies.

For contracts valued from \$25,000 to \$100,000, Bottom Line, Statistics, and Combination increased by 3, 3, and 2 respectively, while the number of response indicating "no preference" declined by 3.

Responses indicating "no experience" was nine (3.2%) for both contract values up to \$100,000 and \$1,000,000.

There appears to be no significant differences between the distribution of strategies selected for contracts valued up to \$25,000 and those valued up to \$100,000. Moreover, when the dollar value exceeds \$100,000 the strategy distribution exhibits a shift much like that noted when contract type changed from fixed-price to cost reimbursement.

Contract negotiators at the four AFSC buying divisions surveyed are apparently quite familiar with contracts valued between \$100,000 and \$1,000,000; only 9 respondents (3.2%) indicated no experience with this level of contract dollar value. While Bottom Line strategy remained the most preferred at 71 individuals (25.5%), this is 38 fewer than for contracts valued up to \$100,000. Those indicating "no preference" (47 - 16.9%) did not change, and those selecting some other strategy (45 - 16.2%) increased only slightly. The distribution among the other strategies shows an increase in preference for both Statistics and Step-by-Step strategies, as well as smaller increases in several other strategies. The somewhat uniform distribution of the preferences among the majority of strategies indicates a possible diminishing influence of dollar value within the range of \$100,000 to \$1,000,000.

When the contract value exceeds one million dollars the distribution shifts more dramatically and assumes a definite pattern that becomes more prominent as the value continues to increase. Therefore, the next three categories of dollar value will be discussed

together in order to highlight this shift. Table XIII displays the number of individuals selecting the top four strategies for dollar value categories and the number of individuals with no preference, no experience and other write-in strategies.

TABLE XIII
Strategy Frequencies Based on Dollar Value

Strategy	Dollars in Millions			
	Up to \$1	\$1 - \$10	\$10 - \$25	Over \$25
Combination	20 (7.2%)	26 (9.4%)	21 (7.6%)	20 (7.2%)
Bottom Line	71 (25.5%)	33 (11.9%)	26 (9.4%)	19 (6.8%)
Participation	10 (3.6%)	28 (10.1%)	29 (10.4%)	35 (12.6%)
Statistics	34 (12.2%)	43 (15.5%)	37 (13.3%)	34 (12.2%)
No Preference	47 (16.9%)	45 (16.2%)	41 (14.7%)	40 (14.4%)
No Experience	9 (3.2%)	18 (6.5%)	48 (17.3%)	54 (19.4%)
Other*	45 (16.2%)	52 (18.7%)	49 (17.6%)	51 (18.3%)

A significant proportion of the "other" strategies were combinations of two or more of the strategies listed in the questionnaire. For example, combinations of Bottom Line and Participation, or Statistics and Step-by-Step strategies were observed in several responses.

Summary of Contract Dollar Value Situations. It appears that when the value of contracts exceeds one million dollars, negotiators rely less on Bottom Line strategy and more on Statistics and especially Participation. Many factors influence contract dollar value, but generally the complexity and quantity of the items being purchased are primary reasons. The shift in strategy emphasis from Bottom Line to Statistics and Participation (or combinations of strategies) may

signify the depth and breadth of evaluation required to negotiate more complex and higher valued contracts. The increasing number of individuals who indicate "no experience" as contract values increase implies that fewer contract negotiators handle large dollar value contracts. Finally, while there may be a tendency for the strategy distribution to "flatten out" as the dollar value increases, the number of persons who indicate "no preference" or who use some other strategy implies that other factors may influence strategy selection as well. The data indicate that Bottom Line dominates the distribution of negotiating strategies for contracts valued up to \$100,000; but this dominance gives way to a diverse, multi-modal distribution for contracts valued over \$100,000. Among the ten strategies suggested in the questionnaire, Bottom Line, Statistics, Participation, Combination, and Step-by-Step are the most preferred in the six dollar value categories presented. However, the number of respondents who have no preference or use some other strategy would make conclusions about the effect of dollar value on negotiating strategy highly biased.

Contract type and dollar value are two factors that may influence the selection of a negotiating strategy. Contracting personnel at the four major buying divisions of Air Force Systems Command handle both large and small programs that may require them to process a contract from inception through final settlement and retirement of the contract file. Three types of contractual actions were presented to survey respondents as possible influences upon their strategy preferences. They were new contracts, modifications to existing contracts, and terminations. The respondents were also asked to write in other unique

actions which they may have experienced in addition to the three presented.

Type of Contractual Action. These three particular situations were presented because they confront the contract negotiator with distinctly different factors. A new contract often means dealing with a new contractor, new products, and unfamiliar contract provisions, rules, funding constraints, etc. These facets of the new contract may require the contract negotiator to perform unique and unfamiliar tasks. At the very least, the Government and contractor must agree on a wide range of topics including price, delivery and payment provisions, standard and non-standard contract clauses, etc. On the other hand, a modification to an existing contract may be an engineering change proposal (ECP) that will require price negotiation but no discussion of contract terms and conditions. The contract clauses regarding delivery, acceptance, and payment, for example, will already have been spelled out in the basic contract and may not require or permit any alterations. Termination of contracts is a relatively rare event resulting from cancellation of a Government requirement, default of the contractor, or final disposition of Government-owned property after performance by the contractor. Termination actions also usually require the services of a Termination Contracting Officer who has experience and expertise in settling termination actions. However, terminations do occur and represent a definite type of contractual action that may influence the strategies used in negotiating the settlement. Table XIV reflects the key preferences of respondents in the three situations.

TABLE XIV

Strategy Rankings Based on Contractual Action

Strategy	New Contract	Modification	Termination
1. Combination	41 (14.7%)	21 (7.6%)	10 (3.6%)
2. Bottom Line	48 (17.3%)	80 (28.8%)	21 (7.6%)
3. Participation	35 (12.6%)	12 (4.3%)	5 (1.8%)
4. Statistics	27 (9.7%)	46 (16.5%)	35 (12.6%)
5. Step-by-Step	15 (5.3%)	10 (3.6%)	8 (2.9%)
6. No Preference	34 (12.2%)	30 (10.8%)	32 (11.5%)
7. No Experience	18 (6.5%)	5 (1.8%)	89 (32.0%)
9. Other Strategy*	43 (15.5%)	43 (15.5%)	42 (15.1%)

*Combinations of listed strategies and others.

The situation involving a new contract is often uncertain, requiring knowledge in many diverse areas of contracting, accounting and finance, and contract law. The relatively broad distribution of strategies appears to reflect these facets of a new contract. However, negotiating a modification to an existing contract is focused primarily on the price of the item or service being purchased and often requires detailed analysis of the contractor's proposal including an in-depth audit of changes to both technical and cost baselines within the contract. It is not surprising that Bottom Line, Statistics, and combined strategies dominate the distribution in all three types of contract actions. In addition, it appears the great majority of respondents have negotiated contract modifications. This is not true, however, for terminations, for which nearly one-third of the respondents indicated "no experience." Statistics, combined strategies, and "no preference" dominate the strategy distribution for termination/settlement situations.

Type of Acquisition or Program. Air Force Systems Command is responsible for acquiring "state of the art" weapons systems for the Air Force to meet external threats and maintain war-fighting capabilities. These weapons are often acquired by a two-phase process. The first phase is a period of research and development (R&D), and the second is the production of the system. Each phase requires certain unique contract approaches; the R&D phase focuses on technological advancement, performance capabilities, and support feasibility; the production phase focuses on production, cost, schedule, performance, and support capabilities. The respondents were asked to indicate their strategy preference based on whether the contract was strictly R&D or production. Table XV shows the responses to this portion of the questionnaire.

TABLE XV
Strategy Rankings Based on Type of Acquisition or Program

Strategy	R & D		Production	
1. Combination	26	(9.4%)	26	(9.4%)
2. Bottom Line	45	(16.2%)	41	(14.7%)
3. Participation	38	(13.7%)	16	(5.8%)
4. Statistics	19	(6.8%)	64	(23.0%)
5. Step-by-Step	13	(4.7%)	8	(2.9%)
6. No Preference	30	(10.8%)	34	(12.2%)
7. No Experience	35	(12.6%)	32	(11.5%)
8. Other Strategy	45	(16.2%)	44	(15.8%)

The shift from Participation to Statistics is the one significant difference between the two categories. The reasons for this shift are

not apparent from the data since no rationale for strategy preference was requested from the respondents. However, the nature of the two categories of contracts may provide clues to understanding this shift. R&D contracts often lack definite specifications and may result in only a report at the end of performance. The Air Force negotiator may require the participation of technical experts during negotiations to make sure the contractor understands the Government's requirements in arriving at a "bottom line" price. A production contract, on the other hand, usually specifies more precisely the item being purchased and the focus is on production rates, efficiency, and supportability. These factors are often determinable through the use of statistical methodologies (e.g., learning curve analysis), and can help the negotiators reach agreement on price, delivery, and quality of the product. Besides this shift, the distribution of strategies shows little change between R&D and production contracts. The data suggest the influence of either R&D or production contracts on negotiating strategies is limited.

Degree of Competition. The preceding categories, contract type, dollar value, type of action, and type of acquisition or program relate essentially to the nature of the product being purchased. The last situation relates to one specific area of the procurement environment, namely the degree of competition. Each respondent was asked to indicate the strategy he or she preferred given the situations of (a) three or more competing contractors; (b) two competitors; and (c) only one (sole source) negotiation. Table XVI shows the distribution of key strategies for the three levels of competition.

TABLE XVI

Strategy Rankings Based on Degree of Competition

Strategy	Three or More Contractors	Two Contractors	Sole Source
1. Combination	16 (5.8%)	17 (6.1%)	28 (10.1%)
2. Bottom Line	52 (18.7%)	48 (17.3%)	42 (15.1%)
3. Definite Action	18 (6.5%)	19 (6.8%)	15 (5.4%)
4. Participation	16 (5.8%)	21 (7.6%)	30 (10.8%)
5. Statistics	24 (8.6%)	26 (9.4%)	36 (12.9%)
6. No Preference	35 (12.6%)	32 (11.5%)	34 (12.2%)
7. No Experience	49 (17.6%)	44 (15.8%)	5 (1.8%)
8. Other	42 (15.1%)	44 (15.8%)	55 (19.8%)

*Combinations of listed strategies and others.

