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Assessment of Army Contracting Command's Contract Management Processes (TACOM and RDECOM)

15 April 2011

by

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Abstract

This research builds upon the emerging body of knowledge on contract management workforce competence and organizational process capability. In 2003, the Contract Management Maturity Model (CMMM) was first developed for the purpose of assessing Department of Defense (DoD) and defense contractor organizational contract management process capability. The CMMM has since been applied at Air Force, Army, Navy, and defense contractor organizations. During the period between 2008 and 2009, assessments were conducted at three specific Army Contracting Command (ACC) contracting centers using the CMMM. These organizations included the Army Aviation and Missile Command (AMCOM) Contracting Center, Joint Munitions and Lethality (JM&L) Contracting Center, and the National Capital Region (NCR) Contracting Center. In 2010, the CMMM assessments were conducted at the Tank-automotive and Armaments Command (TACOM) and the Research, Development, and Engineering Command (RDECOM) Contracting Centers. The primary purpose of this paper is to summarize the assessment ratings, analyze the assessment results in terms of contract management process maturity, and discuss the implications of these assessment results for process improvement and knowledge management opportunities at the TACOM and RDECOM contracting centers. This paper will also provide insight on consistencies and trends from these assessment results to DoD contract management. Finally, this paper will discuss these assessment results in an attempt to characterize the current state of practice of contract management within the ACC.

Keywords: Contract Management, workforce competence, organizational process capability, Contract Management Maturity Model (CMMM), consistencies and trends

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About the Author

Dr. Rene G. Rendon is a nationally recognized authority in the areas of supply management, contract management, and project management. He is currently on the faculty of the United States Naval Postgraduate School, where he teaches in the MBA and Master of Science programs. Prior to his appointment at the Naval Postgraduate School, he served for more than 22 years as an acquisition and contracting officer in the United States Air Force, retiring at the rank of lieutenant colonel. His Air Force career included assignments as a warranted contracting officer for the Peacekeeper ICBM, Maverick Missile, C-20 (Gulfstream IV), and the F-22 Raptor. He was also a contracting squadron commander for an Air Force pilot training base and the director of contracting for the Air Force's Space-based Infrared satellite system and the Evolved Expendable Launch Vehicle rocket program.

Rendon has taught contract management courses for the UCLA Government Contracts program; he was also a senior faculty member for the Keller Graduate School of Management, where he taught MBA courses in project management and contract management. He is a graduate of the U.S. Air Force Squadron Officer School, Air Command and Staff College, Air War College, and the Department of Defense Systems Management College. Rendon is Level III certified in both Program Management and Contracting under the Defense Acquisition Workforce Improvement Act (DAWIA) program. He is also a Certified Professional Contracts Manager (CPCM) with the National Contract Management Association (NCMA), a Certified Purchasing Manager (C.P.M.) with the Institute for Supply Management (ISM), and a certified Project Management Professional (PMP) with the Project Management Institute (PMI). He has received the prestigious Fellow Award from NCMA, and he was recognized with the United States Air Force Outstanding Officer in Contracting Award. He has also received the NCMA National Education Award and the NCMA Outstanding Fellow Award. Dr. Rendon is a member of the ISM

Certification Committee as well as on the Editorial Review Board for the ISM *Inside Supply Management* magazine. He is a member of the NCMA Board of Advisors as well as associate editor for its *Journal of Contract Management.* Dr. Rendon's publications include *Government Contracting Basics* (2007), *U.S. Military Program Management: Lessons Learned & Best Practices* (2007), and *Contract Management Organizational Assessment Tools* (2005). He has also published scholarly articles in the *Contract Management* magazine, the *Journal of Contract Management*, the *Program Manager* magazine, the *Project Management Journal*, and the *PM Network* magazine. He is a frequent speaker at universities and professional conferences and provides consulting to both government and industry.

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I. Overview

The contract management process continues to be an increasingly important function in the federal government, and specifically in the Department of Defense (DoD). The DoD, which is the federal government's largest contracting agency, continues to increase its level of public spending for goods and services. Between fiscal years (FYs) 2001 and 2008, the DoD's obligations on contracts have more than doubled, to over $387 billion (GAO, 2009). In conjunction with this increase in defense procurement is the reduction of the defense acquisition workforce. The size of the federal workforce decreased from 2.25 million in 1990 to 1.78 million in 2000 (GAO, 2001). The combination of the increasing defense procurement workload and the decreasing size of the government workforce, along with the complexities of an arcane and convoluted government contracting process, have created the perfect storm—an environment in which complying with government contracting policies and adopting contract management best practices has not always been feasible. Between 2001 and 2009, the Government Accountability Office (GAO) issued 16 reports related to trends, challenges, and deficiencies in defense contracting. Between 2002 and 2008, the DoD Inspector General (DoDIG) issued 142 reports on deficiencies in the DoD acquisition and contract administration processes. These reports have identified poor contract planning, contract administration, and contractor oversight as just some of the critically deficient areas in DoD contract management. Because of these deficiencies, the GAO has identified contract management as a "high risk" area for the federal government since 1990 and continues to identify it as high risk (GAO, 2007b; 2009).

Within the DoD and the overall federal government, the procurement and contracting function has been elevated to an organizational core competency (Kelman, 2001) and is receiving extensive emphasis in the areas of education, training, and the development of workforce competence models (Newell, 2007; GAO, 2007a). In addition to a focus on increasing individual contract management competency, organizations are now focusing on increasing contract management

process competence through the use of organizational process maturity models. Just as individual competence will lead to greater success in performing tasks, organizational process capability will ensure consistent and superior results for the enterprise (Frame, 1999; Kerzner, 2001).

II. Research Scope and Objectives

This paper analyzes the results of capability assessments for the contract management process, conducted during 2010 using the Contract Management Maturity Model (CMMM). The CMMM is used to assess an organization's contract management process capability and to develop a road map for implementing improvement initiatives for the contract management process. Using the web-based survey assessment tool, the CMMM was applied to two Army Contracting Command (ACC) contracting centers: the Tank-automotive and Armaments Command (TACOM) and the Research, Development, and Engineering Command ((RDECOM)) Contracting Centers. The purpose of this research is to summarize the assessment ratings, analyze the assessment results in terms of contract management process maturity, and discuss the implications of these assessment results for process improvement and knowledge management opportunities. The assessment results and related recommendations for contract management process improvement and knowledge management opportunities will guide the contracting centers in developing a road map for increasing contract management process capability. A thorough understanding of the current level of contract management process capability will help these organizations improve their procurement of defense-related supplies and services. This research will also discuss the assessment results by providing insight on consistencies and trends in an attempt to characterize the current state of practice of contract management within the Army Contracting Command.

The background of contract management process and contract management process capability will first be presented, with a specific focus on the CMMM. The assessed ACC contracting centers will then be profiled, followed by an analysis of the assessment findings and implications for process improvement and knowledge management opportunities. Finally, a brief discussion on consistent trends in the practice of contract management throughout the DoD will be presented.

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III. Background

Academic research in contract management is founded on several economic and management theories; the most often referred to is agency theory (Eisenhardt, 1989). A contract between the government and a contractor reflects a principal-agent relationship. The principal (government) contracts with the agent (contractor) to perform a level of effort, such as developing or manufacturing a product or providing a service. In this relationship, the government's objectives include obtaining the product or service at the right quality, right quantity, right source, right time, and right price (Lee & Dobler, 1971). The federal government also has the additional objective of ensuring that the product or service is procured in accordance with public policy and statutory requirements (FAR, 2009). Contractors, on the other hand, pursue the objectives of earning profit, insuring company growth, maintaining or increasing market share, and improving cash flow, just to name a few.

Because of the different and conflicting objectives between the principal and agent, each party is motivated and incentivized to behave in a specific manner. This behavior includes either withholding or sharing information. In principal-agent relationships that involve higher levels of uncertainty, which result in higher risk (such as developing an advanced technology weapon system), the information available to the government and contractor is typically asymmetrical. Agency theory is concerned with the conflicting goals between the principal and agent in obtaining their respective objectives and is focused on mechanisms related to obtaining information (for example, about the marketplace, the supply or service, or the contractor), selecting the agent (to counter the problem of adverse selection), and monitoring the agent's performance (to counter the effects of moral hazard).

Thus, how contracts are planned (for example, competitive or sole source), structured (fixed price or cost reimbursement, with or without incentives), awarded (based on lowest priced, technically acceptable offer, or the highest technically rated offer), and administered (centralized or decentralized, level and type of surveillance,

use of project teams, etc.) has its basis in agency theory and the principal-agent problem. This is reflected in Figure 1.

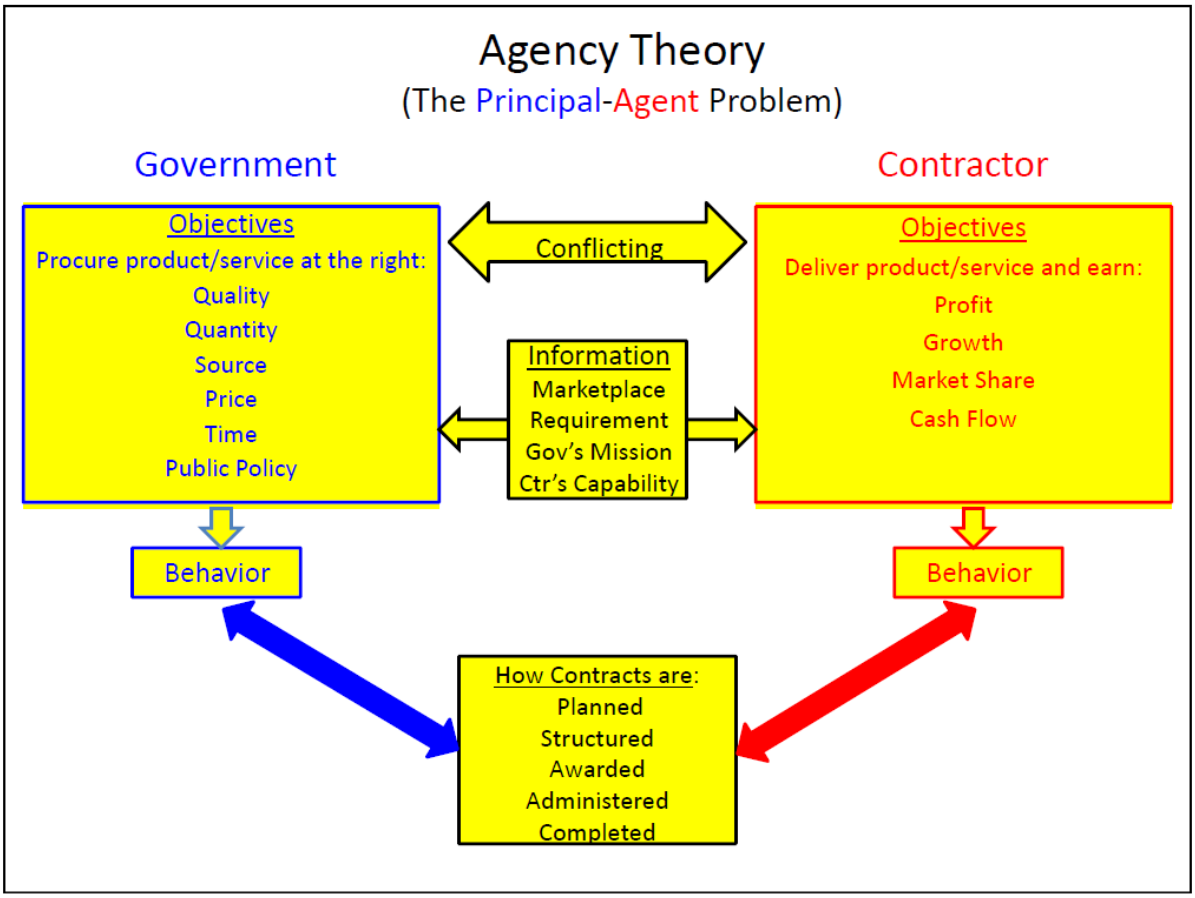

Figure 1. Agency Theory Applied to Government Contracting

Process capability has a direct relationship on an organization's contract management processes and resulting outcomes, such as projects and contracts. Thus, contract management process capability is crucial to an organization's process improvement efforts. The next section will discuss the contract management process.

A. Contract Management Process

Typically, contract management is discussed from the perspective of the buyer, with a focus on the procurement (buying) side of contracting. The six contract management key process areas (from the buyer's perspective) consist of Procurement Planning, Solicitation Planning, Solicitation, Source Selection, Contract

Administration, and Contract Closeout/Termination. In addition, since government contractors (sellers) also manage contracts, the contract management process reflects the key process areas from the seller's perspective. These phases include Pre-sales Activities, Bid/No-bid Decision-making, Bid/Proposal Preparation, Contract Negotiation and Formation, Contract Administration, and Contract Closeout/Termination. Since this research is about the assessment of the Army Contracting Command's contracting processes, only the buying side of contracting will be discussed.

1. **Procurement Planning** involves the process of identifying which business needs can be best met by procuring products or services outside the organization. This process involves determining whether to procure, how to procure, what to procure, how much to procure, and when to procure. This procurement planning process includes the following:

   a. Conducting outsource analysis;

   b. Determining and defining the requirement (the supply or service to procure);

   c. Conducting market research and/or a pre-solicitation conference;

   d. Developing preliminary requirements documents such as work breakdown structures (WBS), statements of work (SOW), and performance work statements (PWS);

   e. Developing preliminary budgets and cost estimates;

   f. Preliminary consideration of contract type and special contract terms and conditions; and

   g. Conducting risk analysis.

2. **Solicitation Planning** involves the process of preparing the documents needed to support the solicitation. It also involves documenting program requirements and identifying potential sources. This solicitation planning process includes the following:

a. Determining the procurement method (sealed bids, negotiated proposals, etc.);

b. Determining the contract type (fixed price versus cost);

c. Developing the solicitation document (IFB, RFQ, or RFP);

d. Determining proposal evaluation criteria and contract-award strategy;

e. Structuring contract terms and conditions; and

f. Finalizing solicitation WBS, SOW, or product or service descriptions.

3. **Solicitation** is the process of obtaining information (proposals) from the sellers on how project needs can be met. This solicitation process includes the following:

a. Conducting advertising of the procurement opportunity;

b. Conducting a pre-proposal conference, if required; and

c. Developing and maintaining a qualified bidder's list.

4. **Source Selection** is the process of receiving proposals and applying the proposal evaluation criteria to select a supplier. The source selection process includes evaluating proposals and conducting contract negotiations with the seller in an attempt to come to an agreement on all aspects of the contract—including cost, schedule, performance, terms and conditions, and anything else related to the contracted effort. This source selection process includes the following:

a. Applying evaluation criteria to the management, cost, and technical proposals;

b. Negotiating with suppliers; and

c. Executing the contract award strategy.

5. Contract Administration is the process of ensuring that each party's performance meets the contractual requirements. The activities involved in contract administration will depend on the contract statement of work, contract type, and contract performance period. This contract administration process includes the following:

a. Conducting a pre-performance conference;

b. Monitoring the contractor's work results;

c. Measuring contractor's performance; and

d. Managing the contract change-control process.

6. Contract Closeout/Termination is the process of verifying that all administrative matters are concluded on a contract that is otherwise physically complete. A government contract can end in one of three ways. First, the contract can be successfully completed, allowed to run its full period of performance, and then closed out. Second, the contract can be terminated for the convenience of the government. Finally, the contract can be terminated for default. Regardless of how the contract ends, all contracts must be closed out. This contract closeout/termination process includes the following:

a. Processing of government property dispositions;

b. Final acceptance of products or services;

c. Final contractor payments; and

d. Documentation of the contractor's final past-performance report.

Each of these contract management key process areas includes various key practice activities that support the specific process. The current state of contract management includes various best practices in performing these key practice activities. The best practices of contract management key process areas are categorized by the following groups: Process Strength, Successful Outcomes, Management Support, Process Integration, and Process Measurement. How an organization performs the key process areas and the extent to which the key practices incorporate best practices determines the organization's contract management process capability maturity level.

Thus, the six phases of the contract management process form the basis for assessing contract management process capability and maturity, which is discussed next.

B. Process Capability and Maturity

Process capability is defined as "the inherent ability of a process to produce planned results" (Ahern, Clouse, & Turner, 2001). As the capability of a process increases, it becomes predictable and measurable. As the organization steadily improves its process capability, organizational competence increases and organizational processes become more mature (Ahern et al., 2001). Competence, in this case, is defined as "an underlying characteristic that is causally related to effective or superior performance, as determined by measurable, objective criteria, in a job or in a situation" (Curtis, Hefley, & Miller, 2001). Maturity can be defined as "a measure of effectiveness in any specific process" (Dinsmore, 1998). It is important to note that process maturity is not related to the passage of time. Different organizations mature at different rates, depending on the nature of the business and the emphasis placed on process improvement. Process maturity is more reflective of how far an organization has progressed toward continuously improving its process capability in any specific area.

Organizational process capability can be assessed using a process maturity model. These maturity models are built on a series of maturity levels—each maturity

level reflective of the level of competence for that process. As the organization gains process competence, it moves up the maturity scale. As maturity increases, so does capability and predictability, while risk decreases. Process capability maturity models include the Software Engineering Institute's (SEI) Capability Maturity Model (CMM) and the Kerzner Project Management Maturity Model (PMMM). The SEI CMM is used to assess an organization's software development process (Persse, 2001; Ahern et al., 2001). The PMMM is used to assess an organization's project management processes (Kerzner, 2001).