The changes in the distribution of strategies across the first two categories are subtle and inconclusive. There is an increase in the number of individuals who prefer Participation, Combination, Statistics, and Other (combinations of two or more of the ten listed), but little can be inferred from such a conservative shift. If one considers the first two categories as one, that is the situation of two or more competitors, and compares the distribution to sole source negotiations, definite shifts can be seen. For example, the number of individuals who have no experience with three-competitor or two-competitor negotiations is almost ten times that for sole source negotiations. Also, Bottom Line, Participation, and Statistics appear to dominate distribution among the ten strategies presented in the questionnaire.

Summary of Contract Situations. The data collected from the survey respondents does not allow absolute conclusions to be made

about the influence of the situations presented on contract negotiator preferences for certain strategies. However, through observations of the distribution of strategies within each category one finds certain inclinations or trends toward certain strategies. Among the ten survey strategies, Bottom Line is the most frequently indicated in 12 of the 20 individual categories, and tends to dominate the less complex and lower dollar value contracts. In general, the distribution of strategies across all situations indicates that individuals approach complex contractual situations more deliberately and rely heavily on quantitative techniques as a major strategy. Situations such as incentive or cost reimbursement type contracts valued over \$1,000,000, and contracts involving large and complex proposals that usually accompany production contracts, lend themselves to Combination and Participation strategies because of the large number of negotiation issues often encountered in major weapon systems acquisitions. Many individuals indicated that they used a combination of strategies rather than a single approach. For example, the three-way combination of Statistics, Bottom Line and Participation, or two-way variations of these, were found in a large number of instances of other "write-in" strategies. A few respondents commented that no one of the situations in the questionnaire influenced their strategy preference. These individuals stated that the strategy used was influenced by the overall situation, for instance, contract type may be important, but only when accompanied by the contract dollar amount could the negotiator choose the appropriate strategy.

Finally, while a few respondents' comments summarily dismissed the notion that the type contract, dollar value, etc., could influence strategy preference, the observed shifts of selections noted above and the significant percentage of "no preference" responses within each category indicate AFSC contract negotiators may fall into two camps. One large segment of the survey population responded by indicating different strategies for different situations. Another significant portion of the respondents indicated either no preference at all or the preference for a single strategy for all situations (interpreted as essentially a preference not influenced by varying situations). Overall, it appears vast segments of the population of AFSC contract negotiators tend to approach negotiations in greatly similar ways.

Strategy Ranking by Demographic Differences

Investigative Question Six. The initial tests on strategy rankings reveal a firm consensus among the total survey population on the ranking of the frequency of use of certain strategies identified in the questionnaire. However, some differences exist among individuals and possibly among specified groups of individuals who share a common trait or condition. The sixth research question asks: What differences in the ranking of particular strategies by frequency of use exist among the surveyed contract negotiators when grouped by level of education, military or civilian status, years of contracting experience, sex, and whether or not they have received formal negotiating training?

The purpose of this question is to initiate the investigation into indicators of tendencies toward certain strategies. Any number of

group discriminators could be used, but the intention of this research is to investigate rather fundamental associations among individuals, namely groups of men compared to groups of women or more experienced versus less experienced contract negotiators. This investigation is not designed to refute or validate common beliefs or misconceptions about the negotiator's abilities by assigning values to the rankings of strategies of any one group over other groups. The following tests will show whether the paired groups of individuals possess consensus within the group and whether their ranking of strategies agrees with the ranking of another group.

Strategy Ranking Differences Based on Education. The first category tested focused on education level. The demographic analysis revealed that over 90 percent of all the respondents had at least a bachelor's degree. About half the group had a master's degree or higher education. A test was conducted to determine whether the rankings of strategies for those with master's degrees and those with less than master's degrees were in agreement. The following is the result of this test:

- a. Test names: Kendall ω and Kendall τ
- b. Hypotheses:

Kendall ω :

H_0 : The groups, master's degree (Gp-A) and less than master's degree (Gp-B) do not have internal agreement/consensus within each group.

H_a : Both Gp-A and Gp-B have internal consensus.

Kendall τ :

H_0 : The set of Average Rank Score-Rankings (ARS Rankings)
for Gp-A and Gp-B are not associated (not in agreement).

H_a : Gp-A and Gp-B ARS Rankings are in agreement. (On average
the two groups tend to rank strategies approximately the
same way.)

c. Level of significance: $\alpha = .01$.

d. Critical Value (CV):

Kendall ω : χ^2 (df=9) $\alpha = .01$, CV = 21.666

Kendall τ : From Kendall τ tables for $n = 10$ and $\alpha = .01$,
CV = .600.

e. Decision rule: Reject H_0 if the SPSS computed test statistic
is greater than critical values for Kendall ω or τ tests at $\alpha = .01$.

f. SPSS-run results:

1. The ARS and ARS Rankings of each strategy for both groups
is shown in Table XVII, followed by the Kendall ω test results:

Kendall ω : Gp-A = 0.25664; Gp-B = 0.14955

χ^2 : Gp-A = 189.87572; Gp-B = 188.04651

P: Gp-A and Gp-B < 0.00001

2. Kendall τ : The following SPSS results show the Kendall τ
test of Gp-A versus Gp-B:

Kendall $\tau = .8989$ (Spearman $r_s = .9483$, $P < .001$)

$P < .001$

g. Decision: Reject both null hypotheses and accept the
alternates.

TABLE XVII
Strategy Rankings Based on Education

Strategy	Gp-A ARS & Ranking		Gp-B ARS & Ranking	
1. Combination	4.07654	4	5.26154	4.5
2. Bottom Line	2.76543	1	3.14615	1.0
3. Definite Action	5.81481	6	5.93077	7.0
4. Limits	5.95062	7	5.26154	4.5
5. Participation	4.46914	3	4.89231	3.0
6. Patience	6.69136	8	6.67692	8.0
7. Surprise	7.83951	10	7.27692	10.0
8. Reversal	7.49383	9	7.01538	9.0
9. Statistics	4.11111	2	4.83208	2.0
10. Step-by-Step	5.49383	5	5.41538	6.0

h. Interpretation: There is sufficient evidence indicating that there is consensus within the respective groups of individuals who have and do not have master's degrees. Those with master's degrees, on average, tend to use each of the ten strategies listed in the survey approximately as often as those individuals without master's degrees. The confidence in this statement arises from the fact that the probability of randomly observing test statistics as high as those obtained using the survey data is less than 0.001.

(Note: For the sake of brevity, since the test parameters, i.e., statistical tests, critical values, hypotheses, decision rules, etc., for each of the remaining tests are identical to those for education level, only the SPSS-run results, Decision, and Interpretation are recorded for the following categories.)

Strategy Rankings for Military Versus Civilian Respondents.

a. SPSS-run results: Table XVIII shows the ARS and ARS Ranking for each strategy computed for both military (Gp-A) and civilian (Gp-B) respondents.

TABLE XVIII

Strategy Rankings Based on Military and Civilian Status

Strategy	Gp-A ARS & Ranking		Gp-B ARS & Ranking	
1. Combination	4.73170	3	5.20588	4
2. Bottom Line	2.29268	1	3.17059	1
3. Definite Action	6.14634	7	5.82353	7
4. Limits	5.19512	5	5.60588	6
5. Participation	4.90244	4	4.68824	3
6. Patience	7.39024	8	6.51176	8
7. Surprise	8.12195	10	7.34118	10
8. Reversal	7.58537	9	7.10588	9
9. Statistics	4.51220	2	4.55882	2
10. Step-by-Step	5.21951	6	5.50000	5

Kendall ω : Gp-A = .31278; Gp-B = 0.15975

χ^2 : Gp-A = 117.40214; Gp-B = 259.12666

P: Gp-A and Gp-B < 0.00001

Kendall τ : $\tau = .9111$, $P < .001$ ($r_s = .9758$, $P < .001$)

b. Decision: Reject H_0 for both Kendall ω and Kendall τ tests.

c. Interpretation: There appears to be, on average, a strong consensus among military respondents on the ranking of strategies based on frequency of use. Likewise, the civilian respondents' rankings of strategies also forms a firm consensus. The Kendall τ test reveals that the rankings of strategies for military and civilian respondents, as a group, are in agreement.

Strategy Ranking Differences Based on Experience. This category is comprised of two groups of individuals within the survey respondent population. Group A are those individuals with ten or fewer years in contracting and Group B are those persons with more than ten years in contracting. The following are the results of the statistical tests on these two groups:

a. SPSS-run results: The Average Rank Scores (ARS) and ARS-based rankings of strategies, the Kendall ω statistic for each group, and the Kendall τ comparing Gp-A and Gp-B are shown in Table XIX.

TABLE XIX
Strategy Rankings Based on Contracting Experience

Strategy	Gp-A ARS & Ranking		Gp-B ARS & Ranking	
1. Combination	5.14925	4	5.05195	4
2. Bottom Line	2.94776	1	3.09091	1
3. Definite Action	5.85821	7	5.93506	6
4. Limits	5.23134	5	6.03896	7
5. Participation	5.04478	3	4.18182	2
6. Patience	6.85821	8	6.37662	8
7. Surprise	7.36567	10	7.71429	10
8. Reversal	7.15672	9	7.27273	9
9. Statistics	4.61194	2	4.44146	2
10. Step-by-Step	5.32836	6	5.64935	5

Kendall ω : Gp-A = 0.18445, Gp-B = 0.19664

χ^2 : Gp-A = 227.80374; Gp-B = 149.87320

P: Gp-A and Gp-B < 0.00001

Kendall τ : $\tau = 0.8667$, $P < .001$ ($r_s = 0.9515$, $P < .001$)

b. Decision: Reject H_0 for Kendall ω and Kendall τ tests.

c. Interpretation: There appears to be strong consensus within each group as to the ranking of strategies based on frequency of use. There is also strong agreement between the more experienced and less experienced respondents. The probability of observing a Kendall τ as high as .8667 purely by chance is less than .001, which is a good indicator that the two groups really are in agreement most of the time. However, some minor differences can be seen in the rankings of strategies by both groups (e.g., Definite Action, Limits, and Step-by-Step), but these are lower-ranked strategies in both groups and are not considered to seriously affect the ranking order.

Strategy Ranking Differences Due to Sex. The federal government has stressed the importance of women in the American workforce, resulting in a growing number of women entering the field of contracting. Many of these individuals face long-standing prejudices and stereotypes. In fact, some individuals may believe that women, as a group, do not perform the same way as men in such stressful situations as contract negotiations. The issue is examined in this research in a very specific, if somewhat limited, way by comparing the rankings of strategies for all female respondents (Gp-A) to the rankings for the male respondents (Gp-B). The results of the SPSS-run are shown in Table XX.

TABLE XX
Strategy Rankings Based on Sex

Strategy	Gp-A ARS & Ranking		Gp-B ARS & Ranking	
1. Combination	5.25926	4.5	5.16369	4
2. Bottom Line	2.64815	1.0	3.12102	1
3. Definite Action	6.18519	7.0	5.78344	7
4. Limits	5.31481	6.0	5.59873	6
5. Participation	4.55556	2.0	4.78981	3
6. Patience	7.01852	8.0	6.56688	8
7. Surprise	7.31481	10.0	7.55414	10
8. Reversal	7.07407	9.0	7.24204	9
9. Statistics	4.77778	3.0	4.47134	2
10. Step-by-Step	5.25926	4.5	5.50955	5

a. SPSS-run results:

Kendall ω : Gp-A = 0.20037, Gp-B = 0.18111

χ^2 : Gp-A = 100.20664; Gp-B = 271.24690

P: Gp-A and Gp-B < 0.00001

Kendall τ : $\tau = 0.9439$, $P < .001$ ($r_s = 0.9848$, $P < .001$)

b. Decision: Reject H_0 for both Kendall tests.

c. Interpretation: On average, the women respondents tend to agree with each other on the ranking of strategies, i.e., they use the strategies in about the same frequencies. This appears true for the men respondents as well. Moreover, there is strong indication that the women and men respondents agree, in large measure, on the ranking of the strategies in the questionnaire. A more liberal interpretation, although unsubstantiated by more rigorous sociological or behavioral analysis, is that men and women contract negotiators tend to approach negotiations in about the same way.

Strategy Differences Based on Formal Negotiating Training. A key aspect of the underlying impetus for this research concerns the value of the formal training in contract negotiations received by Air Force Systems Command procurement personnel. The question addressed by this test is "Do respondents who have received formal negotiating training (Gp-A) tend to rank the strategies differently than (i.e., not in agreement with) those who have not received such training (Gp-B)?" The results of the SPSS-run are shown in Table XXI.

TABLE XXI

Strategy Rankings Based on Negotiating Training

Strategy	Gp-A ARS & Ranking		Gp-B ARS & Ranking	
1. Combination	5.16556	4	4.98333	6
2. Bottom Line	2.97351	1	3.06667	5
3. Definite Action	5.94702	7	5.73333	2
4. Limits	5.53642	6	6.50000	8
5. Participation	4.95364	3	4.16667	2
6. Patience	6.60265	8	6.88333	8
7. Surprise	7.44371	10	7.61667	10
8. Reversal	7.21192	9	7.16667	9
9. Statistics	4.50331	2	4.66667	3
10. Step-by-Step	5.32450	5	5.75000	7

a. SPSS-run results:

Kendall ω : Gp-A = 0.17945, Gp-B = 0.20402

χ^2 : Gp-A = 258.75919; Gp-B = 113.30986

P: Gp-A and Gp-B < 0.00001

Kendall τ : $\tau = 0.8667$, $P < .001$ ($r_s = 0.9515$, $P < .001$)

b. Decision: Reject H_0 for both Kendall tests

c. Interpretation: The two groups representing individuals who have and who have not received formal negotiating training both show strong consensus within each group and between the two groups. There appears to be no significant differences, at a significance level of .001 due to respondents having received formal negotiating training.

Chapter V provides a summary of each research question analysis, draws conclusions on the findings of several questions into broader statements, and recommends areas of additional research that can further define this effort.

V. Summary, Conclusions and Recommendations

The focus of this research has been on negotiating tactics and strategies used by Air Force Systems Command (AFSC) contract negotiators at four major buying divisions. The majority of the literature reviewed in Chapter II is concerned with negotiation as a psychological and sociological manifestation of interpersonal relationships or basic human interaction. This viewpoint is concerned with the motivational and psychological activity during the negotiating process and seeks to explain what is happening in the minds of the individuals while they are negotiating. Another common treatment of negotiations among professional publications deals with the attitudes and opinions of managers on the qualifications and desirable characteristics of good contract negotiators. Writings in this venue are mostly research reports that describe personality traits, education, and experience levels of persons who managers believe make the best negotiators. Neglected is an investigation of how people actually negotiate, what tactics and strategies they use, and whether they tend to use the tactics and strategies that prominent authors on the subject say are used most often.

It was from this point of departure that this research began. The contract negotiators in the AFSC major buying divisions were selected because of the wide variety of contracts, types of products, and dollar amounts handled by the contracting establishment within AFSC. The

survey questionnaire used in this research had the effect of "looking over the shoulder" of contract negotiators going about their business. Based on comments from several individuals who completed the survey, many respondents found themselves, for the first time, thinking about their contract negotiations in terms of tactics and strategies. However, the great majority of respondents had no problems indicating which tactics and strategies they use most often. Moreover, based on written comments from respondents, it is clear that some negotiators have strong feelings regarding the tactics they and defense contractors use. Other respondents indicate an acute appreciation of the situational nature of contract negotiations by remarking that the tactics and strategies they use depend on the total contracting environment, including the item being bought, the dollar value, type of contract, the particular company and its representatives. This view encourages the assumption that there may be widely dispersed preferences for particular negotiating strategies since individual contracts create their own unique environments.

The exploration of this assumption was carried out by answering the research questions presented in Chapter I. The summary of the research question analyses is presented in the order in which the questions appear in Chapter I; the question is repeated and followed by evaluation summaries. The conclusions of this research tie together, where appropriate, the findings of several questions into broader statements. The recommendations include specifically identified areas that can expand upon this effort and open new avenues for exploring the underlying factors behind these findings.

Research Question One

What proportion of Air Force Systems Command negotiators indicate they have attended a negotiation workshop or some other formal negotiations training?

Summary. About two-thirds of the respondents indicate they have received such training. The proportion of those who have or have not received such training appears independent of such factors as rank or grade, number of years service, or organization.

Conclusions. The fact that 30 percent of the respondents have not received training indicates formal negotiating training is not a critical factor in the assignment of individuals to jobs that require contract negotiations. Air Force Systems Command (AFSC) contracting management may need to consider this in determining future negotiation training requirements. The completion of this training may enhance the individual's ability to negotiate effectively. However, this research did not attempt to define "negotiating effectiveness." Therefore, additional research would be necessary to define and measure the effect of formal negotiations training on "negotiating effectiveness."

Recommendations.

1. It is recommended that AFSC contracting management and training monitors determine future requirements for formal negotiations training.
2. Initial research is recommended to define the concept of "negotiating effectiveness."
3. A follow-on research should be undertaken to determine what relationships, if any, exist between "negotiating effectiveness" and

various other factors such as formal training or specific tactics and strategies. It is recommended that the survey questionnaire method be used to obtain data of this type from AFSC buying division contracting personnel.

Research Questions Two and Three

Which tactics do Air Force Systems Command negotiators use most frequently? Which tactics do Air Force Systems Command negotiators indicate as most often used by DOD contractors?

Summary. When the answers to these two questions are combined one can envision, from the viewpoint of the respondents, a typical negotiating scenario depicting the attitudes and actions of both sides and the general atmosphere of the proceedings. While interpreting this manufactured situation is risky and purely speculative, insight may be gained into the on-going human processes that occur during Government and contractor negotiations.

The interaction between Air Force and DOD contractors during negotiations displays aspects of game playing, posturing, and counter-measures described in several of the publications on negotiations reviewed in Chapter II, Literature Review. While a comparison of these two sets of rankings could generate a virtually unlimited number of interpretations, the researchers, based on an analysis of the survey responses, statistical test results, and comments provided by individual respondents, have reached several conclusions in this area.

The ten most frequently used tactics for both sides are shown in Table XXII.

TABLE XXII

Ten Most Frequently Used Tactics

Rank	Air Force Tactics	Contractor Tactics
1	Ask for lots of data	Split the difference
2	Belabor fair and reasonable	Negotiate with limited authority
3	Split the difference	High-ball offers
4	Allow face-saving exits	Take-it-or-leave-it offers
5	Off-the-record discussions	Must be on contract by ...
6	Call frequent caucuses	Off-the-record discussions
7	Low-ball offers	Deadlock the negotiations
8	Refer to your side's generosity	Refer to your side's generosity
9	Escalate to opponent's boss	Threaten to walk out
10	Escalate to your boss	Deliberate errors in offers

Conclusions. The Air Force contract negotiators appear to view themselves as "the guys with the white hats." The majority of the tactics they use convey the image of an earnest, forthright, diplomatic, and well-disciplined person -- one who takes the officially proper action even in the face of adversity, despite the fact that "low-ball offers" and "referring to your side's generosity" could be interpreted as either less than exemplary or mere posturing. On the other hand, Air Force contract negotiators view the contractor representatives as "the guys with the black hats," whose tactics present an image of an individual who may become more accommodating only after establishing an absolute and undiminishable position which the Government must accept according to the contractor's time table. The Air Force negotiators appear to counter the contractor's intransigence first with an unreasonably low counter offer followed by "behind the scenes" appeals to both sides' management for assistance

in breaking the impasse. Finally, so it appears, the differences that were keeping the two sides apart are reconciled in a round of "split the difference" offers and eventual settlement. This conclusion is speculative, yet the overall impact of comparing Air Force and contractor tactics, as seen by Air Force negotiators, may be described as antagonistic or adversarial in tone.