Rendon (2003) was the first to apply the concept of process capability and maturity to organizational contract management processes. The CMMM was developed as a method for assessing an organization's contract management process capability and using the assessment results to identify contract management process deficiencies and the need for process improvement. The CMMM has been applied at Air Force, Army, Navy, and defense contractor organizations. "Contract management," as used in the model, is defined as the "art and science of managing a contractual agreement throughout the contracting process" (Garrett & Rendon, 2005, p. 270). "Maturity," as defined in the model, refers to organizational capabilities that can consistently produce successful business results for buyers and sellers of products, services, and integrated solutions (Garrett & Rendon, 2005). Thus, contract management refers to the buyer's (procurement) process as well as the seller's (business development and sales) process. The CMMM assessments analyzed in this research focused only on the buyer's procurement process. The structure of the CMMM is based on the six contract management process phases previously discussed and on the five levels of contract management process capability maturity, discussed next.

C. Contract Management Process Maturity

The five levels of contract management process maturity range from an Ad Hoc level (Level 1) to an Optimized level in which processes are focused on

continuous improvement and adoption of lessons learned and best practices (Level 5). What follows is a brief description of each maturity level.

Level 1—Ad Hoc: The organization at this initial level of process maturity acknowledges that contract management processes exist and that these processes are accepted and practiced throughout various industries and within the public and private sectors. In addition, the organization's management understands the benefit and value of using contract management processes. Although there are no basic contract management processes that are established organization-wide, some established contract management processes do exist and are used within the organization, but these established processes are applied only on an ad hoc and sporadic basis to various contracts. There is no rhyme or reason as to which contracts these processes are applied. Furthermore, there is informal documentation of contract management processes existing within the organization, but this documentation is used only on an ad hoc and sporadic basis on various contracts. Finally, organizational managers and contract management personnel are not held accountable for adhering to, or complying with, any basic contract management processes or standards.

Level 2—Basic: Organizations at this level of maturity have established some basic contract management processes and standards within the organization, but these processes are required only on selected complex, critical, or high-visibility contracts, such as contracts meeting certain dollar thresholds or contracts with certain customers. Some formal documentation has been developed for these established contract management processes and standards. Furthermore, the organization does not consider these contract management processes or standards established or institutionalized throughout the entire organization. Finally, at this maturity level, there is no organizational policy requiring the consistent use of these contract management processes and standards on contracts other than the required contracts.

Level 3—Structured: At this level of maturity, contract management processes and standards are fully established, institutionalized, and mandated throughout the entire organization. Formal documentation has been developed for these contract management processes and standards, and some processes may even be automated. Furthermore, since these contract management processes are mandated, the organization allows the tailoring of processes and documents in consideration for the unique aspects of each contract, such as contracting strategy, contract type, terms and conditions, dollar value, and type of requirement (product or service). Finally, senior organizational management is involved in providing guidance, direction, and even approval of key contracting strategy, decisions, related contract terms and conditions, and contract management documents.

Level 4—Integrated: Organizations at this level of maturity have contract management processes that are fully integrated with other organizational core processes such as financial management, schedule management, performance management, and systems engineering. In addition to representatives from other organizational functional offices, the contract's end user is also an integral member of the buying or selling contracts team. Finally, the organization's management periodically uses metrics to measure various aspects of the contract management process and to make contract-related decisions.

Level 5— Optimized: The fifth and highest level of maturity reflects an organization whose management systematically uses performance metrics to measure the quality and evaluate the efficiency and effectiveness of the contract management processes. At this level, continuous process-improvement efforts are also implemented to improve the contract management processes. Furthermore, the organization has established programs for lessons learned and best practices in order to improve contract management processes, standards, and documentation. Finally, contract management process streamlining initiatives are implemented by the organization as part of its continuous process improvement program.

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IV. Methods

A. Survey and Sampling

The CMMM assessment tool is a web-based survey comprised of a total of 62 items related to each of the six contract management key process areas (approximately 10–11 items per key process area). The items use a Likert Scale–option response with associated numerical value from 5 (*Always*) to 0 (*I Don't Know*). These options respond to the organization's use of specific contract management best practices, as reflected in the literature. As previously discussed, these best practices relate to contract management process strength, successful outcomes, management support, process integration, and process measurement. The assessment tool was developed and validated in 2003 and subsequently applied to other defense contracting organizations (Rendon, 2003, 2008; Garrett & Rendon, 2005).

The CMMM is limited as an assessment tool simply by the fact that it is based on qualitative survey data. Thus, it is only as effective as the responses to the survey questions. The CMMM should be used as an initial tool in assessing an organization's contract management process capability. The CMMM results should be validated with follow-up assessments, including personal interviews, procurement file audits, and reviews of procurement process documentation. Additionally, comparison of CMMM results with other procurement metrics such as procurement administrative lead-time, small-business awards, and the number of protested contract awards will also provide additional backup to the CMMM assessment.

The CMMM uses a purposeful sampling method designed to acquire data on organizational contract management processes. Purposeful sampling ensures that samples are knowledgeable and informative about the phenomena being researched, thus increasing the utility of the information obtained from small samples (McMillan & Schumacher, 2001; Creswell, 2003). Thus, the survey is only administered to warranted contracting officers and fully qualified contract specialists.

The sampling in this research consisted of agency employees either designated as warranted contracting officers or as individuals that were considered fully qualified in the government contracting career field, in accordance with the Defense Acquisition Workforce Improvement Act (DAWIA). Warranted contracting officers are those individuals who have specific authority to enter into, administer, or terminate contracts and make related determinations and findings on behalf of the United States government (FAR, 2009). Full qualification in the contracting career field is interpreted to mean achievement of Level II certification in contracting under DAWIA. Level II certification requires completion of a baccalaureate degree with at least 24 semester hours in accounting, law, business, finance, contracts, purchasing, economics, industrial management, marketing, quantitative methods, and organization and management coursework; two years of contracting experience; and completion of the required contract training courses (DAWIA, 2009).

The survey website link was e-mailed to the directors of contracting for these specific agencies, and it was then forwarded to the eligible personnel. Reminder e-mails were sent approximately two weeks into the survey period. The survey instrument included the appropriate provisions for confidentiality and the protection of human subjects. Of the total 457 eligible survey participants, 228 completed the survey, yielding a response rate of approximately 50%. Following are profiles of the contracting agencies that participated in the survey.

B. Assessment Organizations

During 2010, CMMM assessments were conducted at two specific ACC contracting centers. These organizations included the TACOM Contracting Center and the RDECOM Contracting Center.

The TACOM Contracting Center provides acquisition and contracting support to the U.S. Army TACOM Life Cycle Management Command for the procurement of ground combat, tactical vehicles, small arms, chemical/biological systems, targetry, supporting services, associated consumable parts, and the Brigade Combat Team

Modernization program. Specifically, the TACOM Contracting Center procures research and development, systems, and repair parts and services for the following supplies and services:

- Combat vehicles,
- Tactical vehicles/trailers,
- Support equipment,
- Tactical bridges,
- Construction and material handling equipment,
- Fuel and water distribution systems,
- Watercraft and railcars,
- Brigade combat team modernization,
- Artillery,
- Base operation support,
- Depot maintenance
- Advanced Science and technology programs,
- Combat vehicle armaments,
- Training devices,
- Fire control systems,
- Cannons 105-165mm,
- Recovery vehicles,
- Mortars,
- Aircraft armaments,
- Small arms,
- Mine Resistant Ambush Protected Vehicle (MRAP) support
- Chemical defense (ACC, 2011)

In FY2010, TACOM Contracting Center total estimated contract obligations were approximately $15 billion through the following nine business groups: ACC–Warren; Anniston Army Depot; Integrated Logistics Support Center; Joint Systems Manufacturing Center–Lima; Rock Island Arsenal Joint Manufacturing and Technology Center; Red River Army Depot; Sierra Army Depot; and Watervliet Arsenal (ACC, 2011).

The TACOM Contracting Center divisions that were assessed for this research consist of the below organizations:

R&D/Armaments Contracting Division (S)

Combat Vehicle Contracting Division (H)

Tactical and Tools Contracting Division (T)

Systems Integration Contracting Division (B)

Stryker Contracting Division (I)

Deployment Support Contracting Division (D)

Depot/Arsenal Contracting Division (X)

The one-letter division symbols in parentheses are used to identify the TACOM contracting divisions in the CMMM assessment result charts and tables used in this report.

The RDECOM Contracting Center provides innovative acquisition and contracting support to U.S. Army Research, Development, & Engineering Command elements and a broad, diverse customer base to equip the Soldier with the latest technology, goods, and services on time and at a reasonable cost (RDECOM, 2011). Specifically, the RDECOM Contracting Center supports research and development acquisition for the following areas:

- Aviation & missile research,
- Armament research,
- Communications electronics,
- Research, development, & engineering,
- Chemical & biological,
- Simulation & training,
- Soldier research, and
- Tank automotives. (RDECOM, 2011)

In FY2009, RDECOM Contracting Center total estimated contract obligations were approximately $6.9 billion in approximately 22,817 contract actions through the following eight business groups: Aviation & Missile Research, Development, & Engineering Center; Armament Research, Development, & Engineering Center; Communications Electronics Research, Development, & Engineering Center; Edgewood Chemical & Biological Center; Simulation & Training Technology Center; Natick Soldier Research, Development, & Engineering Center; Tank Automotives Research, Development, & Engineering Center; and the Army Materiel Systems Analysis Activity (ACC, 2011).

The RDECOM Contracting Center divisions that were assessed for this research consist of the below organizations:

Aberdeen Contracting Division (P)

Aberdeen Installation Contracting Division (I)

Edgewood Contracting Division (D)

Adelphi Contracting Division (A)

Research Triangle Park Contracting Division (T)

The one-letter division symbols in parentheses are used to identify the RDECOM contracting divisions in the CMMM assessment result charts and tables used in this report.

Although the TACOM and RDECOM Contracting Centers acquire and procure different types of supplies and services, the contract management processes used are common to both organizations (Rendon & Snider, 2008). Additionally, the contract management processes used at these contracting centers are also common to other Army, DoD, and federal government agencies for the procurement of supplies and services. Thus, the conclusions based on the analysis of the results from these contract management process assessments may be applicable to other federal government agencies. The CMMM assessment results will be discussed next.

V. Results

The CMMM organizational assessments can be analyzed at different levels. The CMMM assessment tool allows for identification of the respondent's specific contracting office within the assessed agency. For example, the assessment of the TACOM includes the agency's Combat Vehicle Contracting Division. Thus, within an agency such as TACOM, CMMM assessment results can be analyzed at the contracting division level of analysis. This level of analysis can be used to determine the contract management process maturity ratings for each contracting division; comparisons of maturity ratings can be made among the contracting division; and process improvement initiatives can be developed specifically for these contracting divisions.

In addition to analysis of assessments at the contracting division level within each agency, the CMMM assessment results can also be analyzed among contracting agencies within an enterprise, such as the Department of the Army (DA). Using TACOM as an example again, at this enterprise level of analysis, the CMMM results can be compared to other contracting agencies, such as RDECOM, Army Aviation and Missile Command (AMCOM), and Joint Munitions and Lethality (JM&L), and process improvement initiatives can be suggested for each contracting agency. Additionally, the results of these enterprise-level assessments can be used to characterize the state of contract management process capability for the Army, Navy, Air Force, and joint DoD agencies.

For the purpose of this paper, the CMMM analysis is conducted both at the contracting division level within the agency and then at the enterprise (Army) level. My purpose is to compare the CMMM assessment results among the individual contracting divisions within TACOM and RDECOM. The overall CMMM assessment results for these agencies within ACC will also be analyzed and compared. I will analyze the assessment results to identify consistencies in contract management process capability, identify areas for contract management process improvement,

and characterize the state of contract management process capability within the Army Contracting Command.

The results of the CMMM assessment at the two contracting agencies are reflected in Tables 1–4. These tables list the contract management key process area, survey item number, and item description. Also listed are the mean response for each survey item for each contracting division, the total number of responses for each contracting agency, and the standard deviation for all of the responses to each survey item. (Note that the contracting divisions are represented by the one-letter office symbols introduced in Chapter IV).

The mean responses—based on the Likert Scale's numerical value range from 5 (*Always*) to 1 (*Never*) and 0 (*I Don't Know*)—for each item in each key process area (Procurement Planning, Solicitation Planning, etc.) are totaled, and the resulting score is converted to its associated process capability maturity level using the CMMM conversion table.

Figures 2 and 3 are graphic presentations of the maturity levels for each contracting division within each organization (TACOM and RDECOM). (Note that the contracting divisions are represented by the one-letter office symbols introduced in Chapter IV).

Table 1. TACOM CMMM Survey Item Responses for Procurement Planning, Solicitation Planning, and Solicitation

TACOM												
Process Area	Key Process/Item Number/ Description	B	D	H	I	S	T	X				
		Mean	Mean	Mean	Mean	Mean	Mean	Mean	SD	*n*		
	Procurement Planning											
Procurement Planning	1.1 Process Strength	4.40	4.20	4.13	4.40	4.59	4.57	4.73	1.09	132		
	1.2 Process Strength	4.20	3.57	3.64	3.20	3.76	3.14	4.33	1.65	132		
	1.3 Process Strength	3.80	3.63	3.64	4.00	3.76	3.71	3.60	1.44	132		
	1.4 Successful Results	4.00	3.87	3.59	4.00	3.94	3.90	4.13	1.23	132		
	1.5 Management Support	4.20	4.37	3.95	4.40	4.47	4.29	4.20	1.09	132		
	1.6 Process Integration	4.00	3.97	3.56	4.40	4.29	4.00	4.27	1.29	132		
	1.7 Process Integration	3.80	4.03	3.44	4.60	4.18	3.90	3.93	1.26	132		
	1.8 Process Integration	4.00	3.77	3.46	4.20	4.12	4.38	3.93	1.29	132		
	1.9 Process Measurement	2.80	2.83	2.67	4.40	3.29	2.76	3.27	1.74	132		
	1.10 Process Measurement	3.60	3.60	3.49	4.40	4.24	4.33	4.07	1.11	132		
	Total	38.80	37.83	35.56	42.00	40.65	39.00	40.47				
	Solicitation Planning											
Solicitation Planning	2.1 Process Strength	4.60	4.57	3.92	4.25	4.71	4.45	4.40	0.99	125		
	2.2 Process Strength	4.00	3.93	3.36	2.75	4.18	3.85	4.13	1.45	125		
	2.3 Process Strength	4.60	4.25	3.72	4.50	4.47	4.20	4.00	1.06	125		
	2.4 Successful Results	4.40	4.25	3.94	4.75	4.65	4.40	4.33	0.76	125		
	2.5 Management Support	4.40	4.07	3.81	4.50	4.29	4.15	4.33	1.07	125		
	2.6 Process Integration	4.00	3.71	3.67	4.25	4.24	3.80	4.27	1.09	125		
	2.7 Process Integration	4.00	3.93	3.69	4.50	4.29	3.85	3.73	1.05	125		
	2.8 Process Integration	4.00	3.61	3.47	4.50	4.29	3.70	3.73	1.13	125		
	2.9 Process Measurement	3.00	2.71	2.86	4.50	3.47	3.00	3.27	1.67	125		
	2.10 Process Measurement	3.80	3.46	3.31	4.00	4.29	4.25	4.07	1.18	125		
	Total	40.80	38.50	35.75	42.50	42.88	39.65	40.27				
	Solicitation											
Solicitation	3.1 Process Strength	4.40	4.29	3.83	4.67	4.71	4.26	4.40	1.08	122		
	3.2 Process Strength	4.20	3.86	3.54	4.67	4.29	3.16	4.13	1.45	122		
	3.3 Process Strength	4.20	4.07	3.60	4.67	4.47	3.63	3.93	1.35	122		
	3.4 Successful Results	4.00	3.93	3.57	4.33	4.12	3.89	3.73	1.04	122		
	3.5 Management Support	4.20	3.75	3.34	4.67	4.24	4.21	4.27	1.30	122		
	3.6 Process Integration	3.80	3.64	3.40	4.00	4.35	3.79	4.07	1.26	122		
	3.7 Process Integration	4.00	3.82	3.34	4.33	4.29	3.79	3.73	1.26	122		
	3.8 Process Integration	3.60	3.46	2.77	3.33	3.76	3.58	2.67	1.29	122		
	3.9 Process Measurement	3.00	2.89	2.51	3.67	3.71	3.21	3.27	1.72	122		
	3.10 Process Measurement	3.60	3.54	3.14	4.67	4.35	4.32	4.00	1.27	122		
	Total	39.00	37.25	33.06	43.00	42.29	37.84	38.20				

Table 2. TACOM CMMM Survey Item Responses for Source Selection, Contract Administration, and Contract Closeout