If these respective tactics infer the attitudes of both sides, then a typical Air Force and DOD contractor negotiation is likely to achieve conclusion only after a fruitless exchange of unacceptable offers and counter offers, until time or some other constraint compels both sides to agree. An agreement based on a "split the difference" settlement may mean that the disputed amounts are arbitrarily shared and may lack legitimate supporting rationale. However, "split the difference" can also indicate a genuine desire to accommodate the demands of the opposition in the interests of settlement, particularly when the disputed amount is small relative to the total contract value. Contracting managers should consider the appropriateness of this tactic for DOD negotiations.

Finally, these findings support the contention of some contracting professionals that there is a strong adversarial relationship between the Government and DOD contractors. Moreover, from the Air Force perspective, it is the contractor who uses antagonistic negotiating tactics, while the Air Force team is business-like, even-handed, and fair and reasonable. One can only speculate that defense contractor representatives may have a different view of both themselves and their Air Force Systems Command negotiating counterparts.

Recommendations.

4. It is recommended that AFSC contracting managers consider addressing negotiating tactics in future policy and procedures for contract negotiations.

5. Further research is necessary to validate the tactics used by DOD contractors. The survey questionnaire method using a modified version of the one used for this thesis should be used to obtain data from DOD contractors.

6. It is recommended that further research be undertaken to validate the conclusions made here, using the databases established in this thesis research and from recommendation number five.

Research Question Four

What strategies do Air Force Systems Command contract negotiators use most often?

Summary. There is a strong consensus among the respondents to both prefer and use Bottom Line negotiating strategy. Other frequently used strategies include Participation (the use of experts from various disciplines on contracting teams) as well as Statistics (the dependence on quantitative methods and statistical records to support negotiating positions). There also is strong agreement among negotiators that the Surprise strategy (taking unusual and sudden actions) or Reversal (disguising presentations in order to secure concessions) are the least used and preferred strategies. The ranking of the strategies implies a firm Air Force Systems Command commitment to approach negotiations in a methodical and analytical manner and to agree on a total contract price

that reflects the satisfaction of both technical and business concerns of Air Force management.

Recommendation.

7. It is recommended that AFSC contracting management consider the role of negotiating strategies in future policies on contract negotiations. For example, management may require a description of the overall negotiating strategy in pre-negotiation briefings.

Research Question Five

What are the strategies used under specific contract situations?

Summary. Several respondents remarked that individual contract situations, such as those listed in the questionnaire, do not influence the choice of strategy. However, the findings in Chapter IV indicate that general categories of contract situations may influence the preference for one strategy over others. Fixed-price and cost-reimbursement type contracts generally represent distinct contract-risk philosophies. The risk under fixed price contracts is born primarily by the contractor. For this reason a fixed price contract serves as an incentive to reduce cost and increase profit for the contractor, while limiting the cost-risk to the government. Bottom Line strategy focuses on this single price aspect and is preferred by a significant number of the respondents for fixed-price contracts. Under cost-reimbursement contracts the cost-risk shifts primarily to the Government; and detailed cost accountability and reporting are usually required during the contract performance period. The choice of strategy shifts from a

tendency toward Bottom Line for fixed price contracts to one favoring Statistics, Step-by-Step, and Participation for cost-reimbursement contracts. This shift underscores the concern for defining and negotiating individual cost elements before the contractor begins work.

Bottom Line strategy also dominates the other nine strategies for contracts valued under \$100,000, but was indicated by significantly fewer respondents for higher contract values. For contracts valued over \$100,000 contract negotiators tend to combine the strategies listed and generally move away from a dependence on Bottom Line strategy.

In general, contracts of lower complexity and dollar value tend to influence the selection of Bottom Line strategy. However, for more complex contract types, higher dollar value contracts, and the remaining contract situations of type of contractual action, type of acquisition, and the degree of competition, no one strategy dominates the others.

On the other hand, a significant proportion of respondents indicated they had no preference for a particular strategy based on the categories listed in the questionnaire. Many respondents indicated that the "total contract situation," considering all the situations together, determines the strategy used. Still other respondents indicated they do not use a specific strategy, but rather conduct negotiations "honestly and with integrity."

Finally, certain situations may influence negotiating strategies, but the results of this research are inconclusive as to the predictability of strategies based on situation. Far more data may be needed

before the relationships between strategies and contract situations can be fully investigated.

Recommendations.

8. It is recommended that AFSC contracting management consider the proportions of contract negotiators who lack experience with various contract type and dollar values in future policy and procedure decisions on assignments and business strategies used within AFSC. The possible results may indicate a need to increase the breadth of experience of contracting professionals within the buying divisions.

9. Further research is recommended using this database and expanded databases to better define and measure the relationships that may exist between contract situations and the preference for negotiating strategies. The survey questionnaire method is suggested for gathering data and, if appropriate for that data, multiple linear regression analysis to describe any direct relationships.

Research Question Six

What differences in the ranking of strategies exist among Air Force Systems Command contract negotiators based on education level, military or civilian status, years of contracting experience, sex, and whether or not they have received formal negotiating training?

Summary. None of the categories in question six appear to have significant influence on the ranking of strategies by respondents to the questionnaire. The Kendall τ tests for association indicate that the rankings within the categories are so strong that only an extremely rare coincidence of chance could otherwise account for the

correlation of rankings observed. The individual groups in each category showed strong agreement on the rankings of the ten strategies. For example, there is a firm consensus among all the military respondents on the ranking of the ten strategies. Likewise, the Kendall Coefficient of Concordance ω test on the ranking of the strategies by civilian contract negotiators results in a very positive agreement overall. The comparisons of the categories in question six could seriously challenge some prevalent misconceptions about negotiators and the strategies they use.

Conclusions. Previous research by both Bearden (1) and Novak (21) focused on the personal characteristics that Air Force managers desire of contract negotiators. Included among the desirable characteristics are experience in contracting and higher levels of education. These research reports reflect the opinions of senior contracting managers who are responsible, by and large, for establishing and satisfying recruitment criteria for Air Force Systems Command contract negotiators. However, this thesis research found that neither education level or the number of years experience in contracting by themselves appear to influence the ranking of strategies used by the survey respondents.

In the contracting arena, military and civilian federal professionals share negotiation responsibilities. The Air Force uniform is an obvious difference between military and civilian contracting personnel who also often have dissimilar experiences and general career orientations. The differences between military and

civilian contract negotiators do not appear to influence the strategies that individuals within each group use most frequently. The strategy rankings for each are very closely correlated, as shown by the Kendall τ test results in Chapter IV, Findings and Analysis.

Everyday experience may lead one to believe that individuals with many years experience would tend to think and act considerably differently from less experienced people, especially concerning matters relevant to their jobs. The analysis of the statistical tests comparing contract negotiators with ten or fewer years in contracting with those with more than ten years experience reveals few differences in their rankings of the ten strategies.

There is no evidence to conclude that individuals who have received formal negotiating training select negotiating strategies significantly differently from those who have not received such training. The strength of the correlation noted between the two groups may concern training managers who must consider sending individuals to formal negotiating training courses.

The five categories of comparisons broadly describe the major demographic differences among the respondents. While the treatment of these categories limits the scope of the conclusions they highlight key considerations facing contracting managers on the assignment of individuals to various contracting situations. For example, a contracting manager may be faced with assigning either a military or civilian negotiator to a particular contract negotiation and may be concerned with the strategies each might use. Based on this research the military or civilian status of the negotiator should have little

bearing on the strategies selected. However, this research used only individual factors in comparing the rankings of negotiating strategies. Combination-factor comparisons such as female-military versus male-military or civilians with master's degrees compared to military with master's degrees were not conducted. The comparisons which were conducted reveals a singular homogeneity of the strategy rankings among all individually identified factors. The rankings of the ten strategies, except in rare instances, differ only in reversed adjacent rankings. For example, civilian respondents ranked Combination strategy third and Participation strategy fourth, while military respondents ranked them fourth and third, respectively.

Recommendations.

10. Further research is recommended using the database in this thesis to compare multiple-factor strategy rankings. The SPSS software program is recommended for executing programs using the Kendall ω and Kendall τ non-parametric tests to determine concordance among various multi-factor groups.

11. Further research is recommended to record more specific and diverse demographic or interdisciplinary factors (such as specifically identified programs or organizations) while developing information on negotiating tactics and strategies. The survey questionnaire method of gathering data is suggested, and appropriate statistical tests to measure any relationships among various groups.

Overall Summary

The findings of this research infer generalizations of the population of contract negotiators within Air Force Systems Command (AFSC). In common experience one often encounters the concept of the "average" or "typical" person. The averaging of categories such as military rank or civilian grade is meaningless and illustrates the drawbacks of averaging categories. However, the practice can help one conceive of an individual who represents the larger group as a whole. As described in the Summary of Demographic Analysis in Chapter IV, the average contract negotiator who responded to this research questionnaire was a 37 year-old male, had approximately 10 years contracting experience, was a GS-12, with at least a bachelor's degree, and attended a formal negotiation training course. This average negotiator, whom we will call Mr. Smith, prefers and almost always chooses Bottom Line strategy approach to negotiations. During negotiations he will most often ask the contractor for lots of data while telling his opponent how fair and reasonable the Government is. He looks upon his negotiating opponent as a true adversary who often issues his "high-ball" offer as a "take it or leave it" ultimatum to the Government negotiator. Mr. Smith, believing the contractor's representative does not have full negotiating authority, conducts "off-the-record discussions" to clear the air between each other. Mr. Smith does not wish to embarrass his opponent, so he often allows him to gracefully retract his ultimatum and any statements regarding time limitations on his offer. Finally, perhaps after speaking with his boss, who may speak to his opponent's boss, Mr. Smith agrees with

the contractor that they should "split the difference" and reach agreement.

Please note that this "average" negotiator, Mr. Smith, and this scenario are speculative. However, they are presented here to assist the reader in conceptualizing how the demographic data and rankings of tactics and strategies might relate to a "real world" negotiation. The actions of the imaginary negotiator, Mr. Smith, reflect the overall tendencies indicated by the statistical tests and analyses conducted on the survey responses of 278 contract negotiators. The respondents to this research survey are only a sampling of the total population of contract negotiators within Air Force Systems Command, and an even smaller sample of contract negotiators Air Force-wide. The tactics and strategies represent only samples of possible individual choices, and the demographic and contractual categories used for comparison are admittedly limited in scope. However, the responses to the survey indicate a high degree of awareness of negotiating tactics and strategies. The strength of consensus among the various groups of contract negotiators infers a broad-based general concept of how to negotiate among a large number of contract negotiators. The information and analyses presented in this thesis should help contracting managers and contract negotiators alike gain a better understanding of the negotiating process within Air Force Systems Command.

Overall Recommendations

1. Follow-on research on tactics and strategies is recommended, using the database generated by this research to determine what relationships exist between certain combinations of demographic factors and the tactics and strategies used by Air Force Systems Command contract negotiators. Suggest the SPSS software program be used to conduct cross-category analysis of tactics and strategy rankings.

2. Follow-on research is recommended to increase the response rate within all the AFSC buying divisions and to include other AFSC units and contract negotiators at base level throughout the Air Force. Suggest the survey questionnaire and testing methodology of this research be used.

3. Follow-on research is recommended to survey defense contractors on the tactics and strategies they use and prefer in negotiations with the Department of Defense. Suggest the survey questionnaire and testing methodology of this research, appropriately modified as needed, be used to obtain data from contractor representatives.

4. Initial research is recommended to define the term "negotiating effectiveness" and to measure the impact of the tactics and strategies most frequently used by AFSC contract negotiators on "negotiating effectiveness" as defined. Suggest the Delphi method to obtain consensus among contract negotiators and contracting managers on the definition of "negotiating effectiveness." Suggest the most frequently used tactics and strategies indicated by this research be used to determine the effect each may have on negotiating effectiveness.



AFSC CONTRACTUAL ACTIONS (FY84)

<u>ORG</u>	<u>TOTAL</u>
ASD	9944
AD	764
BMO	1512
ESD	1139
SD	2415
OTHER	2886
TOTALS	<u>18660</u>
ASD SHARE	53%
ASD SHARE FY83	49%

Appendix A: AFSC Contractual Actions (FY84)



AFSC CONTRACTUAL OBLIGATIONS

(FY84)
(MILLIONS)

<u>ORG</u>	<u>TOTAL</u>
ASD	16688
AD	547
BMO	2860
ESD	2245
SD	3200
OTHER	639
TOTALS	<u>26179</u>
ASD SHARE	64%
ASD SHARE FY83	61%

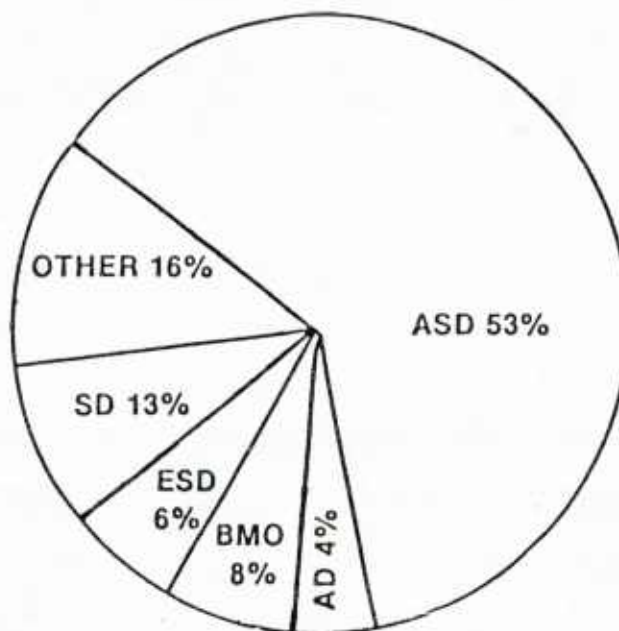
Appendix B: AFSC Contractual Obligations (FY84)



AFSC CONTRACTUAL ACTIVITY (FY84)

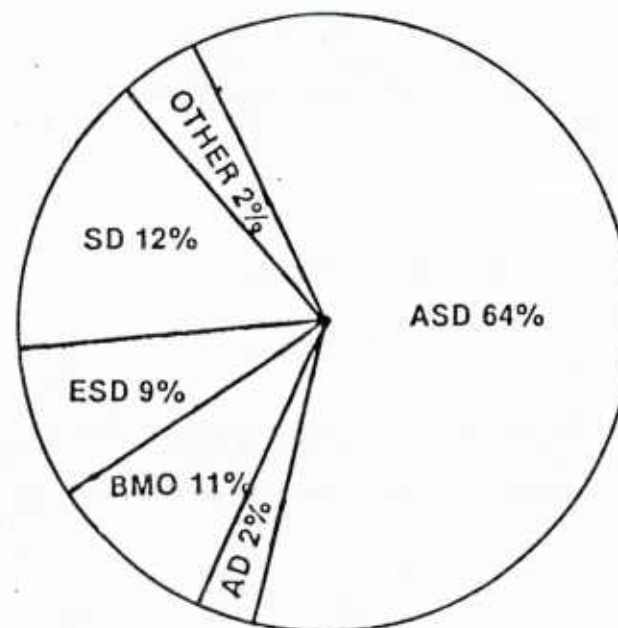
Appendix C: AFSC Contractual Activity (FY84)

NUMBER OF ACTIONS



TOTAL 18660

OBLIGATIONS (MIL)



TOTAL \$26,179

Appendix D: Survey Cover Letter and Questionnaire



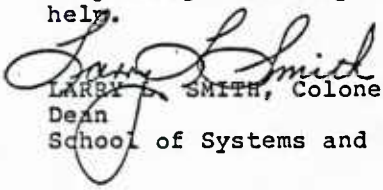
DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (AFIT)
WRIGHT-PATTERSON AIR FORCE BASE, OH 45433-6583

REPLY TO: LS (Capt Catlin/Capt Faenza, AV 785-6569)
ATTN OF:
SUBJECT: Negotiation Tactics and Strategies Survey Package

6 JUN 1985

TO: Each Survey Respondent

1. Please take the time to complete the attached questionnaire and return it to us in the attached envelope by 1 July 1985.
2. The survey records the tactics and strategies you use and prefer in your job as a contract negotiator. The survey data we gather will become part of an AFIT research project to allow you and other Air Force negotiators to share your experience. Your individual responses will be combined with others and will not be attributed to you personally.
3. This survey has been reviewed by Mr. Don Phillips, HQ AFSC/PKCP and approved by HQ MPC/MPCYPS. Your participation is completely voluntary, but we would certainly appreciate your help.


LARRY D. SMITH, Colonel, USAF
Dean
School of Systems and Logistics

- 2 Atch
1. Questionnaire
2. Return envelope

USAF Survey Control No. 85-62, expires 31 Dec 85

AIR FORCE—A GREAT WAY OF LIFE

Negotiating TACTICS and STRATEGIES Questionnaire

Introduction and Instructions

This questionnaire is in two parts. Part I requests information about your education, training, experience, current job, organization and type of program. No information about your name, social security number, or other identifying data is requested; however, other "personal-type" data such as age, sex, and rank or pay grade are requested. This data will be used for conducting statistical analysis of the answers you provide to the questions in Part II.

Part II contains questions requesting you to indicate how often you use certain negotiating TACTICS and STRATEGIES in various contracting situations.

This questionnaire is designed to be completed with minimum time and effort. When you have completed the questionnaire, please use the attached postage-paid envelope to return it.

Please add any information or comments you wish on separate sheets and attach them to this questionnaire. We appreciate your participation in this survey.

PART I - GENERAL INFORMATION

Please fill in the block or circle the letter indicating your answers to the following questions:

1. Age: _____ (to the nearest whole year).
2. Sex: a. Male b. Female.
3. Military rank or civilian grade: _____.
4. Total number of years federal service: _____.
5. Total number of years in contracting: _____.
6. Please indicate the highest level of formal education you have attained: (circle appropriate letter).
 - a. High School Graduate
 - b. College, non-degree
 - c. Bachelor's Degree
 - d. Graduate study, non-degree
 - e. Master's Degree
 - f. Master's Degree, plus additional hours
 - g. Doctorate Degree
7. Please indicate the professional continuing education (PCE) courses in contracting that you have completed:
 - a. Basic contracting training
 - b. Basic contract pricing
 - c. Intermediate-level contract pricing
 - d. Advanced contract pricing
 - e. Contract Administration
 - f. Cost analysis
 - g. Overhead management
 - h. Contract law
 - i. Negotiations workshop
 - j. No PCE training to date
 - k. Other (please list): _____

8. How often do you negotiate contracts?

- a. Always
- b. Often
- c. Occasionally
- d. Seldom
- e. Never

9. Current position title (buyer, PCO, Division Chief, etc.):

_____.

10. Primary contract negotiating responsibilities (negotiator, PCO, reviewer, price/cost analyst).

_____.

11. Type of organization you currently work in:

- a. Staff (policy, review committee, etc.).
- b. Single system program office (such as B-1, F-16, etc).
- c. Laboratory.
- d. Multi-system program office (simulators, armaments, strategic systems, etc.).
- e. Research and Development (R&D) only.
- f. Mission support (regional or local).
- g. Other: _____ (write in).

12. Estimated total number of negotiations as the lead/chief negotiator:_____.

13. Estimated total number of negotiations you participated in as other than the lead negotiator:_____.

PART II - NEGOTIATING TACTICS AND STRATEGIES

The following questions ask you to identify and rank order various negotiating **TACTICS** and **STRATEGIES**. These **TACTICS** and **STRATEGIES** were selected from publications by Chester L. Karras, the National Contract Management Association's Negotiations Procedures and Strategies Training Manual, and other sources. While no two sources agree on all types of **TACTICS** or **STRATEGIES**, features of the approaches from these publications were combined. The following definitions are used in this questionnaire and are presented here to aid you in understanding the questions.