TACOM												
Process Area	Key Process/Item Number/ Description	B	D	H	I	S	T	X				
		Mean	Mean	Mean	Mean	Mean	Mean	Mean	SD	*n*		
	Source Selection											
Source Selection	4.1 Process Strength	3.80	4.57	3.97	5.00	4.76	4.53	4.57	1.07	121		
	4.2 Process Strength	2.60	3.89	3.54	5.00	4.41	3.74	4.50	1.46	121		
	4.3 Process Strength	3.40	4.14	3.66	4.67	4.53	4.05	3.86	1.29	121		
	4.4 Successful Results	3.60	4.36	4.00	4.67	4.35	4.42	4.71	0.99	121		
	4.5 Management Support	3.60	4.21	3.74	4.67	4.41	4.58	4.43	1.16	121		
	4.6 Successful Results	3.20	3.82	3.40	4.00	4.06	3.58	3.93	1.28	121		
	4.7 Successful Results	3.40	4.25	3.91	4.33	4.29	4.47	4.43	1.04	121		
	4.8 Process Integration	3.40	4.21	3.43	4.00	4.24	3.95	4.57	1.35	121		
	4.9 Process Integration	3.40	3.96	3.54	4.33	4.18	4.37	4.07	1.33	121		
	4.10 Process Measurement	3.00	3.04	3.03	3.33	3.41	2.95	3.71	1.84	121		
	4.11 Process Measurement	3.00	3.39	3.26	4.33	4.24	4.42	4.14	1.48	121		
Total	Total	36.40	43.86	39.49	48.33	46.88	45.05	46.93				
	Contract Administration											
Contract Administration	5.1 Process Strength	4.00	3.93	3.62	4.67	4.25	3.72	4.14	1.22	118		
	5.2 Process Strength	4.00	3.46	3.26	4.67	3.88	3.33	3.86	1.51	118		
	5.3 Process Strength	3.80	3.25	3.35	4.33	3.75	3.28	3.71	1.47	118		
	5.4 Successful Results	4.00	3.71	3.50	4.00	4.00	3.56	4.07	1.25	118		
	5.5 Management Support	4.00	3.36	2.94	4.33	3.31	3.44	3.79	1.45	118		
	5.6 Process Integration	4.00	3.61	3.09	4.67	4.06	3.44	4.00	1.46	118		
	5.7 Process Integration	3.80	3.46	3.18	4.67	4.13	3.50	4.00	1.40	118		
	5.8 Process Integration	3.40	3.57	2.91	4.67	3.25	2.94	3.71	1.53	118		
	5.9 Process Integration	2.80	2.68	2.53	3.67	3.25	2.44	3.36	1.83	118		
	5.10 Process Measurement	2.60	2.50	2.62	4.33	3.19	2.67	3.07	1.77	118		
	5.11 Process Measurement	3.40	3.14	2.88	4.67	3.63	3.50	3.79	1.56	118		
Total	Total	39.80	36.68	33.88	48.67	40.69	35.83	41.50				
	Contract Closeout											
Contract Closeout	6.1 Process Strength	3.80	3.50	3.15	4.67	3.31	2.72	4.07	1.90	118		
	6.2 Process Strength	3.40	3.18	2.88	4.33	3.06	2.44	3.86	1.91	118		
	6.3 Process Strength	3.40	3.11	3.09	4.33	3.38	2.67	3.79	1.85	118		
	6.4 Successful Results	3.60	2.93	3.12	4.33	3.25	3.11	3.71	2.06	118		
	6.5 Management Support	3.00	1.96	2.18	4.67	2.31	2.11	3.29	1.91	118		
	6.6 Process Integration	2.00	2.11	2.21	4.00	2.81	2.22	3.29	1.93	118		
	6.7 Process Integration	1.80	2.04	2.56	4.33	2.88	2.39	3.21	1.95	118		
	6.8 Process Measurement	2.20	1.75	1.82	4.33	1.81	1.94	2.71	2.00	118		
	6.9 Process Measurement	1.40	2.07	1.94	4.67	2.50	2.11	3.29	2.00	118		
	6.10 Process Measurement	2.20	1.79	1.85	3.33	1.94	2.28	3.14	2.04	118		
Total	Total	26.80	24.43	24.79	43.00	27.25	24.00	34.36				

Table 3. RDECOM CMMM Survey Item Responses for Procurement Planning, Solicitation Planning, and Solicitation

RDECOM									
Key Process/Item Number/ Description	A	I	P	D	T			
	Mean	Mean	Mean	Mean	Mean	SD	*n*	
Procurement Planning								
1.1 Process Strength	4.25	3.93	3.79	4.24	3.88	1.45	96	
1.2 Process Strength	4.13	3.40	3.25	3.64	3.00	1.59	96	
1.3 Process Strength	3.96	3.07	3.46	3.44	2.38	1.68	96	
1.4 Successful Results	3.92	3.47	3.38	4.04	2.88	1.46	96	
1.5 Management Support	4.00	4.00	3.33	4.04	3.88	1.47	96	
1.6 Process Integration	3.25	3.33	3.63	3.88	3.25	1.57	96	
1.7 Process Integration	3.54	2.67	3.25	3.40	3.50	1.67	96	
1.8 Process Integration	3.29	3.27	3.46	4.20	3.50	1.53	96	
1.9 Process Measurement	3.71	2.40	2.25	2.48	2.00	1.92	96	
1.10 Process Measurement	3.79	3.07	3.04	3.68	2.88	1.54	96	
Total	37.83	32.60	32.83	37.04	31.13			
Solicitation Planning								
2.1 Process Strength	4.25	3.93	3.78	4.21	2.38	1.45	93	
2.2 Process Strength	4.00	3.29	3.35	3.75	2.13	1.65	93	
2.3 Process Strength	4.04	3.14	3.43	3.54	2.50	1.52	93	
2.4 Successful Results	3.96	3.57	3.78	4.29	3.13	1.34	93	
2.5 Management Support	4.13	3.64	3.61	3.92	3.25	1.48	93	
2.6 Process Integration	3.29	2.93	3.52	4.00	2.75	1.50	93	
2.7 Process Integration	3.38	2.79	3.61	3.79	2.63	1.58	93	
2.8 Process Integration	3.71	3.07	3.26	4.08	2.75	1.43	93	
2.9 Process Measurement	3.88	2.57	2.57	2.79	1.50	1.84	93	
2.10 Process Measurement	3.63	3.07	3.17	3.54	2.38	1.62	93	
Total	38.25	32.00	34.09	37.92	25.38			
Solicitation								
3.1 Process Strength	4.26	3.43	4.26	4.04	2.29	1.40	90	
3.2 Process Strength	4.13	2.93	3.87	3.52	2.00	1.54	90	
3.3 Process Strength	4.13	3.21	3.65	3.35	2.29	1.52	90	
3.4 Successful Results	4.09	3.21	3.65	3.78	2.86	1.33	90	
3.5 Management Support	3.87	3.64	3.39	3.83	2.71	1.53	90	
3.6 Process Integration	3.70	2.93	3.70	3.65	2.57	1.46	90	
3.7 Process Integration	3.65	2.93	3.65	3.52	2.57	1.46	90	
3.8 Process Integration	2.83	2.64	3.22	3.39	2.29	1.56	90	
3.9 Process Measurement	3.74	2.43	2.65	2.70	1.43	1.90	90	
3.10 Process Measurement	3.83	2.93	3.17	3.43	1.71	1.65	90	
Total	38.22	30.29	35.22	35.22	22.71			

Table 4. RDECOM CMMM Survey Item Responses for Source Selection, Contract Administration, and Contract Closeout

RDECOM								
Key Process/Item Number/ Description	A	I	P	D	T		
	Mean	Mean	Mean	Mean	Mean	SD	*n*
Source Selection							
4.1 Process Strength	4.35	3.50	4.13	4.23	3.29	1.23	89
4.2 Process Strength	4.13	3.14	3.70	3.95	2.43	1.46	89
4.3 Process Strength	4.13	3.07	3.65	3.68	3.29	1.45	89
4.4 Successful Results	4.35	3.36	4.00	4.23	3.00	1.27	89
4.5 Management Support	3.87	3.64	3.74	4.09	3.57	1.45	89
4.6 Successful Results	4.17	3.43	3.26	4.09	2.71	1.52	89
4.7 Successful Results	4.39	3.64	4.17	4.45	3.71	1.27	89
4.8 Process Integration	3.83	3.21	4.00	4.00	3.43	1.37	89
4.9 Process Integration	3.57	3.00	3.74	3.91	3.43	1.47	89
4.10 Process Measurement	3.70	3.07	2.65	2.86	1.57	1.90	89
4.11 Process Measurement	3.87	3.07	3.22	3.55	1.71	1.64	89
Total	44.35	36.14	40.26	43.05	32.14		
Contract Administration							
5.1 Process Strength	3.78	2.93	3.64	3.73	3.14	1.47	88
5.2 Process Strength	3.87	2.93	3.41	3.59	2.86	1.56	88
5.3 Process Strength	3.70	2.93	3.64	3.73	3.43	1.46	88
5.4 Successful Results	3.52	3.21	3.82	3.73	3.43	1.37	88
5.5 Management Support	3.70	2.79	3.09	3.55	3.71	1.41	88
5.6 Process Integration	3.48	3.14	3.73	3.86	3.71	1.48	88
5.7 Process Integration	3.22	3.00	3.18	3.50	3.43	1.56	88
5.8 Process Integration	3.04	2.79	3.18	3.32	2.71	1.53	88
5.9 Process Integration	3.00	2.29	2.45	2.32	2.71	1.93	88
5.10 Process Measurement	3.39	2.50	2.64	2.45	1.86	1.86	88
5.11 Process Measurement	3.48	2.71	2.95	3.50	2.14	1.67	88
Total	38.17	31.21	35.73	37.27	33.14		
Contract Closeout							
6.1 Process Strength	4.30	3.08	3.41	4.05	3.29	1.48	87
6.2 Process Strength	4.17	3.00	3.18	3.82	3.00	1.60	87
6.3 Process Strength	3.91	3.31	3.18	3.86	2.86	1.61	87
6.4 Successful Results	4.48	4.00	3.45	3.59	3.57	1.62	87
6.5 Management Support	3.83	2.00	2.45	2.82	1.71	1.86	87
6.6 Process Integration	3.57	2.31	2.68	3.14	2.29	1.77	87
6.7 Process Integration	3.78	3.00	2.77	2.82	3.14	1.69	87
6.8 Process Measurement	3.96	2.23	2.45	2.45	1.00	1.95	87
6.9 Process Measurement	3.83	2.69	2.59	3.00	1.29	1.85	87
6.10 Process Measurement	3.57	1.69	2.23	2.14	1.14	1.95	87
Total	39.39	27.31	28.41	31.68	23.29		

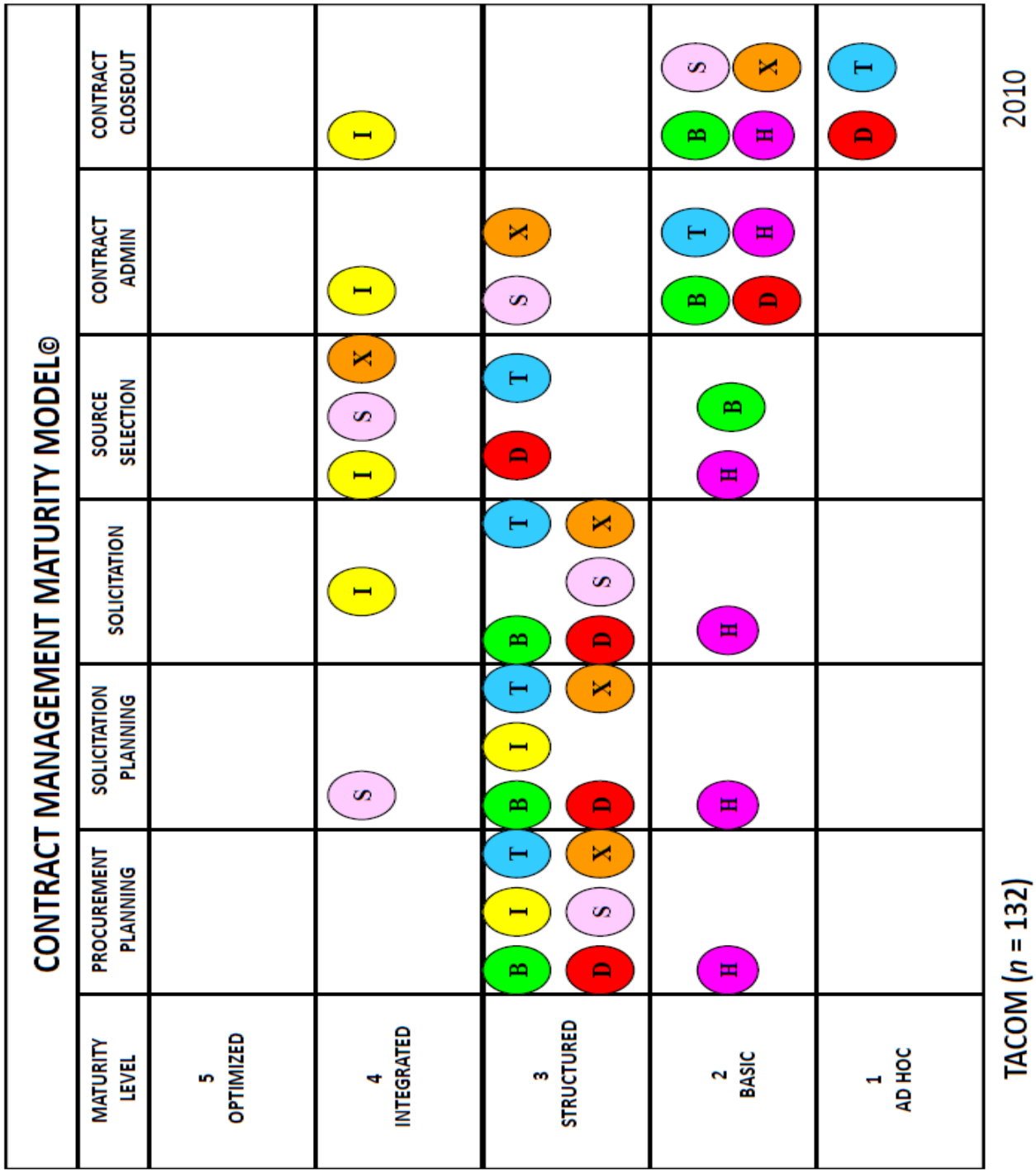


Figure 2. Contract Management Maturity Model for TACOM

Figure 3. Contract Management Maturity Model for RDECOM

VI. Discussion

A. Contracting Center Analysis

1. TACOM

In TACOM, a total of 132 contracting officials out of the 237 eligible contracting officials completed the CMMM survey, yielding a response rate of 56%. The contract management process assessment results for the TACOM Contracting Center reflect some consistencies in terms of process maturity levels for each of the contract management process areas. For example, based on the survey responses, the majority of contracting offices achieved a Structured maturity level for Procurement Planning, Solicitation Planning, and Solicitation. Additionally, the majority of contracting offices achieved a Basic maturity level for the Contract Administration and Contract Closeout process areas. Finally, the disparity between maturity levels ranged from Basic to Integrated for Solicitation Planning, Solicitation, Source Selection, and Contract Administration. It is also interesting to note that the disparity between maturity levels ranged from Ad Hoc to Integrated for the Contract Closeout key process area.

2. RDECOM

In RDECOM, a total of 96 contracting officials out of the 220 eligible contracting officials completed the CMMM survey, yielding a response rate of 44%. The contract management process assessment results for the RDECOM Contracting Center also reflect some consistencies in terms of process maturity levels for each of the contract management process areas. For example, the majority of contracting offices achieved a Basic maturity level for all six contract management key process areas. Additionally, the disparity of maturity levels ranged from Basic to Structured for all key process areas except Contract Administration, which had no disparity in maturity levels, and Contract Closeout, which ranged from Ad Hoc to Structured.

B. Comparative Analysis

When the CMMM assessment results of TACOM and RDECOM are compared, some consistencies can be identified in terms of key process area item means as well as process capability maturity ratings. The purpose of this analysis is to discuss the implications that these consistencies have on contract management process capability within these two organizations of the Army Contracting Command. The implications of these assessment results will be discussed in the areas of contract management maturity levels, process improvement opportunities, knowledge management opportunities, and overall Army Contract Management Command contract management trends.

The data in Figures 2 and 3 in Chapter V provide some interesting observations. First, we see that the Contract Administration and Contract Closeout key process areas attained lower maturity levels compared to the other contract management key process areas. Both TACOM and RDECOM attained Basic maturity levels for Contract Administration and Contract Closeout, although some TACOM contracting offices were rated at the Ad Hoc and Integrated levels and some RDECOM contracting offices were rated at the Ad Hoc and Structured levels for Contract Closeout.

Second, for TACOM, we see that the preponderance of contracting offices were rated at the Structured level for Procurement Planning, Solicitation Planning, and Solicitation key process areas, while the majority of RDECOM contracting offices were rated at the Basic level for these same key process areas.

Finally, the assessment results reveal that only TACOM achieved Integrated maturity levels for some of the key process areas, while RDECOM's highest maturity level was Structured.

These differences in maturity levels between TACOM and RDECOM for the Procurement Planning, Solicitation Planning, and Solicitation key process areas, and the consistencies in maturity levels for these two agencies for the Contract

Administration and Contract Closeout key process areas, may reflect differences in the use of best practices in contract management. These best practices are related to process strength, process outcomes, organizational management support, process integration, and process measurement. Specifically for the Contract Administration and Contract Closeout key process areas, we can expect to see the lack of contract management best practices within these two contracting centers.

C. Agency–Level Analysis

Tables 5 and 6 provide a summary listing of the survey-response means aggregated for each contracting center. Based on the aggregated survey-response means, the maturity level for each contract management key process area was developed for each contracting center, as reflected in Figure 4. (Note that in Figure 4, the symbols T and R are used to denote TACOM and RDECOM, respectively).