TACTIC: ANY SPECIFIC ACTION, WORDS, OR GESTURES DESIGNED TO ACHIEVE BOTH AN IMMEDIATE OBJECTIVE (such as countering an action by the other negotiating party) AND THE ULTIMATE OBJECTIVE OF A PARTICULAR STRATEGY.

STRATEGY: AN ORGANIZED PLAN OR APPROACH TO NEGOTIATIONS FROM AN OVERALL PERSPECTIVE WHICH MAY BE COMPRISED OF ONE OR MORE THAN ONE TACTIC.

Please feel free to write in and rank any **TACTICS** or **STRATEGIES** you use most often or most prefer but that are not listed. Also, please be as candid as possible in selecting or adding any **TACTIC**. No positive or negative connotations have been assigned to the **TACTICS** or **STRATEGIES** listed, and no such connotation will be attributed to those who complete this survey.

PART II - SECTION ONE - NEGOTIATING TACTICS

INSTRUCTIONS:

1. Line through any terms you do not recognize.
2. Rank (by appropriate letter(s)) the five **TACTICS** you use most often (#1 being the most frequent).
3. Rank (in the same manner) the five **TACTICS** your negotiating opponents use most often.
4. Include any **TACTIC** you have experienced or used that is not listed.

NEGOTIATING TACTICS

- A. Adjust the thermostat
- B. Allow face saving exits
- C. Appeal to patriotism
- D. Ask for lots of data
- E. Belabor "Fair & Reasonable"
- F. "Bogey" - Budget Limits
- G. Call frequent caucuses
- H. Change negotiators
- I. "Cherry-Pick" the best deals.
- J. Deadlock the negotiations
- K. Deliberate errors left in offers
- L. Deliberately expose notes or working papers
- M. Embarrass your opponent
- N. Escalate to opponent's boss
- O. Escalate to your boss
- P. "Good-guy-bad-guy" roles

- Q. "High-Ball" offers
- R. Impose "No-smoking rule"
- S. "Low-Ball" offers
- T. Make an offer they must refuse.
- U. Massage opponent's ego
- V. "Must be on contract by _____!"
- W. "My plane leaves at _____ o'clock"!
- X. Negotiate with limited authority.
- Y. "Off-the-record" discussion.
- Z. Personal attack
- AA. Play hard to get.
- AB. Refer to the firm's past poor performance.
- AC. Refer to your side's generosity.
- AD. Reverse auctioning
- AE. "Split-the-difference" offers
- AF. "Take-it-or-leave-it"
- AG. Threaten to walk out.

RANK TACTIC YOU USE

- #1 _____
- #2 _____
- #3 _____
- #4 _____
- #5 _____

RANK TACTIC OPPONENTS USE

- #1 _____
- #2 _____
- #3 _____
- #4 _____
- #5 _____

PART II SECTION TWO - STRATEGY RANKINGS

The following are definitions of STRATEGIES selected for this survey.

#1. COMBINATION (THE "BIG POT"): Introducing many issues at one time, using "throw-away" points to get major concessions.

#2. COVERAGE ("BOTTOM-LINING"): Negotiating on total cost/price basis versus item-by-item.

#3. DEFINITE ACTION ("TESTING THE WATERS"): Taking a definite position forcing the opposition to either accept or reject your position.

#4. LIMITS: Using authority, time, budget, or other limits to pressure concessions from the opposition.

#5. PARTICIPATION/INVOLVEMENT: Designing the team composition to narrow or broaden the areas of negotiation (use of experts, for example).

#6. PATIENCE ("BUYING TIME OR STALLING"): Using delay TACTICS to prolong consideration of an issue or to counter a time limit STRATEGY.

#7. SURPRISE: Any unexpected action to gain acceptance of a point or obtain concessions from the opposition.

#8. REVERSAL ("THE LESSER OF EVILS"): Presenting increasingly more rigid demands forcing the opposition to accept a lesser (preceding or following) offer - your true objective.

#9. STATISTICS ("FIGURES DON'T LIE"): Using learning curves, trend analysis, or historical records as the primary support for your position.

#10. STEP-BY-STEP: Presenting a series of acceptable minor points to obtain a major concession; also used to counter "The Bottom Line" STRATEGY.

Please rank the STRATEGIES listed below, according to frequency of use and preference, by placing a number under the respective column next to the STRATEGY. The number one (1) would indicate the most frequently used or preferred STRATEGY, and the number ten (10) the least frequently used or preferred. Remember if your use or prefer a STRATEGY not listed, please describe and rank it. Your input will be valuable in broadening the database of this survey.

	<u>STRATEGY</u>	<u>FREQUENCY</u>	<u>PREFERENCE</u>
#1.	COMBINATION	_____	_____
#2	COVERAGE	_____	_____
#3	DEFINITE ACTION	_____	_____
#4	LIMITS	_____	_____
#5	PARTICIPATION	_____	_____
#6	PATIENCE	_____	_____
#7	SURPRISE	_____	_____
#8	REVERSAL	_____	_____
#9	STATISTICS	_____	_____
#10	STEP-BY-STEP	_____	_____
	OTHERS (Please write in & rank)	_____	_____
		_____	_____
		_____	_____
		_____	_____
		_____	_____

PART II SECTION THREE

STRATEGY RANKINGS UNDER VARIOUS CONTRACT SITUATIONS

INSTRUCTIONS:

1. Indicate the **STRATEGY** (from page 7) you most prefer to use.
2. If you have no preference, then please so indicate by writing "NP" on the line next to the situation.
3. If you have no experience with a particular situation, then please so indicate by writing "NE" on the corresponding line.
4. Assume that the situation presented is the primary determining factor in your choice.

REMEMBER - INDICATE YOUR MOST PREFERRED STRATEGY

<u>SITUATION</u>	<u>STRATEGY</u>
<u>CONTRACT TYPE</u>	
FIRM FIXED PRICE	_____
FIXED PRICE INCENTIVE	_____
COST PLUS FIXED FEE	_____
COST PLUS INCENTIVE FEE	_____
COST PLUS AWARD FEE	_____
<u>CONTRACT DOLLAR VALUE</u>	
<u>FROM</u>	<u>TO</u>
0	25,000
25,000	100,000
100,000	1,000,000
1,000,000	10,000,000
10,000,000	25,000,000
OVER \$25,000,000	_____

REMEMBER - INDICATE YOUR MOST PREFERRED STRATEGY

<u>SITUATION</u>	<u>STRATEGY</u>
<u>TYPE OF CONTRACTUAL ACTION</u>	
NEW CONTRACT	_____
CONTRACT MODIFICATION (ECP, ADDED WORK, ETC)	_____
TERMINATION - SETTLEMENT OF CLAIMS - CLOSE-OUT	_____
OTHER (Please specify)	_____
<u>TYPE OF ACQUISITION OR PROGRAM</u>	
RESEARCH AND DEVELOPMENT	_____
PRODUCTION	_____
OTHER (Please indicate)	_____
<u>DEGREE OF COMPETITION</u>	
THREE OR MORE COMPETING CONTRACTORS	_____
TWO COMPETING CONTRACTORS	_____
SOLE SOURCE CONTRACTOR NEGOTIATIONS	_____

END OF QUESTIONNAIRE

Thank you for completing this questionnaire. We really appreciate your participation in this survey. Your responses are valuable additions to the knowledge base of contract negotiating TACTICS and STRATEGIES.

Appendix E: HQ AFMPC Approval of Survey Questionnaire



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR FORCE MANPOWER AND PERSONNEL CENTER
RANDOLPH AIR FORCE BASE, TX 78150-6001

5 JUN 1985

REPLY TO
ATTN OF: MPCYPS

SUBJECT: Survey Evaluation

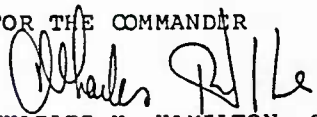
TO: AFIT/LS (Capt Catlin)

1. Your request to conduct the "Identification of Negotiation Strategies of Air Force Contract Negotiators" survey is approved and is assigned USAF Survey Control Number 85-62. This number expires 31 December 1985 and should appear on the front of each survey booklet.

2. We have already discussed our suggestions for the instrument with you; at this point, we remind you that you must have permission to use copyrighted scales, and any previously published scales should be referenced both in the survey instrument and in any subsequent paper or report.

3. If you have any questions about this evaluation, please contact Capt Fred Gibson, HQ AFMPC/MPCYPS, AUTOVON 487-5680.

FOR THE COMMANDER


CHARLES H. HAMILTON, GS-12
Chief, Personnel Survey Branch

Appendix F: Data File Code Key

1. THIS CODE KEY APPLIES TO APPENDIX G, DATA FILE. THE DATA FILE CONSISTS OF 101 COLUMNS OF DATA, BROKEN DOWN INTO EITHER SINGLE COLUMN OR MULTI-COLUMN FIELDS. EACH FIELD CONTAINS RAW INPUT DATA. INPUT DATA WERE OBTAINED FROM EITHER THE COMPLETED QUESTIONNAIRES OR WERE INPUT BY THE RESEARCHERS FOR CONTROL, ANALYTICAL, OR OTHER PURPOSES FROM SOURCES OTHER THAN THE SURVEY DOCUMENTS.

2. THE CODES SERVE SEVERAL PURPOSES:

A. TO INDICATE BLANKS

B. TO IDENTIFY EACH SURVEY WITH ONE OF THE AFSC DIVISIONS AND THE ORGANIZATIONS WITHIN THOSE DIVISION (FOR ASD ONLY).

C. TO INDICATE WHETHER A QUESTIONNAIRE CONTAINS COMMENTS OR REMARKS.

D. TO INDICATE YES/NO-TYPE RESPONSES.

E. TO IDENTIFY SPECIFIC RESPONSES, WHICH IN RAW FORM FROM THE QUESTIONNAIRE CANNOT BE INPUT TO THE FIELD (E.G. TOO MANY DIGITS).