Table 5. Summary CMMM Survey Item Responses for Procurement Planning, Solicitation Planning, and Solicitation

Summary

Key Process/Item Number/ Description	TACOM Mean	RDECOM Mean	*n*
Procurement Planning			
1.1 Process Strength	4.36	4.05	228
1.2 Process Strength	3.64	3.57	228
1.3 Process Strength	3.68	3.43	228
1.4 Successful Results	3.84	3.66	228
1.5 Management Support	4.22	3.83	228
1.6 Process Integration	3.95	3.52	228
1.7 Process Integration	3.86	3.29	228
1.8 Process Integration	3.86	3.58	228
1.9 Process Measurement	2.94	2.68	228
1.10 Process Measurement	3.85	3.39	228
Total	38.20	35.00	
Solicitation Planning			
2.1 Process Strength	4.35	3.91	218
2.2 Process Strength	3.78	3.51	218
2.3 Process Strength	4.11	3.49	218
2.4 Successful Results	4.27	3.87	218
2.5 Management Support	4.10	3.80	218
2.6 Process Integration	3.88	3.43	218
2.7 Process Integration	3.90	3.39	218
2.8 Process Integration	3.74	3.52	218
2.9 Process Measurement	3.04	2.87	218
2.10 Process Measurement	3.76	3.30	218
Total	38.92	35.09	
Solicitation			
3.1 Process Strength	4.24	3.92	212
3.2 Process Strength	3.79	3.56	212
3.3 Process Strength	3.93	3.52	212
3.4 Successful Results	3.84	3.67	212
3.5 Management Support	3.88	3.61	212
3.6 Process Integration	3.76	3.48	212
3.7 Process Integration	3.75	3.42	212
3.8 Process Integration	3.23	3.00	212
3.9 Process Measurement	3.02	2.81	212
3.10 Process Measurement	3.75	3.26	212
Total	37.17	34.24	

Table 6. Summary CMMM Survey Item Responses for Source Selection, Contract Administration, and Contract Closeout

Summary

Key Process/Item Number/ Description	TACOM	RDECOM	
	Mean	Mean	*n*
Source Selection			
4.1 Process Strength	4.40	4.04	210
4.2 Process Strength	3.88	3.69	210
4.3 Process Strength	3.99	3.66	210
4.4 Successful Results	4.28	3.97	210
4.5 Management Support	4.17	3.83	210
4.6 Successful Results	3.69	3.69	210
4.7 Successful Results	4.18	4.18	210
4.8 Process Integration	3.95	3.79	210
4.9 Process Integration	3.93	3.60	210
4.10 Process Measurement	3.16	2.96	210
4.11 Process Measurement	3.73	3.33	210
Total	43.36	40.72	
Contract Administration			
5.1 Process Strength	3.90	3.55	206
5.2 Process Strength	3.54	3.45	206
5.3 Process Strength	3.46	3.55	206
5.4 Successful Results	3.73	3.59	206
5.5 Management Support	3.35	3.36	206
5.6 Process Integration	3.58	3.60	206
5.7 Process Integration	3.58	3.26	206
5.8 Process Integration	3.28	3.08	206
5.9 Process Integration	2.79	2.56	206
5.10 Process Measurement	2.77	2.70	206
5.11 Process Measurement	3.31	3.13	206
Total	37.30	35.83	
Contract Closeout			
6.1 Process Strength	3.36	3.75	205
6.2 Process Strength	3.08	3.56	205
6.3 Process Strength	3.19	3.54	205
6.4 Successful Results	3.21	3.85	205
6.5 Management Support	2.36	2.78	205
6.6 Process Integration	2.43	2.94	205
6.7 Process Integration	2.54	3.11	205
6.8 Process Measurement	2.01	2.70	205
6.9 Process Measurement	2.28	2.93	205
6.10 Process Measurement	2.12	2.39	205
Total	26.60	31.56	

CONTRACT MANAGEMENT MATURITY MODEL©							
MATURITY LEVEL	PROCUREMENT PLANNING	SOLICITATION PLANNING	SOLICITATION	SOURCE SELECTION	CONTRACT ADMIN	CONTRACT CLOSEOUT	
5 OPTIMIZED							
4 INTEGRATED							
3 STRUCTURED	T	T	T	T R			
2 BASIC	R	R	R		T R	T R	
1 AD HOC							
ACC Summary (n = 228)							2010

Figure 4. Contract Management Maturity Model Summary for TACOM and RDECOM

Based on the CMMM survey results reflected in Figure 4, for TACOM, the contract management key process areas of Procurement Planning, Solicitation Planning, Solicitation, and Source Selection were predominantly at the Structured (Level 3) maturity level. Figure 4 also indicates that for TACOM, the contract management key process areas of Contract Administration and Contract Closeout were assessed at the Basic (Level 2) maturity level. However, Figure 4 also reflects that there is no organizational policy requiring the consistent use of these Contract Administration and Contract Closeout processes on contracts other than the required contracts. Finally, TACOM does not consider these contract management processes well-established or institutionalized throughout the entire organization.

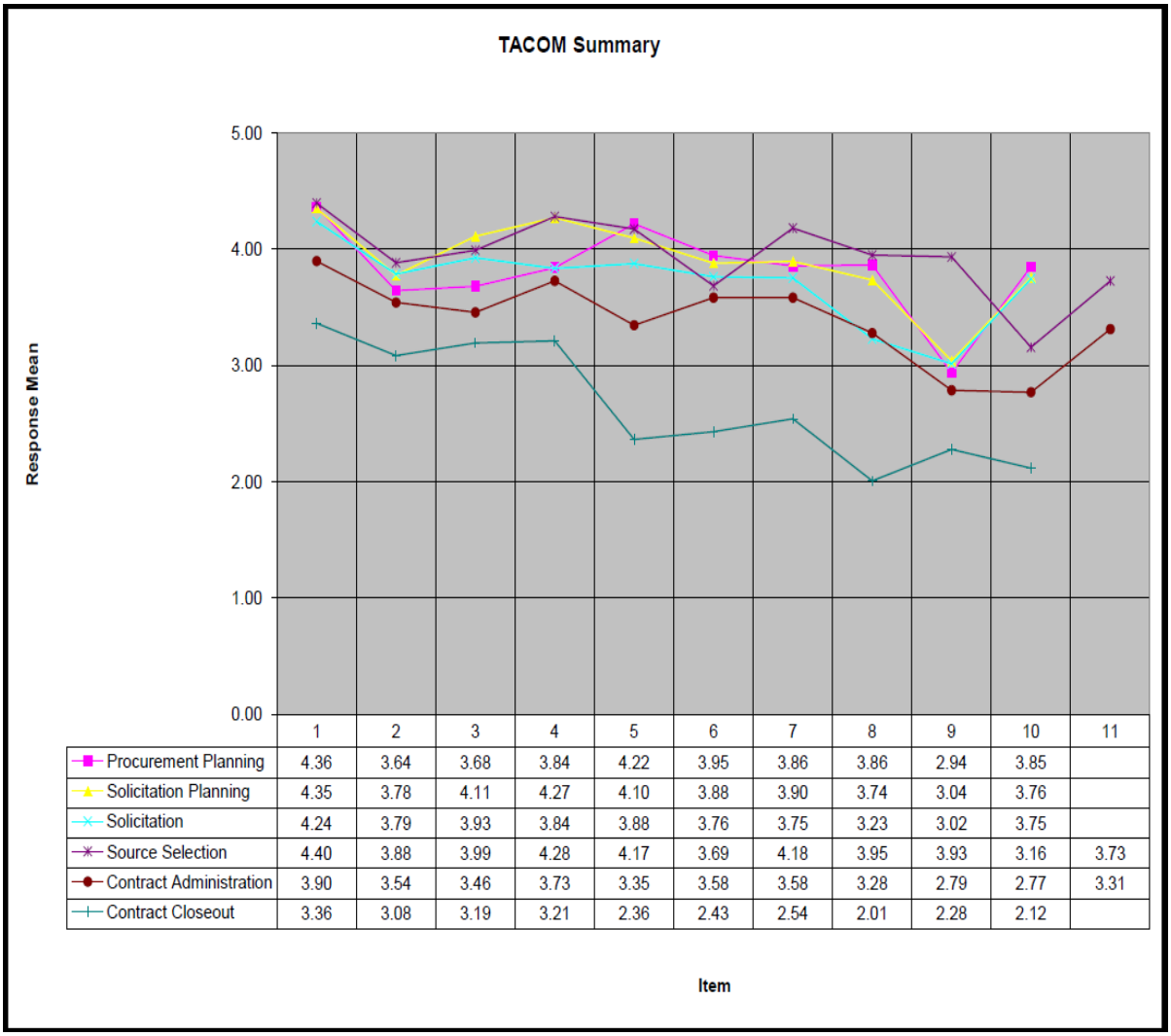
Based on the CMMM survey results reflected in Figure 4, for RDECOM, the contract management key process areas of Procurement Planning, Solicitation Planning, Solicitation, Contract Administration, and Contract Closeout were predominantly assessed at the Basic (Level 2) maturity level. However, Figure 4 also reflects that there is no organizational policy requiring the consistent use of these processes on contracts other than the required contracts. Finally, RDECOM does not consider these contract management processes well-established or institutionalized throughout the entire organization. Figure 4 also indicates that for RDECOM, the contract management key process area of Source Selection was assessed at the Structured (Level 3) maturity level.

As reflected in the survey responses and Figure 4, it is noted that neither TACOM nor RDECOM's contract management key process areas were assessed at the Integrated or higher maturity levels. This assessment indicates that these contracting agencies' contract management process areas are not fully integrated with other organizational core processes such as financial management, schedule management, performance management, and systems engineering. In addition, within TACOM and RDECOM, representatives from other organizational functional offices and the contract's end user are not integral members of the agencies' contracts team. Additionally, these contracting agencies do not systematically use

performance metrics to measure the quality and evaluate the efficiency and effectiveness of the contract management processes, implement continuous process improvement efforts, or rely on databases for lessons learned and best practices in order to improve the contract management processes.

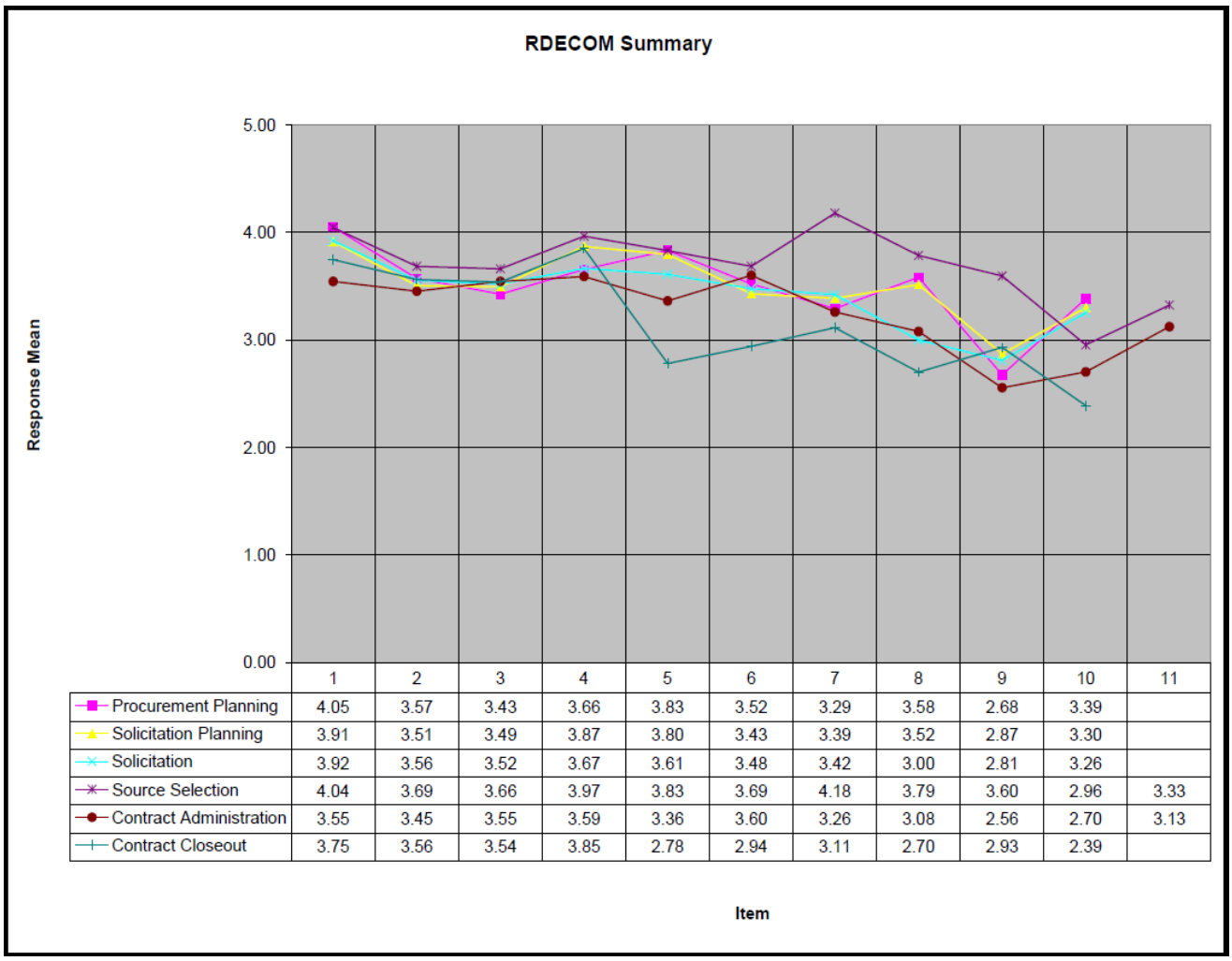
D. Process Capability Comparisons

The results of the CMMM assessment for TACOM and RDECOM can also be analyzed at the survey item-level by specifically looking at the five groups of contract management best practices previously discussed: Process Strength, Successful Results, Management Support, Process Integration, and Process Measurement. Figures 5 and 6 provide CMMM summary-level survey-response means, broken out for each of the six contract management key process areas. Appendices A and B provide detailed-level response means for each contract management key process areas.



	1	2	3	4	5	6	7	8	9	10	11
Procurement Planning	4.36	3.64	3.68	3.84	4.22	3.95	3.86	3.86	2.94	3.85	
Solicitation Planning	4.35	3.78	4.11	4.27	4.10	3.88	3.90	3.74	3.04	3.76	
Solicitation	4.24	3.79	3.93	3.84	3.88	3.76	3.75	3.23	3.02	3.75	
Source Selection	4.40	3.88	3.99	4.28	4.17	3.69	4.18	3.95	3.93	3.16	3.73
Contract Administration	3.90	3.54	3.46	3.73	3.35	3.58	3.58	3.28	2.79	2.77	3.31
Contract Closeout	3.36	3.08	3.19	3.21	2.36	2.43	2.54	2.01	2.28	2.12	

Figure 5. TACOM Summary Ratings



	1	2	3	4	5	6	7	8	9	10	11
Procurement Planning	4.05	3.57	3.43	3.66	3.83	3.52	3.29	3.58	2.68	3.39	
Solicitation Planning	3.91	3.51	3.49	3.87	3.80	3.43	3.39	3.52	2.87	3.30	
Solicitation	3.92	3.56	3.52	3.67	3.61	3.48	3.42	3.00	2.81	3.26	
Source Selection	4.04	3.69	3.66	3.97	3.83	3.69	4.18	3.79	3.60	2.96	3.33
Contract Administration	3.55	3.45	3.55	3.59	3.36	3.60	3.26	3.08	2.56	2.70	3.13
Contract Closeout	3.75	3.56	3.54	3.85	2.78	2.94	3.11	2.70	2.93	2.39	

Figure 6. RDECOM Summary Ratings

As reflected in Tables 5 and 6 and in Figure 5, TACOM's highest scoring survey-response means were in the key process areas of Procurement Planning (4.36), Solicitation Planning (4.35), and Source Selection (4.40). TACOM's lowest scoring survey-response means were in the key process areas of Contract Administration (2.77) and Contract Closeout (2.01, 2.12).

As reflected in Tables 5 and 6 and in Figure 6, RDECOM's highest scoring survey-response means were in the key process areas of Procurement Planning (4.05) and Source Selection (4.18). RDECOM's lowest scoring survey-response

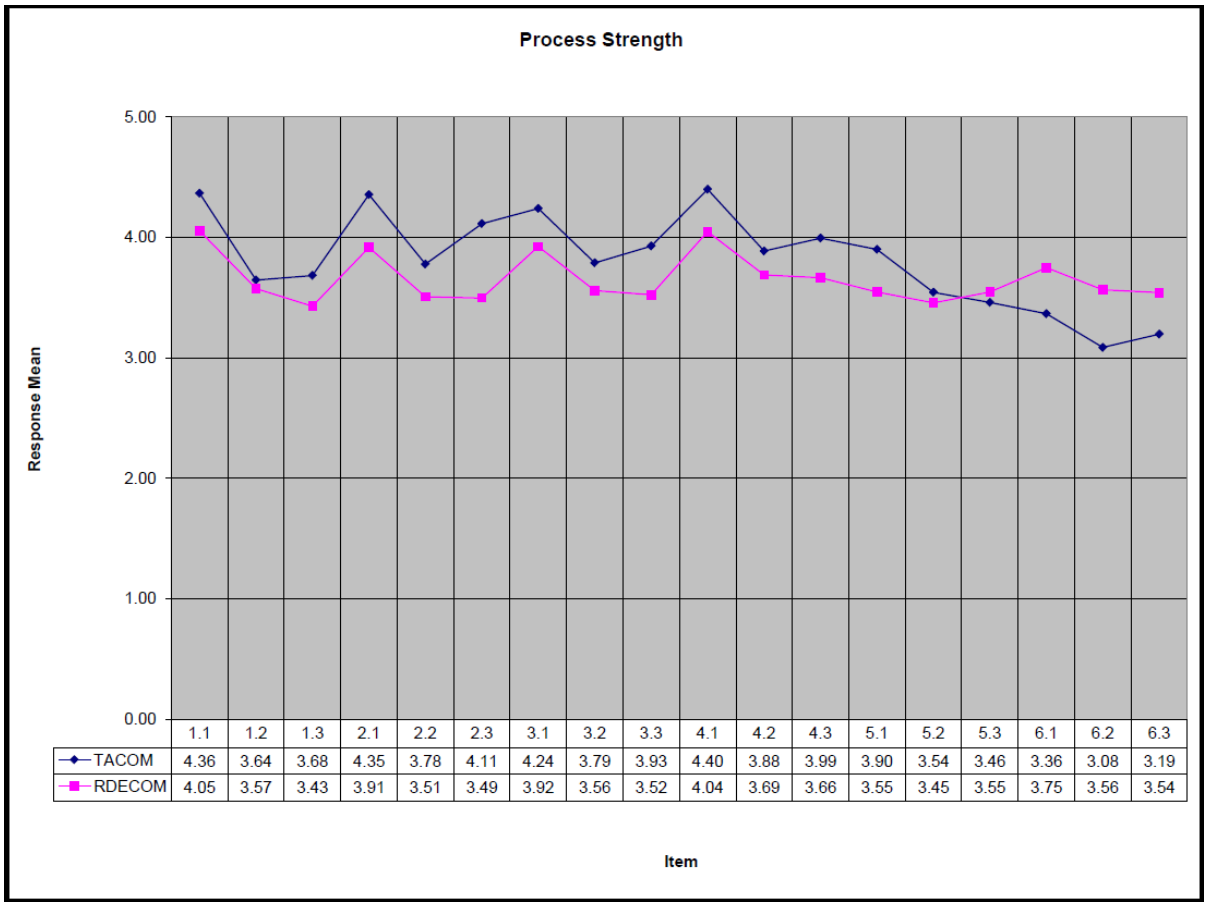
means were in the key process areas of Contract Administration (2.56) and Contract Closeout (2.78, 2.70, 2.39).