3. THE FOLLOWING IS THE LIST OF CODES THEIR CORRESPONDING DATA FILE COLUMN NUMBER(S), THEIR MEANING, AND EXPLANATIONS, IF APPROPRIATE.

COLUMN #	CODE SCHEME	CODES	MEANING & REMARKS
1-4	SERIAL 1-UP	0001-0278	SURVEY NUMBER
5-6	2-DIGIT	01-22	ORGANIZATION
		01	ARMAMENT DIVISION EGLIN AFB, FL
		02	ELECTRONIC SYSTEMS (ESD) HANSCOM AFB, MA
		03	SPACE DIVISION (SD) LOS ANGELES AFS, CA
		04-21	AERONAUTICAL SYSTEMS (ASD) WRIGHT-PATTERSON AFB, OH
		04	ASD/PM- STAFF OFFICES
		05	ASD/AEK
		06	SD/AFK
		07	ASD/B1K
		08	ASD/RW
		09	ASD/TAK
		10	ASD/YP
		11	ASD/YW
		12	ASD/YY
		13	ASD/YZ
		14	ASD/PMO

		15	ASD/PMW
		16	ASD/PNR
		17	ASD/PMF
		18	ASD/FMC
		19	ASD/PMA
		20	ASD/PMF
		21	ASD/AT LARGE-ORG UNKNOWN
7-8	2-DIGIT		AGE (00=LEFT BLANK)
9	1-DIGIT		SEX
		0	MALE
		1	FEMALE
10-11	2-DIGIT	01-1	MIL RANK OR CIV GRADE
		01	2ND LT
		02	1ST LT
		03	CAPT
		04	MAJOR
		05	LT COL
		06	COLONEL OR HIGHER
		07	ENLISTED PERSONNEL
		08	GS-8 AND BELOW
		09	GS-9
		10	GS-10
		11	GS-11
		12	GS-12
		13	GS-13
		14	GS-14
		15	GS-15
		16	GS-16 OR SES
12-13	2-DIGIT		* YEARS FEDERAL SERVICE
14-15	2-DIGIT		* YEARS IN CONTRACTING
16	1-DIGIT ALPHA		EDUCATION LEVEL
		A	HIGH SCHOOL
		B	COLLEGE - NO DEGREE
		C	BACHELOR DEGREE
		D	SOME GRADUATE WORK
		E	MASTER DEGREE
		F	SOME POST GRAD WORK
		G	DOCTORATE DEGREE

17-27	1-DIGIT	0 OR 1	YES/NO FOR VARIOUS TRAINING COURSES: 0=NO, 1=YES IF COL 27=YES THEN SURVEY HAS WRITE-IN COURSES
28	1 DIGIT ALPHA	A THRU E	NEGOTIATING FREQUENCY
		A	ALWAYS
		B	OFTEN
		C	OCCASIONALLY
		D	SELOOM
		E	NEVER
29	1 DIGIT ALPHA		CURRENT POSITION TITLE
		A	ADMIN. CONTRACTING OFFICER (ACO)
		B	BUYER
		C	DIVISION CHIEF
		D	PRICE ANALYST
		N	NEGOTIATOR
		P	PROCURING CONTRACTING OFFICER (PCO)
		O	OTHER CAPACITY/POSITION
		R	REVIEWER
		S	STAFF MEMBER
		X	DIRECTOR
30	1 DIGIT ALPHA	(SAME AS COL 29)	PRIMARY CONTRACT NEGO- TIATING RESPONSIBILITY
31	1 DIGIT ALPHA	A THRU G	TYPE OF ORGANIZATION
		A	STAFF
		B	SINGLE SYSTEM PROGRAM OFFICE
		C	LABORATORY
		D	MULTI-SYSTEM PROGRAM OFFICE
		E	RESEARCH AND DEVELOPMENT (R&D)
		F	MISSION SUPPORT
		G	OTHER
32-34	3-DIGIT	000 THRU 999	ESTIMATED NUMBER OF NEGOTIATIONS AS LEAD NEGOTIATOR
		000	NO NEGOTIATING EXPERIENCE
		101	HUNDREDS (EXACT NUMBER NOT SPECIFIED)
		999	999 OR MORE (HOOT POINT) ALL OTHER NUMBERS AS INDICATED BY RESPONDENT
35-37	3-DIGIT	(SAME AS 32-34)	ESTIMATED NEGOTIATIONS AS OTHER THAN LEAD NEGOTIATOR
38-47	2-DIGIT ALPHA		MOST OFTEN USED TACTICS
		0A THRU AC	FROM THE SURVEY - LIST OF 34 TACTICS
		BB 00	OTHER TACTIC NOT LISTED LEFT BLANK BY RESPONDENT
48-57	2-DIGIT ALPHA	(SAME AS COL 38-47)	TACTICS OPPONENTS MOST OFTEN USE

58-68	1-DIGIT ALPHA		RANK OF TEN STRATEGIES BY FREQUENCY OF USE
		1 - 9	RANK 1ST THRU 9TH
		0	10TH RANK
		B	LEFT BLANK BY RESPONDENT
		0	OTHER WRITE-IN STRATEGY
69-79	1-DIGIT ALPHA	(SAME AS 58-68)	RANK OF TEN STRATEGIES BY PREFERENCE FOR USE
80-100	1-DIGIT ALPHA	0 THRU 9, B, 0 (SAME AS 58 - 68) P E	STRATEGY PREFERENCES FOR VARIOUS CONTRACT SITUATIONS NO PREFERENCE NO EXPERIENCE
	COLUMN BREAKDOWNS		SITUATIONS
	80-84		TYPE OF CONTRACT
	80		FFP - FIRM FIXED PRICE
	81		FPI - FIRM PRICE INCENTIVE
	82		CPFF - COST PLUS FIXED FEE
	83		CPIF - COST PLUS INCENTIVE FEE
	84		CPAF - COST PLUS AWARD FEE
	85-90		CONTRACT DOLLAR VALUE
	85		\$0 - \$25,000
	86		\$25,000 - \$100,000
	87		\$100,000 - 1,000,000
	88		\$1,000,000 - \$10,000,000
	89		\$10,000,000 - \$25,000,000
	90		OVER \$25,000,000
	91-94		TYPE OF CONTRACTUAL ACTION
	91		NEW CONTRACT
	92		MODIFICATION TO EXISTING CONTRACT
	93		TERMINATION (CLOSE-OUT)
	94		OTHER
	95-97		TYPE OF ACQUISITION OR PROGRAM
	95		RESEARCH AND DEVELOPMENT
	96		PRODUCTION
	97		OTHER
	98-100		DEGREE OF COMPETITION
	98		THREE OR MORE COMPETING CONTRACTORS
	99		TWO COMPETING CONTRACTORS
	100		SOLE SOURCE CONTRACTOR NEGOTIATIONS
101	1-DIGIT ALPHA	Y OR N Y=YES N=NO	INDICATES WHETHER OR NOT RESPONDENT ADDED COMMENTS/REMARKS

END OF DATA FILE CODE KEY

Appendix G: Data File

[illegible]

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113

[illegible]

[illegible]