Based on these assessment-survey results, a consistency in higher scoring survey-response means is seen in the key process area of Procurement Planning and Source Selection, and a consistency in the lower scoring survey-response means is seen in the key process areas of Contract Administration and Contract Closeout.

In addition to the analysis based on contract management key process areas, consistencies among the two ACC contracting agencies can also be seen in the survey-response ratings when analyzed from the perspective of the contract management best practice groups. As discussed previously in this report, each of the contract management key process areas includes key practice activities supporting the specific process area. How an organization performs in the key process areas and the extent to which the key practices incorporate best practices determine the organization's contract management process capability maturity level. These best practices for contract management key process areas are categorized into the following groups: Process Strength, Successful Outcomes, Management Support, Process Integration, and Process Measurement. Each of the items in the assessment survey relates to one of these best practice groups, as reflected in Tables 5 and 6 and in Figures 7–11. For example, the first three survey items (Items 1, 2, and 3) in each of the key process areas are part of the Process Strength best practice group. Likewise, Item 4 for each key process area is part of the Successful Results best practice group. Generally, Item 5 for each key process group is part of the Management Support best practice group. Finally, Items 6, 7, and 8 are generally part of the Process Integration best practice group, and Items 9, 10, and 11 are generally part of the Process Measurement best practice group.

As reflected in Tables 5 and 6 and in Figures 7–11, consistencies can be found in both the highest and lowest scoring survey-response means and their relationship to the contract management key process areas and best practice

groups. This analysis provides some valuable insight in terms of contract management best practices within the six key process areas.



	1.1	1.2	1.3	2.1	2.2	2.3	3.1	3.2	3.3	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3
TACOM	4.36	3.64	3.68	4.35	3.78	4.11	4.24	3.79	3.93	4.40	3.88	3.99	3.90	3.54	3.46	3.36	3.08	3.19
RDECOM	4.05	3.57	3.43	3.91	3.51	3.49	3.92	3.56	3.52	4.04	3.69	3.66	3.55	3.45	3.55	3.75	3.56	3.54

Figure 7. Process Strength

E. Process Strength

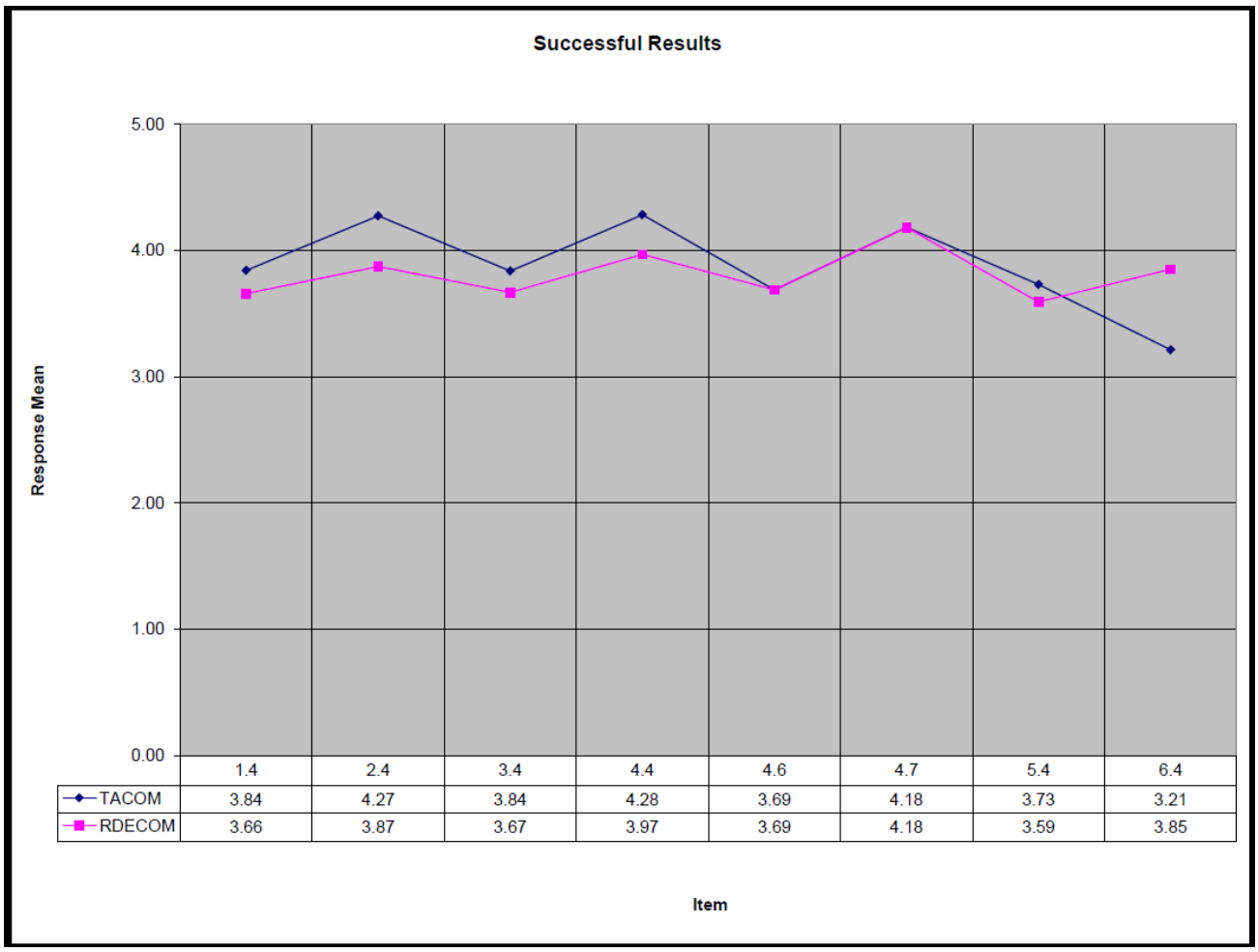
In Figure 7, we see a consistency in relatively higher and lower levels of Process Strength best practices, as reflected in the survey-response means. Both contracting centers (TACOM and RDECOM) reflect relatively higher levels of Process Strength, specifically in the area of having an established process (Items 1.1, 2.1, and 4.1). This indicates a stronger use of Process Strength best practices (ensuring established processes) in the contract management key process areas of Procurement Planning, Solicitation Planning, and Source Selection.

On the other hand, both contracting centers reflect relatively lower levels of Process Strength, specifically in the area of having standardized, mandatory, and documented processes (Items 1.2, 1.3, 2.2, 2.3, 3.2, 3.3, 4.2, 5.2, 5.3, and 6.2). This indicates a weaker use of Process Strength best practices (ensuring standardized, mandatory, and documented processes) in all six contract management key process areas.

It is interesting to note that the stronger use of Process Strength best practices involved having established contract management processes, while the weaker use of Process Strength best practices involved having established processes that were standardized, mandated, and documented. This holds true for all six of the contract management key process areas.

F. Successful Results

In Figure 8, we see a consistency in relatively higher and lower levels of Successful Results best practices, as reflected in the survey-response means. Both contracting centers reflect relatively higher levels of Successful Results, specifically in the areas of structuring solicitations to facilitate accurate and complete proposals, using appropriate evaluation criteria, and evaluating past performance and technical capability in contractor proposal evaluation (Items 2.4, 4.4, and 4.7). This indicates a stronger use of Successful Results best practices (solicitation development and proposal evaluation) in the contract management key process area of Solicitation Planning and Source Selection.



	1.4	2.4	3.4	4.4	4.6	4.7	5.4	6.4
TACOM	3.84	4.27	3.84	4.28	3.69	4.18	3.73	3.21
RDECOM	3.66	3.87	3.67	3.97	3.69	4.18	3.59	3.85

Figure 8. Successful Results

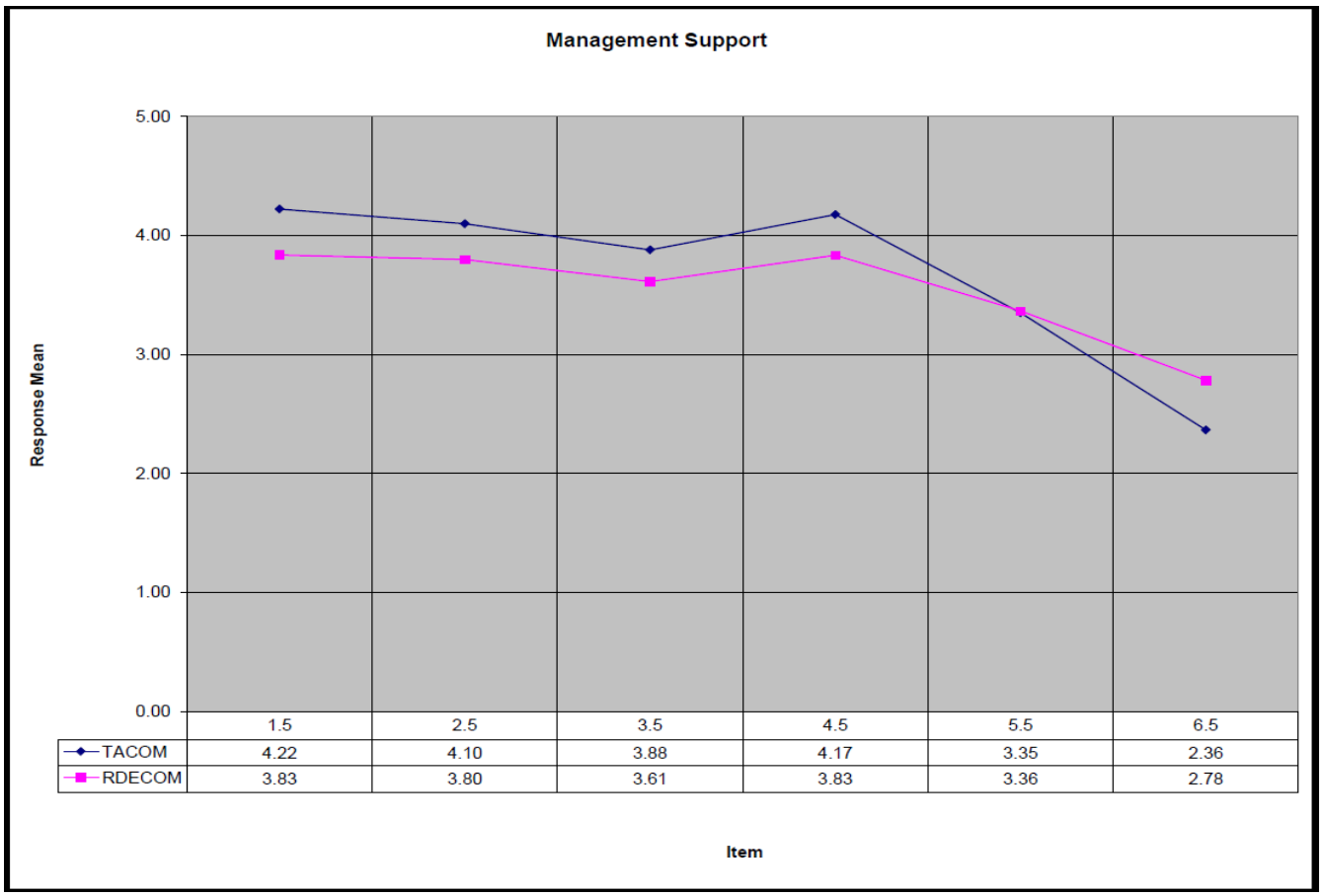
On the other hand, both contracting centers reflect relatively lower levels of Successful Results best practices, specifically in the areas of documented acquisition plans, accurate and complete proposals, use of independent government cost estimates, accurate and timely contractor payments, controlled contract changes, and verifying final delivery and final payment (Items 1.4, 3.4, 4.6, 5.4, and 6.4). This indicates a weaker use of Successful Results best practices in Procurement Planning, Solicitation, Source Selection, Contract Administration, and Contract Closeout.

A clear distinction can be made in the Successful Results best practices. The higher level best practices were in the Solicitation Planning and Source Selection

key process areas, whereas the lower levels of these best practices were generally distributed across all contract management key process areas.

G. Management Support

In Figure 9, we see a consistency in relatively higher levels and lower levels of Management Support best practices, as reflected in the survey-response means. Both contracting centers reflect relatively higher levels of Management Support, specifically in the area of senior-management involvement in providing input and approval of key planning decisions and documents (Items 1.5 and 4.5). This indicates a stronger use of Management Support best practices (senior-management input and approval) in the contract management key process areas of Procurement Planning and Source Selection.



	1.5	2.5	3.5	4.5	5.5	6.5
TACOM	4.22	4.10	3.88	4.17	3.35	2.36
RDECOM	3.83	3.80	3.61	3.83	3.36	2.78

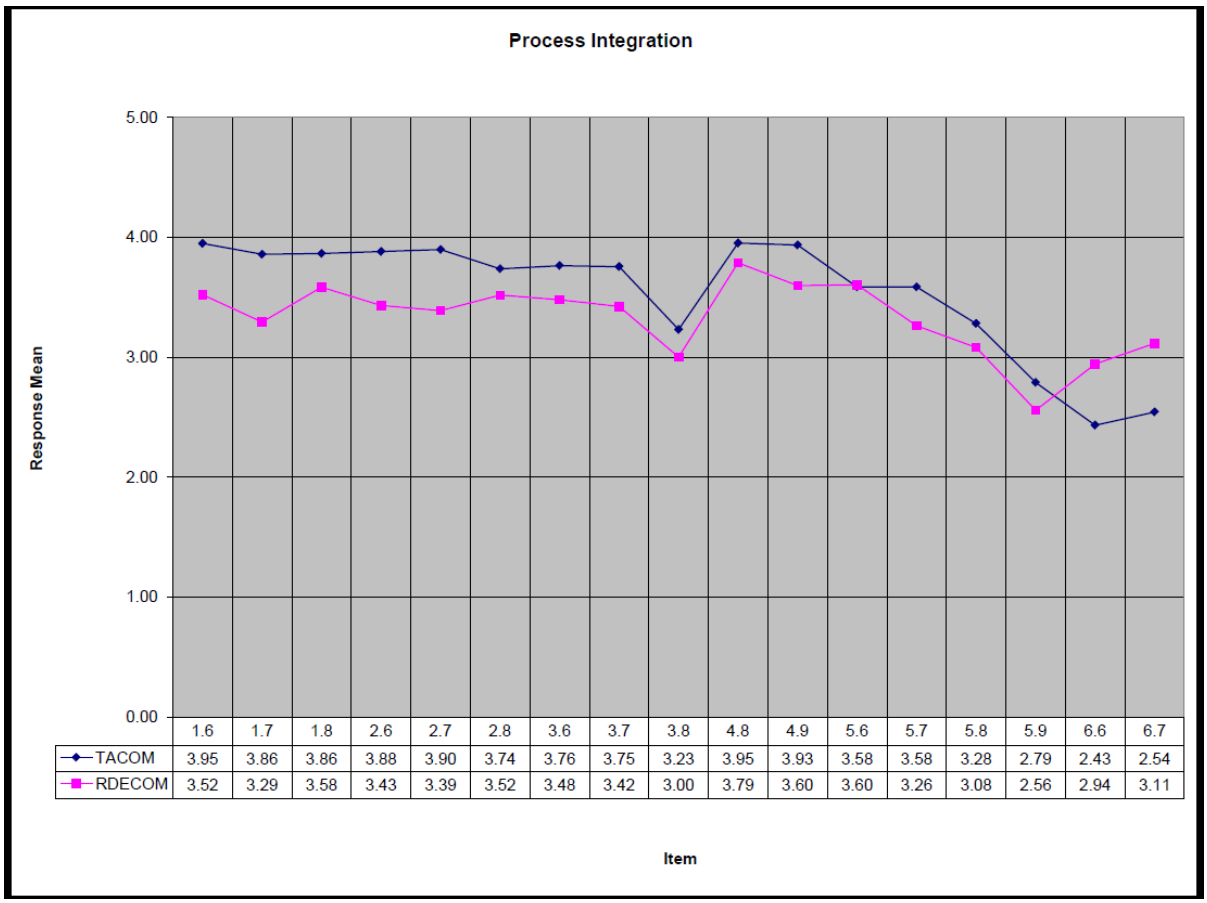
Figure 9. Management Support

On the other hand, both contracting centers reflect relatively lower levels of Management Support, also in the area of senior-management involvement in providing input and approval of key planning decisions and documents (Items 5.5 and 6.5). This indicates a weaker use of Management Support best practices (senior-management input and approval) in Contract Administration and Contract Closeout.