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END OF DATA FILE

Appendix H: SPSS Programs PROG9 and PROG10

```

1 $JOB,PROG9,OUT=PGOUT9
2 SPSS*SPSS
3 RUN NAME          TACTICS AND STRATEGIES BASIC PROGRAM
4 VARIABLE LIST
SNUM, ORIGIN, AGE, SEX, GRADE, YRSVC, YRKTG,
5      EDUC, Q1 TO Q11, NEGFRQ, CURPOS, NEGRES,
6      TYPORG, NEGLED, NPART, ATAC1 TO ATAC5,
7      KTAC1 TO KTAC5, STGY1 TO STGY11,
8      PREF1 TO PREF11, FFP, FPI, CPFF, CPIF,
9      CPAF, VAL1 TO VAL6, NEW, MOD, TERM, RD,
10     PROD, THREE, TWO, ONE, RMKS
11 INPUT MEDIUM     *CLEAN1
12 N OF CASES        UNKNOWN
13 INPUT FORMAT      FIXED(F4.0, F2.0, F2.0, F1.0, 3F2.0, A1, 11F1.0,
14      4A1, 2F3.0, 10A2, 22A1, 14A1, 1X, 2A1, 1X, 4A1)
15 VAR LABELS        SNUM, SURVEY NUMBER/ORIGIN, ORGANIZATION/
16      AGE, AGE/SEX, MALE OR FEMALE/GRADE, MIL RANK
OR CIV              GRADE/
17      YRSVC, YEARS FED SERVICE/YRKTG, YEARS IN
CONTRACTING/
18      EDUC, EDUCATION LEVEL/Q9, NEG TRAINING
COURSE/
19      NEGFRQ, HOW OFTEN NEGOTIATE/CURPOS, CURRENT
POSITION/
20      NEGRES, PRIME NEGOTIATING RES/TYPORG, TYPE
ORGANIZATION/
21      NEGLED, NUMBER NEG AS LEAD/NPART, NUMBER NEG
PARTICIPATE/
22      ATAC1 TO ATAC5, AF NEGOTIATING TACTICS/
23      KTAC1 TO KTAC5, KTR NEGOTIATING TACTICS/
24      STGY1 TO STGY11, STRATEGY FREQUENCY RANKING/
25      PREF1 TO PREF11, STRATEGY PREFERENCE
RANKING/
26      FFP, STRATEGY FOR FIRM FIXED PRICE
CONTRACTS/
27      FPI, STRATEGY FOR FIXED PRICE INCENTIVE
CONTRACTS/
28      CPFF, STRATEGY FOR COST PLUS FIXED FEE
CONTRACTS/
29      CPIF, STRATEGY FOR COST PLUS INCENTIVE FEE
CONTRACTS/
30      CPAF, STRATEGY FOR COST PLUS AWARD FEE
CONTRACTS/
31      VAL1, STRATEGY FOR CONTRACTS UP TO 25K
DOLLARS/
32      VAL2, STRATEGY FOR CONTRACTS 25 TO 100K
DOLLARS/
33      VAL3, STRATEGY FOR CONTRACTS 100K TO 1 MIL

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DOLLARS/
34 VAL4, STRATEGY FOR CONTRACTS 1 TO 10 MILLION
DOLLARS/
35 VAL5, STRATEGY FOR CONTRACTS 10 TO 25
MILLION DOLLARS/
36 VAL6, STRATEGY FOR CONTRACTS OVER 25 MILLION
DOLLARS/
37 NEW, STRATEGY FOR NEW CONTRACTS/
38 MOD, STRATEGY FOR MODIFICATIONS TO
CONTRACTS/
39 TERM, STRATEGY FOR TERMINATION CONTRACTS/
40 RD, STRATEGY FOR RESEARCH AND DEVELOPMENT
CONTRACTS/
41 PROD, STRATEGY FOR PRODUCTION CONTRACTS/
42 THREE, STRATEGY FOR CONTRACTS WITH 3 OR MORE
CONTRACTORS/
43 TWO, STRATEGY FOR CONGTRACTS WITH 2
COMPETITORS/ .
44 ONE, STRATEGY FOR SOLE SOURCE CONTRACTS/
45 MISSING VALUES AGE(00)/SEX(B)/GRADE(00)/YRSVC(00)/
YRKTG(00)/
46 ATAC1 TO ATAC5(00)/KTAC1 TO KTAC5(00)/
47 STGY1 TO STGY11(B)/PREF1 TO PREF11(B)/
48 FFP(B)/FPI(B)/CPFF(B)/CPIF(B)/CPAF(B)/
49 VAL1 TO VAL6(B)/NEW(B)/MOD(B)/TERM(B)/
50 RD(B)/PROD(B)/THREE(B)/TWO(B)/ONE(B)/
51 ALLOCATE TRANSPACE=15000
52 RECODE STGY1 TO STGY11 ('0'=10)(CONVERT)/
53 PREF1 TO PREF11 ('0'=10)(CONVERT)/
54 FFP, FPI, CPFF, CPIF, CPAF, VAL1 TO
VAL6, NEW, MOD, TERM, RD,
55 PROD, THREE, TWO, ONE
('D'='B')('E'='B')('P'='B')
56 TASK NAME KENDAL COEFFICIENT OF CONCORDANCE FOR
STATREGIES USED
57 RELIABILITY VARIABLES=STGY1 TO STGY10/
58 SCALE(RANK)=STGY1 TO STGY10/
59 OPTIONS 15
60 STATISTICS 1, 10
EOF..

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1 $JOB, PROG10, OUT=POUT10
2 SPSS*SPSS9
3 RUN NAME          TACTICS AND STRATEGIES BASIC PROGRAM
4 VARIABLE LIST     SNUM, ORIGIN, AGE, SEX, GRADE, YRSVC, YRKTG,
5                   EDUC, Q1 TO Q11, NEGFRQ, CURPOS, NEGRES
6                   TYPORG, NEGLED, NPART, ATAC1 TO ATAC5,
7                   KTAC1 TO KTAC5, STGY1 TO STGY11,
8                   PREF1 TO PREF11, FFP, FPI, CPFF, CPIF,
9                   CPAF, VAL1 TO VAL6, NEW, MOD, TERM, RD,
10                  PROD, THREE, TWO, ONE, RMKS
11 INPUT MEDIUM     *CLEAN1
12 N OF CASES        UNKNOWN
13 INPUT FORMAT      FIXED(F4.0, F2.0, F2.0, F1.0, 3F2.0, A1, 11F1.0,
14                  4A1, 2F3.0, 10A2, 22A1, 14A1, 1X, 2A1, 1X, 4A1)
15 VAR LABELS        SNUM, SURVEY NUMBER/ORIGIN, ORGANIZATION/
16                  AGE, AGE/SEX, MALE OR FEMALE/GRADE, MIL RANK
17                  OR CIV GRADE/
18                  YRSVC, YEARS FED SERVICE/YRKTG, YEARS IN
19                  CONTRACTING/
20                  EDUC, EDUCATION LEVEL/Q9, NEG TRAINING
21                  COURSE/
22                  NEGFRQ, HOW OFTEN NEGOTIATE/CURPOS, CURRENT
23                  POSITION/
24                  NEGRES, PRIME NEGOTIATING RES/TYPORG, TYPE
25                  ORGANIZATION/
26                  NEGLED, NUMBER NEG AS LEAD/NPART, NUMBER NEG
27                  PARTICIPATE/
28                  ATAC1 TO ATAC5, AF NEGOTIATING TACTICS/
29                  KTAC1 TO KTAC5, KTR NEGOTIATING TACTICS/
30                  STGY1 TO STGY11, STRATEGY FREQUENCY
31                  RANKING
32                  PREF1 TO PREF11, STRATEGY PREFERENCE
33                  RANKING/
34                  FFP, STRATEGY FOR FIRM FIXED PRICE
35                  CONTRACTS/
36                  FPI, STRATEGY FOR FIXED PRICE INCENTIVE
37                  CONTRACTS
38                  CPFF, STRATEGY FOR COST PLUS FIXED FEE
39                  CONTRACTS/
40                  CPIF, STRATEGY FOR COST PLUS INCENTIVE FEE
41                  CONTRACTS/
42                  CPAF, STRATEGY FOR COST PLUS AWARD FEE
43                  CONTRACTS/
44                  VAL1, STRATEGY FOR CONTRACTS UP TO 25K
45                  DOLLARS/
46                  VAL2, STRATEGY FOR CONTRACTS 25 TO 100K
47                  DOLLARS/
48                  VAL3, STRATEGY FOR CONTRACTS 100K TO 1 MIL
49                  DOLLARS/

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34 VAL4,STRATEGY FOR CONTRACTS 1 TO 10 MILLION
DOLLARS/
35 VAL5,STRATEGY FOR CONTRACTS 10 TO 25
MILLION DOLLARS/
36 VAL6,STRATEGY FOR CONTRACTS OVER 25 MILLION
DOLLARS/
37 NEW,STRATEGY FOR NEW CONTRACTS/
38 MOD,STRATEGY FOR MODIFICATIONS TO
CONTRACTS/
39 TERM,STRATEGY FOR TERMINATION CONTRACTS/
40 RD,STRATEGY FOR RESEARCH AND DEVELOPMENT
CONTRACTS/
41 PROD,STRATEGY FOR PRODUCTION CONTRACTS/
42 THREE,STRATEGY FOR CONTRACTS WITH 3 OR MORE
CONTRACTORS/
43 TWO,STRATEGY FOR CONGTRACTS WITH 2
COMPETITORS
44 ONE,STRATEGY FOR SOLE SOURCE CONTRACTS/
45 MISSING VALUES AGE(00)/SEX(B)/GRADE(00)/YRSVC(00)/
YRKTG(00)/
46 ATAC1 TO ATAC5(00)/KTAC1 TO KTAC5(00)/
47 STGY1 TO STGY11(B)/PREF1 TO PREF11(B)/
48 FFP(B)/FPI(B)/CPFF(B)/CPIF(B)/CPAF(B)/
49 VAL1 TO VAL6(B)/NEW(B)/MOD(B)/TERM(B)/
50 RD(B)/PROD(B)/THREE(B)/TWO(B)/ONE(B)/
51 ALLOCATE TRANSPACE=15000
52 RECODE STGY1 TO STGY11 ('0'=10)(CONVERT)/
53 PREF1 TO PREF11 ('0'=10)(CONVERT)/
54 FFP,FPI,CPFF,CPIF,CPAF,VAL1 TO
VAL6,NEW,MOD,TERM,RD
55 PROD,THREE,TWO,ONE
('0'='B')('E'='B')('P'='B')
56 TASK NAME KENDAL COEFFICIENT OF CONCORDANCE FOR
PREFERENCES
57 RELIABILITY VARIABLES=PREF1 TO PREF10/
58 SCALE(RANK)=PREF1 TO PREF10/
59 OPTIONS 15
60 STATISTICS 1,10
61 FINISH

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<p>Title: IDENTIFICATION OF NEGOTIATION TACTICS AND STRATEGIES OF AIR FORCE CONTRACT NEGOTIATORS</p> <p>Thesis Advisor: John A. Campbell, Captain, USAF</p> <p>Approved for public release: LAW AFR 190-14. LYNN E. WOLVER Dean for Research and Professional Development Air Force Institute of Technology (AFIT) Wright-Patterson AFB OH 45433</p>				
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This research determined the negotiating tactics and strategies used most often by 278 Air Force Systems Command contract negotiators. Thirty-three tactics and ten strategies were presented to the negotiators to rank in order of frequency used. The negotiators were also asked to rank the strategies by preference under five controlling variables: contract type, dollar amount, type of action, type of program, and degree of competition.

The survey questionnaire method was used to gather data from Air Force Systems Command buying divisions at Hanscom AFB MA, Eglin AFB FL, Wright-Patterson AFB OH, and Los Angeles AFS CA. The data was analyzed using the Statistical Package for the Social Sciences (SPSS) software program employing Kendall-W Coefficient of Concordance and Kendall-Tau Rank Correlation Coefficient non-parametric statistical tests. The Kendall-W tested the sample population for overall consensus on strategies. The Kendall-Tau test was used to test for agreement between paired ranking sets from various demographic groups. Frequency distributions were analyzed to determine the most preferred strategies in the five different contract situations.

The analysis of the negotiating tactics used by AFSC contract negotiators and those the respondents indicate defense contractors use implies the prevalence of an antagonistic negotiating atmosphere. Among all respondents, Bottom Line strategy is the most frequently used and most preferred of the ten strategies presented. The research also found that neither education, experience, military or civilian status, sex, or formal negotiating training appears to influence the ranking of the ten strategies. Fixed-price and low value contracts appear to influence the selection of Bottom Line strategy, while cost-reimbursement and high value contracts influence increased selection of Statistics and Participation strategies. Experience with sole source contracts was more extensive than with competitive contracts. Finally, a significant number of respondents had no experience with complex contract types or large dollar value contracts.

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