A clear distinction can also be made in the Management Support best practices. The higher level of this category of best practices was identified in the pre-award phases of Procurement Planning and Source Selection, whereas the lower level of these best practices was identified in the post-award phases of Contract Administration and Contract Closeout.

H. Process Integration

In Figure 10, we see a consistency in relative higher levels and lower levels of Process Integration best practices, as reflected in the survey-response means. Both contracting centers reflect relatively higher levels of Process Integration, specifically in the area of using cross-functional source selection teams (Item 4.8). This indicates a stronger use of Process Integration best practices (integrated project teams) in the contract management key process area of Source Selection.



	1.6	1.7	1.8	2.6	2.7	2.8	3.6	3.7	3.8	4.8	4.9	5.6	5.7	5.8	5.9	6.6	6.7
TACOM	3.95	3.86	3.86	3.88	3.90	3.74	3.76	3.75	3.23	3.95	3.93	3.58	3.58	3.28	2.79	2.43	2.54
RDECOM	3.52	3.29	3.58	3.43	3.39	3.52	3.48	3.42	3.00	3.79	3.60	3.60	3.26	3.08	2.56	2.94	3.11

Figure 10. Process Integration

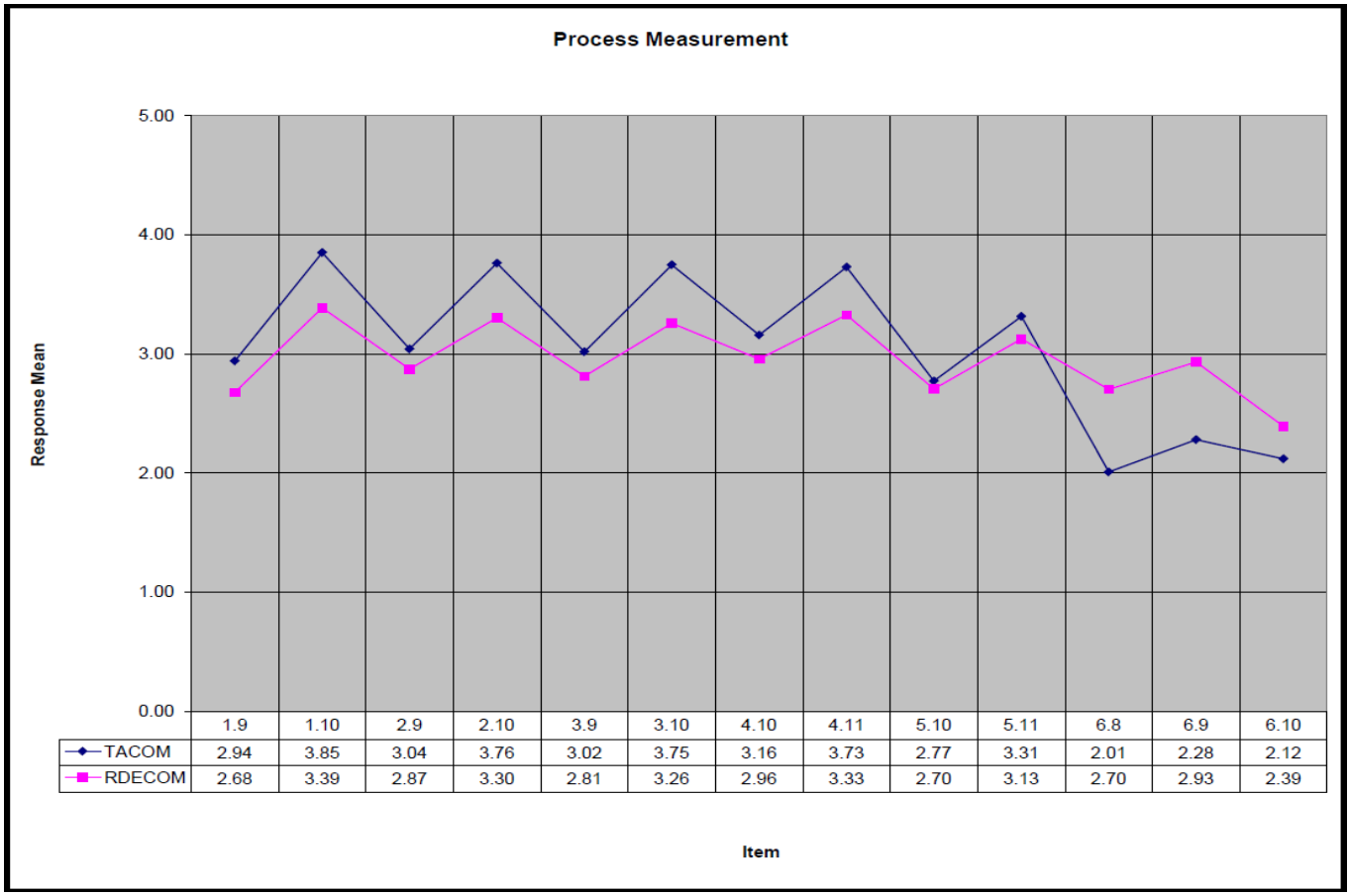
On the other hand, both contracting centers reflect relatively lower levels of Process Integration in the area of incorporating industry inputs in developing solicitation documents; using a team-approach for making award fee, award term, or other contract incentive determinations; using cross-functional contract closeout teams; and having integrated contract closeout processes (Items 3.8, 5.9, 6.6, 6.7). This indicates a weaker use of Process Integration best practices (industry input and integrated project teams) in Solicitation, Contract Administration, and Contract Closeout.

A clear distinction can be seen in the levels of Process Integration best practices. The higher level of this category of best practices was identified in the Source Selection process area, whereas the lower level of these best practices was

identified in the Solicitation, Contract Administration, and Contract Closeout process areas.

I. Process Measurement

In Figure 11, we see a consistency in relatively higher and lower levels of Process Measurement best practices, as reflected in the survey-response means. Both contracting centers reflect relatively higher levels of Process Measurement, specifically in the areas of adopting lessons learned and best practices for continuous process improvement (Items 1.10, 2.10, 3.10, and 4.11). This indicates a stronger use of Process Measurement best practices (continuous process improvement) in the contract management key process areas of Procurement Planning, Solicitation Planning, Solicitation, and Source Selection.



	1.9	1.10	2.9	2.10	3.9	3.10	4.10	4.11	5.10	5.11	6.8	6.9	6.10
TACOM	2.94	3.85	3.04	3.76	3.02	3.75	3.16	3.73	2.77	3.31	2.01	2.28	2.12
RDECOM	2.68	3.39	2.87	3.30	2.81	3.26	2.96	3.33	2.70	3.13	2.70	2.93	2.39

Figure 11. Process Measurement

On the other hand, both contracting centers reflect relatively lower levels of Process Measurement in the areas of using efficiency and effectiveness metrics in process evaluation (Items 1.9, 2.9, 3.9, 4.10, 5.10, 6.8), adopting lessons learned and best practices for continuous process improvement (Items 5.11, 6.9) and in maintaining a database for lessons learned and best practices (Item 6.10). This indicates a weaker use of Process Measurement best practices, such as using efficiency and effectiveness metrics in process evaluation, in all contract management key process areas. This also indicates a weaker use of Process Measurement best practices, such as adopting lessons learned and best practices for continuous process improvement, specifically in Contract Administration and Contract Closeout phases, and in the use of metrics and maintaining a database for lessons learned and best practices) in the Contract Closeout phase.

Once again, a clear distinction can be seen in the levels of Process Measurement best practices. The relatively higher level of Process Measurement best practices was identified in the pre-award contract management key process areas of Procurement Planning, Solicitation Planning, Solicitation, and Source Selection. The relatively lower level of Process Measurement best practices was identified in the post-award contract management key process areas of Contract Administration and Contract Closeout.

J. Summary Analysis

In the final analysis, the CMMM assessment results for TACOM and RDECOM, as reflected in Figure 4, show that the contract management key process areas of Procurement Planning, Solicitation Planning, and Solicitation were assessed at the Basic (Level 2) and Structured (Level 3) maturity levels. In addition, the contract management key process area of Source Selection was assessed at the Structured (Level 3) maturity level, and Contract Administration and Contract Closeout were assessed at the Basic (Level 2) maturity level. These levels of maturity are due to the employment of contract management best practices within each contract management key process area.

Across all six contract management key process areas, the stronger use of Process Strength best practices involved having established contract management processes, while the weaker use of Process Strength best practices involved having established processes that were standardized, mandated, and documented. In terms of Successful Results best practices, the higher level use was identified in the Solicitation Planning and Source Selection key process areas, whereas the lower levels of these best practices were generally distributed across all contract management key process areas. The higher level use of Management Support best practices was identified in the pre-award phases of Procurement Planning and Source Selection, whereas the lower level use of these best practices was identified in the post-award phases of Contract Administration and Contract Closeout. The higher level use of Process Integration best practices was identified in the Source Selection process area, whereas the lower level use of these best practices was identified in the Solicitation, Contract Administration, and Contract Closeout process areas. Finally, the relatively higher level use of Process Measurement best practices was identified in the pre-award contract management key process areas of Procurement Planning, Solicitation Planning, Solicitation, and Source Selection. The relatively lower level use of Process Measurement best practices was identified in the post-award contract management key process areas of Contract Administration and Contract Closeout.

Another interesting insight from the CMMM assessment of TACOM and RDECOM is that no contracting center was assessed at the Integrated or higher maturity level for any contract management key process area. The key to achieving the Integrated level is having contract management processes that are fully integrated with other organizational core processes such as financial management, schedule management, performance management, and systems engineering. In addition to representatives from other organizational functional offices and stakeholders, the contract's end user is an integral member of the procurement organization (Garrett & Rendon, 2005). Within the DoD, integration in defense acquisition programs is implemented using cross-functional teams called integrated

product teams (IPTs). IPTs are used to maintain continuous and effective communication and collaboration among program management, procurement, financial management, and end users (USD[AT&L], 2003). Recent GAO reports have identified that IPTs were not operating effectively and that IPT decision-making processes were sequential and involved numerous external consultations for approval (GAO, 2001). The CMMM assessment results at these contracting centers seem to reflect the ineffectiveness of the integrated project teams.

Another interesting note is that both contracting centers are rated at Basic (Level 2) for the Contract Administration and Contract Closeout key process areas. This is especially evident in the low use of Management Support and Process Measurement best practices for these two key process areas.

It is also interesting to note that recent reports by the GAO have identified the same areas identified by these CMMM assessment results as problematic throughout the DoD and the federal government. These reports have identified problems related to ensuring proper management, oversight, and surveillance of awarded contracts (GAO, 2005, 2006a, 2007c) as well as management of contractor performance information (GAO, 2007d). The DoD Inspector General (IG) has also identified that “organizations are deficient in contract administration, including the surveillance of contract performance, assignment of contracting officer representatives, preparation of quality assurance surveillance plans, and collection and recording of contractor past performance” (DoDIG, 2007, p. i).

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VII. Recommendations for Process Improvement and Knowledge Management

The true value of the CMMM assessment is the use of the assessment results in supporting contract management process improvement and organizational knowledge management. The results of the assessment analysis can be used to develop a road map for implementing contract management process improvement (Garrett & Rendon, 2005). The following process improvement and knowledge management opportunities are discussed for each of the two ACC contracting centers.

A. TACOM

From the contracting center level of analysis reflected in Figure 3, the majority of TACOM achieved a Structured (Level 3) maturity level for Procurement Planning, Solicitation Planning, Solicitation, and Source Selection. To progress to the Integrated maturity level (Level 4), TACOM should ensure these key process areas are integrated with other organizational core processes, such as customer service, financial management, schedule management, performance management, and risk management. The Procurement Planning process activities that need to be integrated with other organizational core processes include requirements analysis, acquisition planning, and market research. For the Solicitation Planning process, the activities include determining procurement method, determining evaluation strategy, and developing solicitation documents. Solicitation process activities to be integrated with organizational core processes include advertising procurement opportunities, conducting solicitation and pre-proposal conferences, and amending solicitation documents as needed. Source Selection process activities include evaluating proposals, applying evaluation criteria, negotiating contract terms, and selecting contractors. In addition to integrating these key process areas with other organizational core processes, TACOM should also ensure that the procurement project's end user is included as integral members of the procurement team and are

engaged in providing input and recommendations for key contract management decisions and documents.

Additionally, as reflected in Figure 3, TACOM achieved a Basic (Level 2) maturity level for the Contract Administration and Contract Closeout key process areas. To progress to the Structured (Level 3) maturity level, TACOM should ensure that Contract Administration and Contract Closeout processes are fully established, institutionalized, and mandated throughout the organization. Formal documentation should be developed for Contract Administration and Contract Closeout process activities. These Contract Administration activities include monitoring and measuring contractor performance, managing the contract change process, and managing the contractor payment process. The Contract Closeout activities include verifying contract completion, verifying contract compliance, and making final payment. Also, senior management should be involved in providing guidance, direction, and even approval of key Contract Administration and Contract Closeout strategy, decisions, related contract terms and conditions, and documents (Garrett & Rendon, 2005). Also, TACOM should permit the tailoring of processes and documents, allowing consideration for the unique aspects of each contract, such as contracting strategy, contract type, terms and conditions, dollar value, and type of requirement.

From the contracting division level of analysis reflected in Figure 2, the disparity between TACOM's contracting division maturity levels ranges from Basic to Structured for Procurement Planning; from Basic to Integrated for Solicitation Planning, Solicitation, Source Selection, and Contract Administration; and from Ad Hoc to Integrated for Contract Closeout. The disparity among maturity levels provides opportunities for knowledge-transferring and knowledge-sharing within TACOM. TACOM should pursue knowledge-sharing between the contracting divisions with the higher maturity levels (for example, Division I for Solicitation, Source Selection, Contract Administration and Contract Closeout) and the contracting divisions with the lower maturity levels (for example, Division H for

Solicitation, Source Selection, and Contract Administration and Divisions D and T for Contract Closeout).

B. RDECOM

From the contracting center level of analysis reflected in Figure 3, the majority of RDECOM was rated at the Basic (Level 2) maturity level for all key process areas except Source Selection, which was rated at the Structured (Level 3) maturity level. For all of the key process areas except Source Selection, to progress to the Structured (Level 3) maturity level, RDECOM should ensure that these processes are fully established, institutionalized, and mandated throughout the organization. Formal documentation should be developed for the contract management key process activities. Also, senior management should be involved in providing guidance, direction, and even approval of key contract management strategy, decisions, related contract terms and conditions, and documents (Garrett & Rendon, 2005). Also, for these key process areas, RDECOM should permit the tailoring of processes and documents, allowing consideration for the unique aspects of each contract, such as contracting strategy, contract type, terms and conditions, dollar value, and type of requirement.

As also reflected in Figure 3, the Source Selection key process area was rated at the Structured (Level 3) maturity level. To progress to the Integrated (Level 4) maturity level, RDECOM should ensure that the Source Selection process is integrated with other organizational core processes, such as customer service, financial management, schedule management, performance management, and risk management. The Source Selection process activities that need to be integrated include evaluating proposals, applying evaluation criteria, negotiating contract terms, and selecting contractors. In addition to integrating this key process area with other organizational core processes, RDECOM should also ensure that the procurement project's end user is included as integral members of the procurement team and are engaged in providing input and recommendations for key contract management decisions and documents.

From the contracting division level of analysis reflected in Figure 3, the disparity between RDECOM's contracting division maturity levels ranges from Basic to Structured for Procurement Planning, Solicitation Planning, and Source Selection and from Ad Hoc to Structured for Solicitation and Contract Closeout. (It is interesting to note that all RDECOM's contracting divisions were assessed at the Basic level for Contract Administration.) The disparity among maturity levels provides opportunities for knowledge-transferring and knowledge-sharing within RDECOM. RDECOM should pursue knowledge-sharing between the contracting divisions with the higher maturity levels (for example, Division A for all key process areas except Contract Administration) and the contracting divisions with the lower maturity levels (for example, Division T for all key process areas except Contract Administration).

The TACOM and RDECOM's CMMM assessment results also indicate a need for an increased emphasis on the ACC's contract management training program. Training in each of the contract management key process areas should also be part of ACC's process improvement initiatives. Table 7 and the subsequent discussion provide an overview of the major activities, tools, techniques, and Federal Acquisition Regulation (FAR) training topics related to each of the contract management key process areas.

Table 7. Contract Management Phases
(Rendon, 2011)

Contract Management Key Process Area	Contract Management Key Practice Activity	FAR Part
Procurement Planning	Requirements Analysis	11
	Required Sources of Supply and Services	8
	Acquisition Planning	7
	Market Research	5, 10
	Determine Competition Environment	6
Solicitation Planning	Document Competition Environment	6
	Determine Procurement Method	12, 13, 14, 15
	Determine Evaluation Strategy	12, 13, 14, 15
	Develop Solicitation Documents	12, 13, 14, 15
	Determine Contract Type/Incentive	16
	Determine Terms and Conditions	52
Solicitation	Advertise Procurement Activities	5
	Conduct Conferences (pre-sol, pre-proposal)	10, 15
	Amend solicitation documents as required	12, 13, 14, 15
Source Selection	Evaluate Proposals	12, 13, 14, 15
	Apply Evaluation Criteria	12, 13, 14, 15
	Negotiate Contract Terms and Conditions	12, 13, 14, 15
	Contractor Responsibility Standards	9
	Select contractor	12, 13, 14, 15
	Manage Protests, Disputes and Appeals	33
Contract Administration	Conduct conferences (post-award, pre-performance)	42
	Manage contract change process	43
	Monitor contractor's management of subcontracting	44
	Manage government furnished property	45
	Monitor and measure contractor performance	46
	Manage Transportation Issues	47
	Manage Value Engineering Issues	48
	Manage contractor payment process	30, 31, 32
	Manage patents, data, copyright, bonds, insurance, taxes	27, 28, 29,
	Manage Protests, Disputes and Appeals	33
	Comply with terms and conditions	52
Contract Close Out	Verify contract completion	42
	Verify contractor compliance	42
	Ensure contract completion documentation	4
	Make final payment	4, 31, 32
	Document lessons learned/best practices	4
	Process contract terminations, if applicable	49
	Dispose of buyer-furnished property and equipment	45
	Process contract closeout procedures	4
Specific Contracting Areas	Special Contracting Methods	17
	Emergecny Contracting	18
	Foreign Acquisition	25
	Major Systems Acquisition	34
	R&D Contracting	35
	Construction and A&E	36
	Service Contracting	37
	Federal Supply Schedule Contracting	38
	Acquisition of Information Technology	39
	Acquisition of Utility Services	41
Social Responsibility Areas	Small Business Programs	19
	Application of Labor Laws to Government Acquisitions	22
	Environ, Energy/Water Efficiency, Renw. Energy Tech., Occup. Safety, Drug Free Workplace	23
	Protection of Privacy and freedom of Information	24
	Other Socioeconomic Programs	26

Training in Procurement Planning would include, but is not limited to, FAR Part 7, Acquisition Planning; FAR Part 5, Publicizing Contract Actions; and FAR Part 10, Market Research. This training should focus on subjects such as determining the availability of funds, making preliminary cost and schedule estimates, assessing and managing risk, determining manpower resources, conducting assessments of market conditions, selecting the appropriate contract type, developing contract incentive plans, and developing standard and unique contract terms and conditions (Garrett & Rendon, 2005).

Training in Solicitation Planning should focus on subjects such as developing solicitations, assessing solicitation documents, and developing appropriate criteria for proposal evaluation (Garrett & Rendon, 2005). This training would include, but is not limited to, FAR Part 12, Acquisition of Commercial Items; FAR Part 13, Simplified Acquisition Procedures; FAR Part 14, Sealed Bidding (if used by the ACC); and FAR Part 15, Contracting by Negotiation (with regard to developing solicitation documents and evaluation strategy).

Training in the Solicitation process should include subjects such as developing an integrated approach to establishing qualified bidders' lists, conducting market research, advertising procurement opportunities, and conducting pre-proposal conferences (Garrett & Rendon, 2005). FAR training related to this topic would include FAR Part 5, Publicizing Contract Actions; FAR Part 12, Acquisition of Commercial Items; FAR Part 13, Simplified Acquisition Procedures; FAR Part 14, Sealed Bidding; and FAR Part 15, Contracting by Negotiation (on conducting pre-solicitation and pre-proposal conferences).

Training in Source Selection should include subjects such as proposal evaluation and evaluation criteria; evaluation standards; estimating techniques and weighting systems; and negotiation techniques, planning, and actions (Garrett & Rendon, 2005). FAR training that would supplement this training includes FAR Part 12, Acquisition of Commercial Items; FAR Part 13, Simplified Acquisition

Procedures; FAR Part 14, Sealed Bidding; and FAR Part 15, Contracting by Negotiation (for evaluating proposals and for selecting contractors).

Training in Contract Administration should focus on areas of conducting integrated assessments of contractor performance, such as integrated cost, schedule, and performance evaluations. Specific topics should include managing contract changes, processing contractor invoices and payments, managing contractor incentives and award fees, and managing subcontractor performance (Garrett & Rendon, 2005). FAR training that would supplement this training would be FAR Part 42, Contract Administration and Audit Services; FAR Part 45, Government Property (for complying with terms and conditions); and FAR Part 46, Quality Assurance (for monitoring and measuring contractor performance).

Training in Contract Closeout should focus on subjects such as contract termination, closeout planning and considerations, and closeout standards and documentation (Garrett & Rendon, 2005). Additional FAR training that would supplement this training would be FAR Part 42, Contract Administration and Audit Services (for verifying contract completion and contractor compliance) and FAR Part 4, Administrative Matters (for ensuring contract completion documentation).

A critical note concerning contract management training should be discussed at this point. It is important for contracting specialists and contracting officers to receive the appropriate training to ensure sufficient competency in each of the contract management key process areas. However, it is also important for senior organizational management (for example, supervisors, division chiefs, and even higher level executives) to understand their roles and responsibilities in the contract management process. This is especially true for senior executives that have specific authorities for making contracting-related decisions and approving contract management documents. These authorities include approval of sole source justifications, use of a high-risk contract type, or waiver of a statutory requirement such as the Truth in Negotiations Act (TINA). Senior executives should understand not only their roles and responsibilities in the contract management process, but also

the implications of their decisions on public policy objectives such as integrity, accountability, and transparency of the contracting process. Past DoDIG reports and investigations have identified a number of instances in which senior management have made contracting-related decisions resulting in a negative impact on the contract management process, specifically in terms of achieving public policy objectives. A review of Figure 9, Management Support, indicates that senior managers may not understand their roles, responsibilities, and implications of their contracting decisions, specifically in the Contract Administration and Contract Closeout key process areas.

The CMMM assessment results from the ACC TACOM and RDECOM Contracting Centers are similar to the recent CMMM assessment results from other ACC contracting centers—specifically, the AMCOM, JM&L, and National Capital Region (NCR) Contracting Centers. Figure 12 reflects the CMMM assessment results of TACOM, RDECOM, AMCOM, JM&L, and NCR. (Note that in Figure 12, the symbols T, R, A, J, and N are used to denote TACOM, RDECOM, AMCOM, JM&L, and NCR, respectively). (See Rendon, 2010, for an analysis of the AMCOM, JM&L, and NCR CMMM assessment results.)

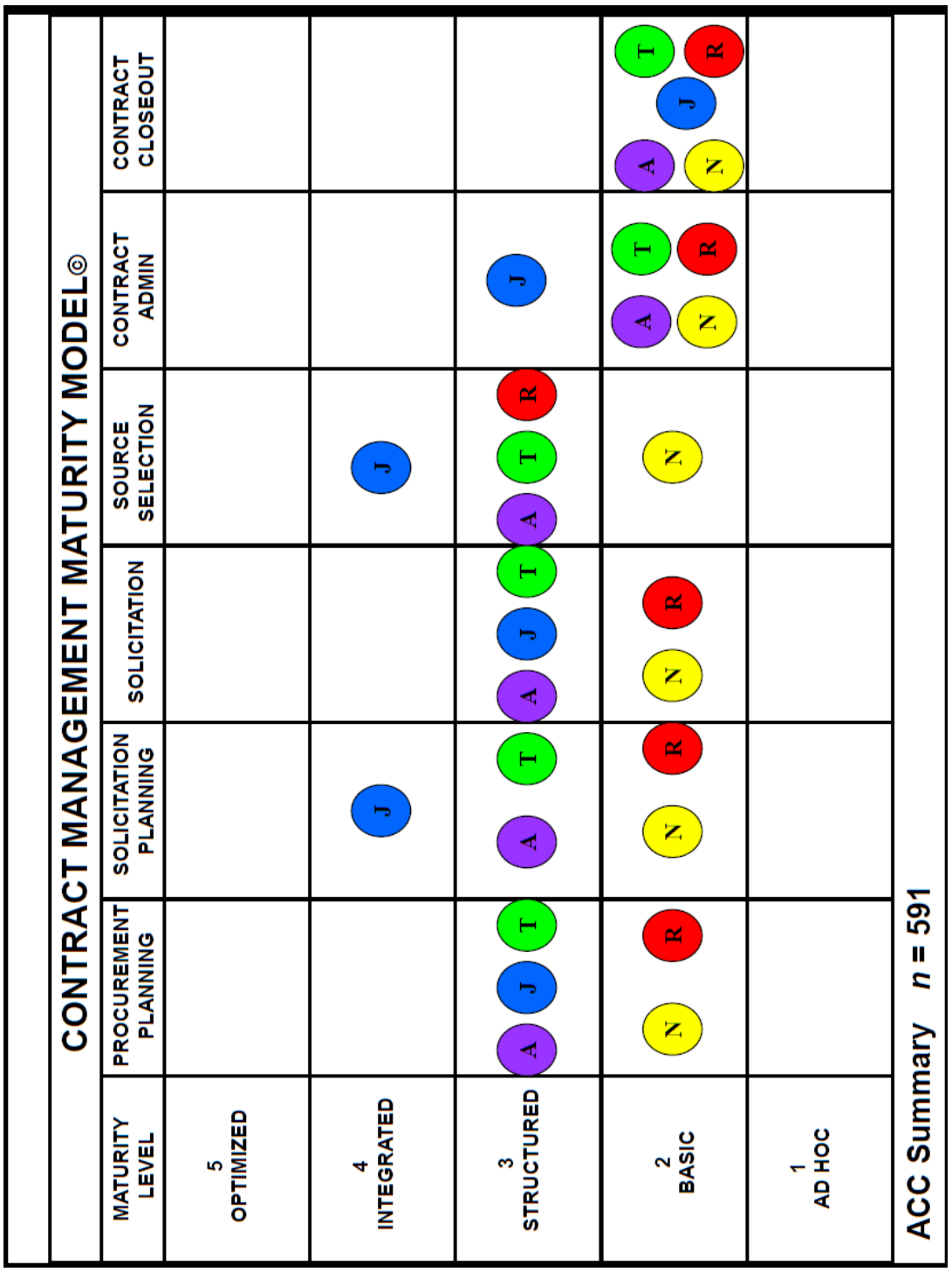

Figure 12. ACC Assessment Results (AMCOM, JM&L, NCR, TACOM, RDECOM)

The CMMM assessment results from the ACC are also similar to the CMMM assessment results from Air Force and Navy contracting centers. In addition, the

process improvement and knowledge management opportunities identified in these CMMM assessment results are also similar to CMMM assessments conducted at other major DoD contracting agencies (Garrett & Rendon, 2005; Rendon, 2008). The opportunity for knowledge-sharing and knowledge-transferring has been identified as the number-one goal for the Department of Defense Acquisition, Technology, and Logistics (AT&L) Human Capital Strategic Plan (HCSP). The overarching goal is to promote DoD-wide sharing of workforce best practices by the military department (DoD, 2007). It is also interesting to note that recent GAO reports have identified the need for improving the training management of the contracting workforce and for creating a culture for knowledge-sharing in improving federal acquisition as an opportunity in federal contract management (GAO, 2002, 2006b). These opportunities for knowledge management initiatives in contract management will only increase in importance as the government contracting workforce continues to retire and is replaced with more junior and less experienced contracting professionals.

VIII. Conclusion

This paper analyzed the results of contract management process capability assessments conducted at the ACC's TACOM and RDECOM Contracting Centers by using the CMMM.

Although the CMMM assessment results indicated different contract management key process maturity levels, ranging from Basic (Level 2) to Structured (Level 3) for each ACC contracting center, consistencies were identified for each of the key process areas: Procurement Planning, Solicitation Planning, Solicitation, Source Selection, Contract Administration, and Contract Closeout. Generally higher maturity levels were indicated in the Source Selection key process area, while generally lower maturity levels were indicated in the Contract Administration and Contract Closeout key process areas.

The maturity levels for these contract management key process areas were also reflected in the responses to the survey items related to the contract management best practice groups Process Strength, Successful Results, Management Support, Process Integration, and Process Measurement.

An analysis of these contract management assessment results identified opportunities for improving the contract management processes, increasing contract management process maturity, and implementing process improvement and knowledge management initiatives.

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IX. Areas for Further Research

An area for further research in these specific assessments would include identifying any relationships between the CMMM assessment results and other procurement-capability or competence assessments, such as the results of organizational and DoD-level contract peer reviews, as well as procurement performance metrics, such as procurement administrative lead-time (PALT), number of letter contracts awarded, number of sole-source contracts awarded, number of contracts completed on time and on schedule, and number of sustained protests. Further analysis of these procurement assessments and performance metrics may provide additional validation of the CMMM assessment results and may also identify additional opportunities for improving the procurement process.

The analysis of the results of the contract management process assessments also identified consistencies in DoD and federal government contract management. These include problem areas within the contract administration and contract closeout process areas, procurement process integration and teaming issues, and contract management knowledge-sharing and training issues. As the body of knowledge on contract management workforce competence and organizational process capability continues to emerge, the use of maturity models will continue to gain wider acceptance in the contract management field as a tool for assessing organizational contract management process maturity and for providing a road map for implementing contract management process improvement initiatives.

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Appendix A. TACOM CMMM Assessment Results

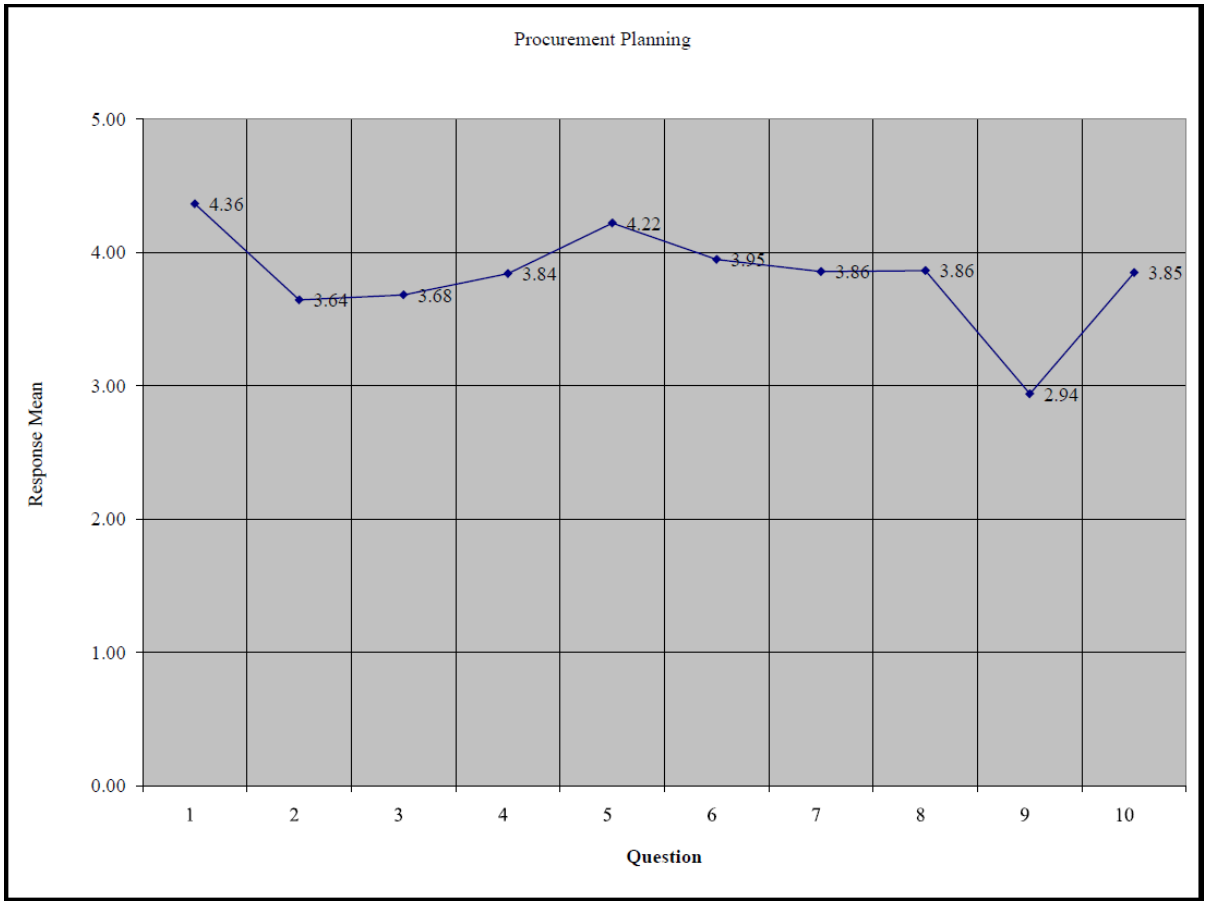

Figure A1. TACOM Procurement Planning

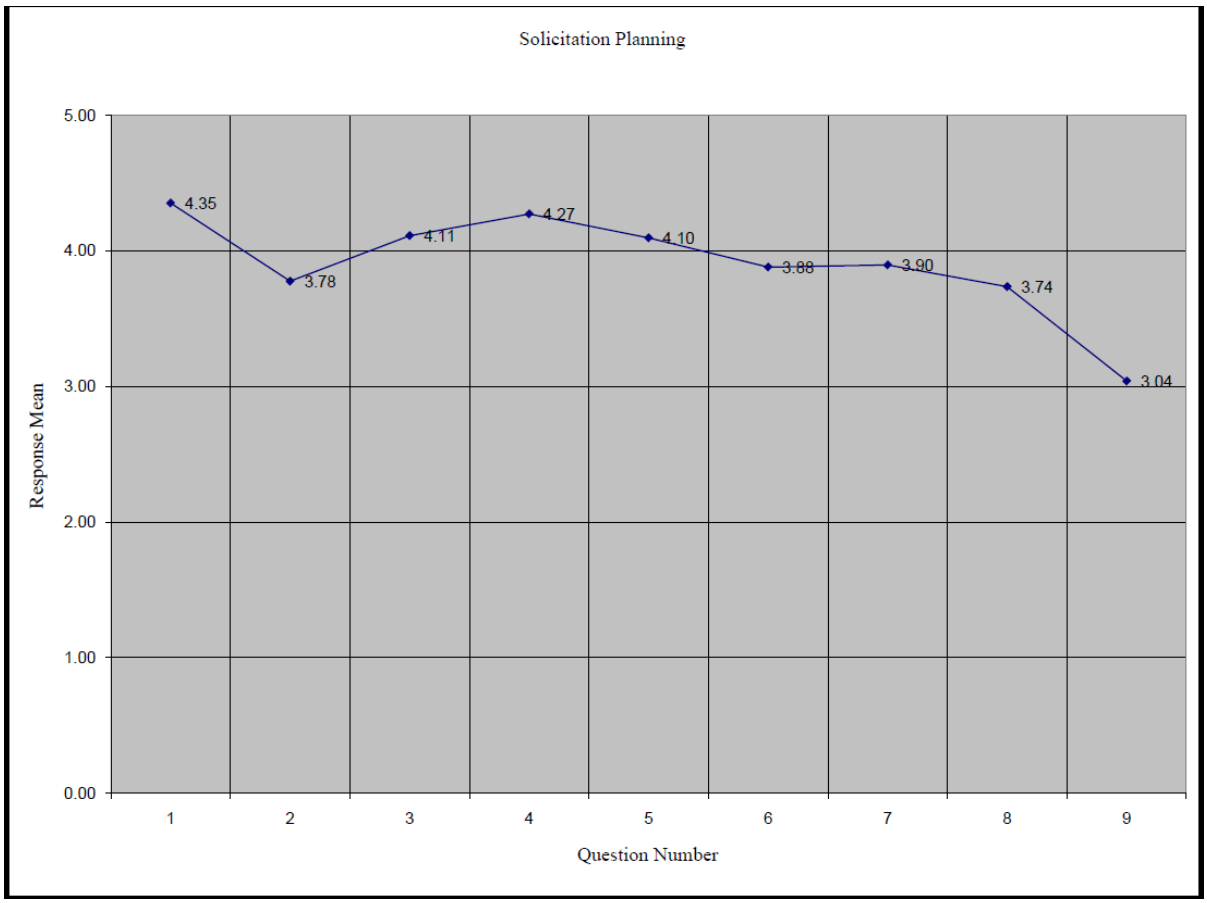

Figure A2. TACOM Solicitation Planning

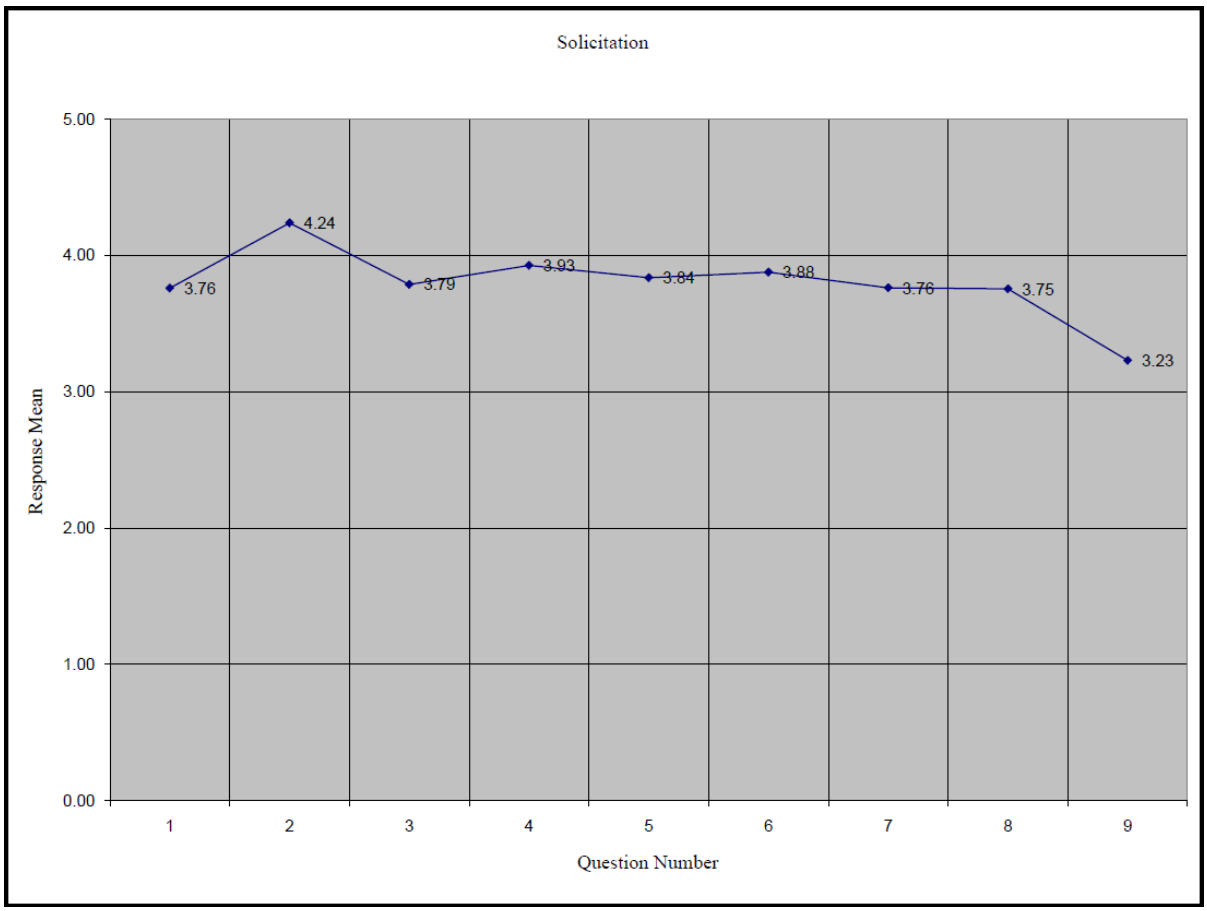

Figure A3. TACOM Solicitation

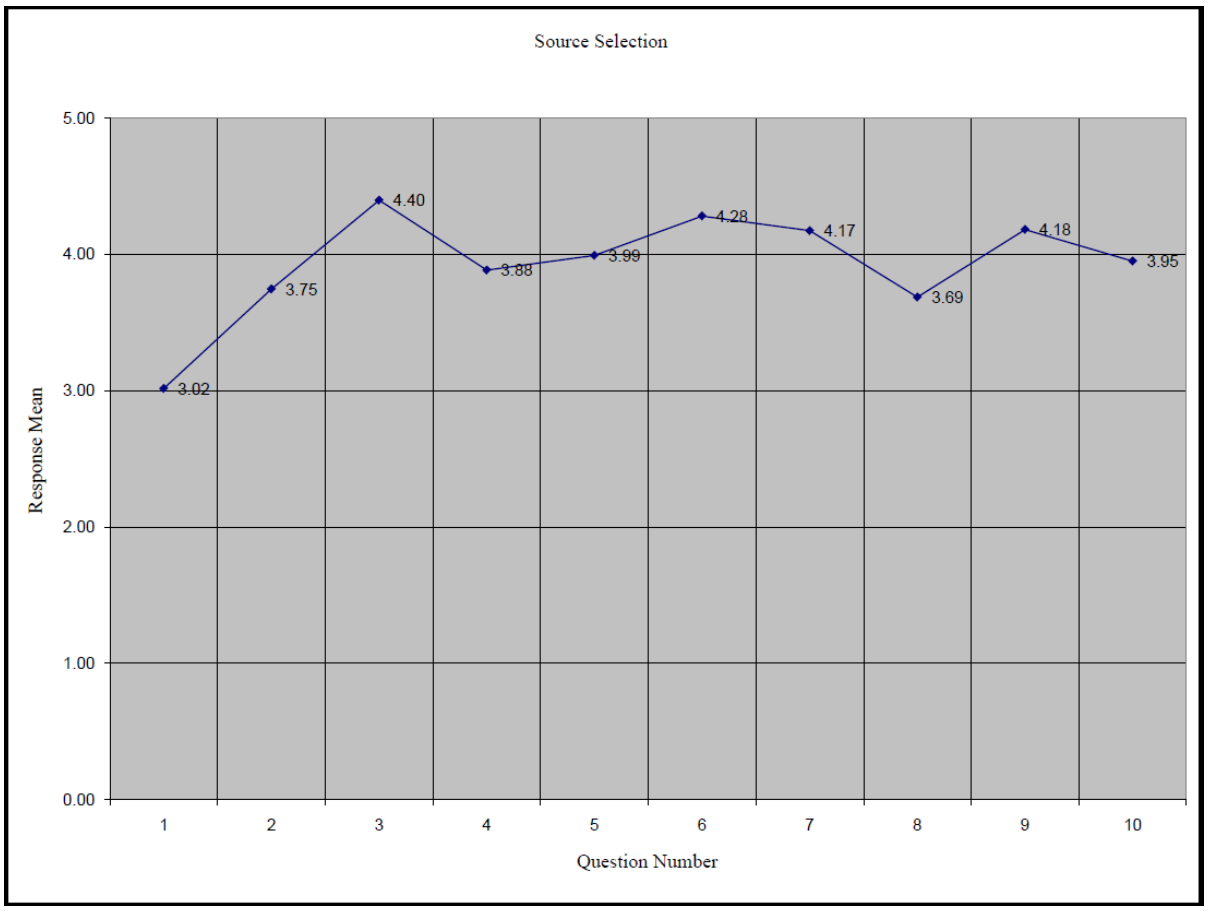

Figure A4. TACOM Source Selection

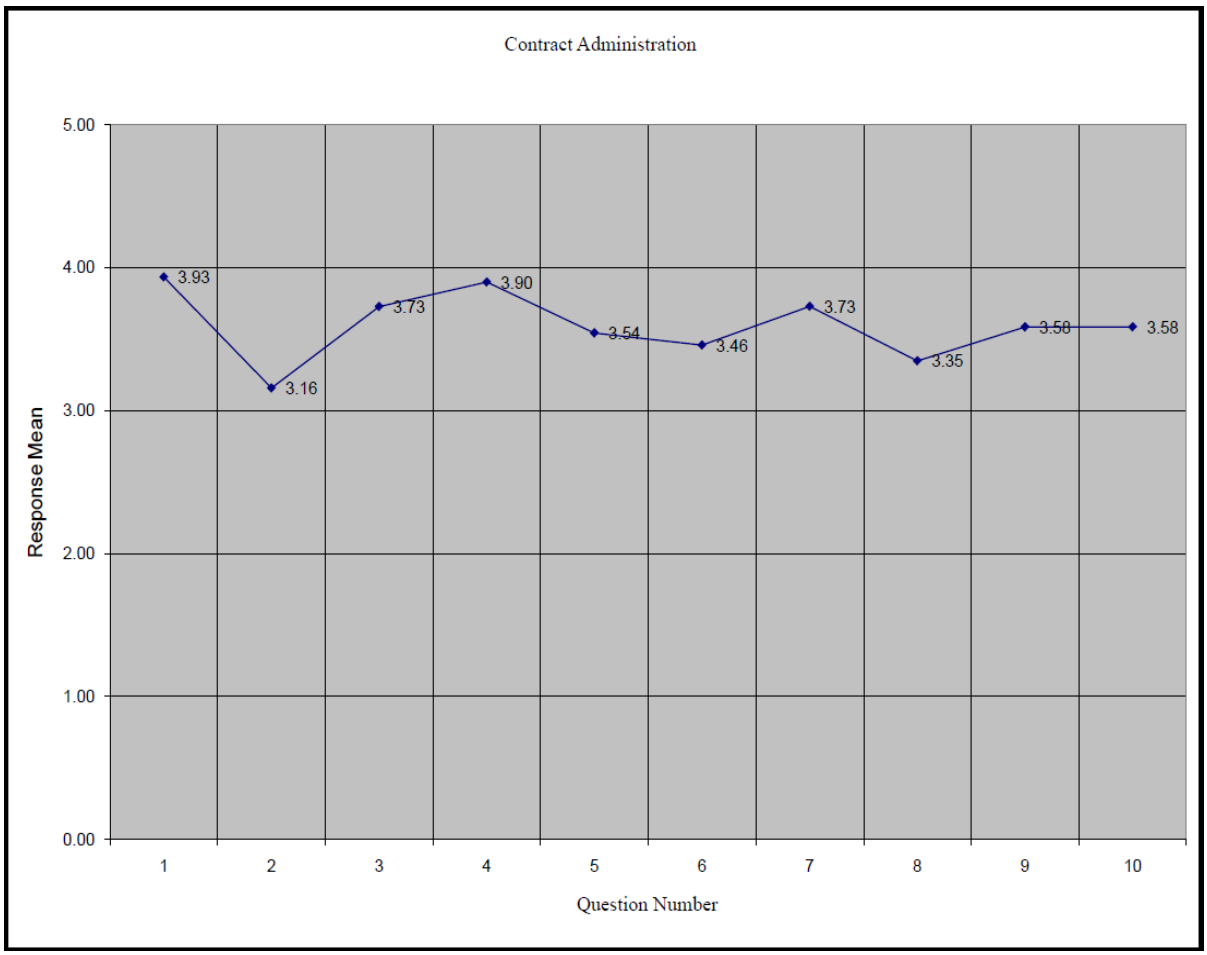

Figure A5. TACOM Contract Administration

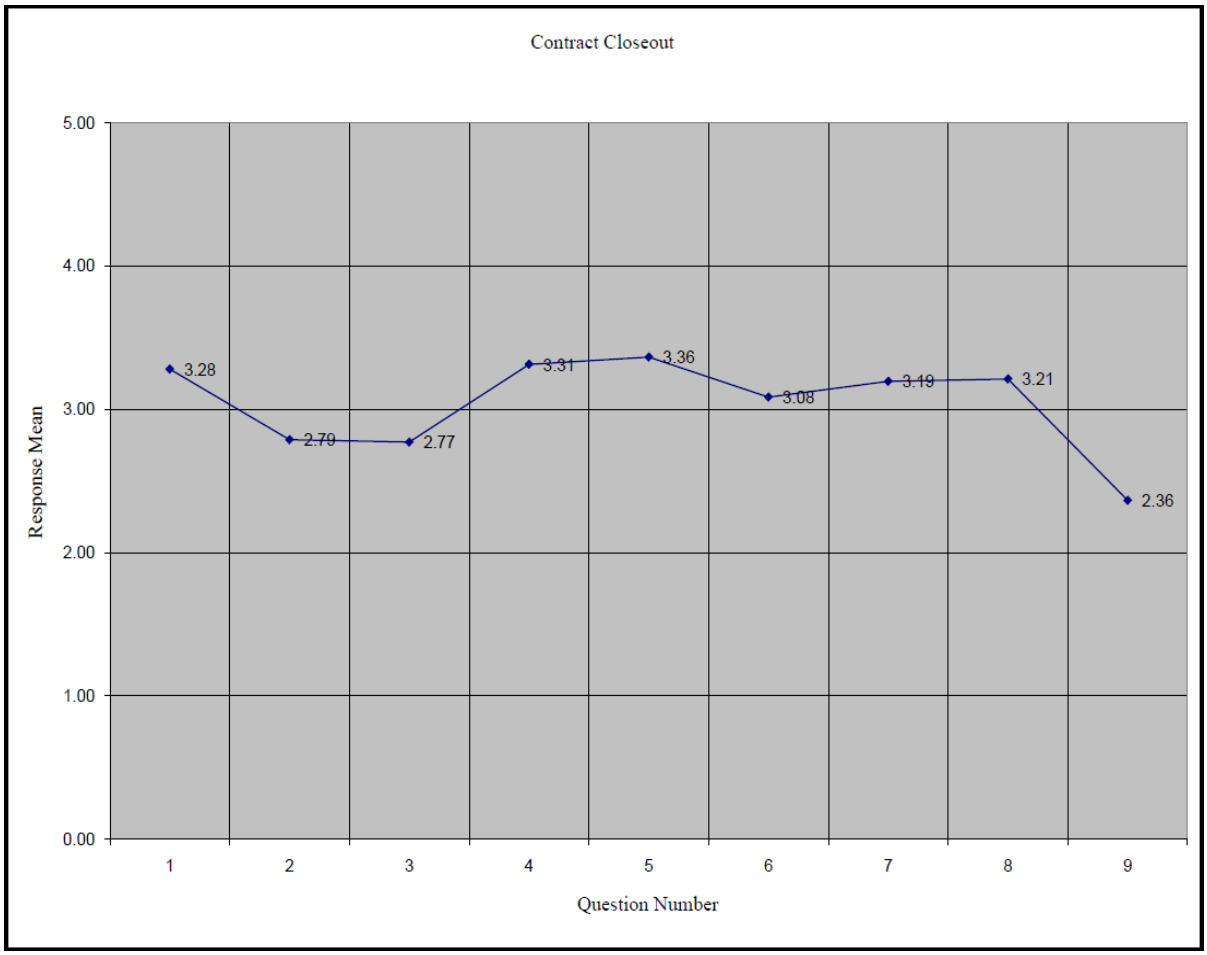

Figure A6. TACOM Contract Closeout

Appendix B. RDECOM CMMM Assessment Results

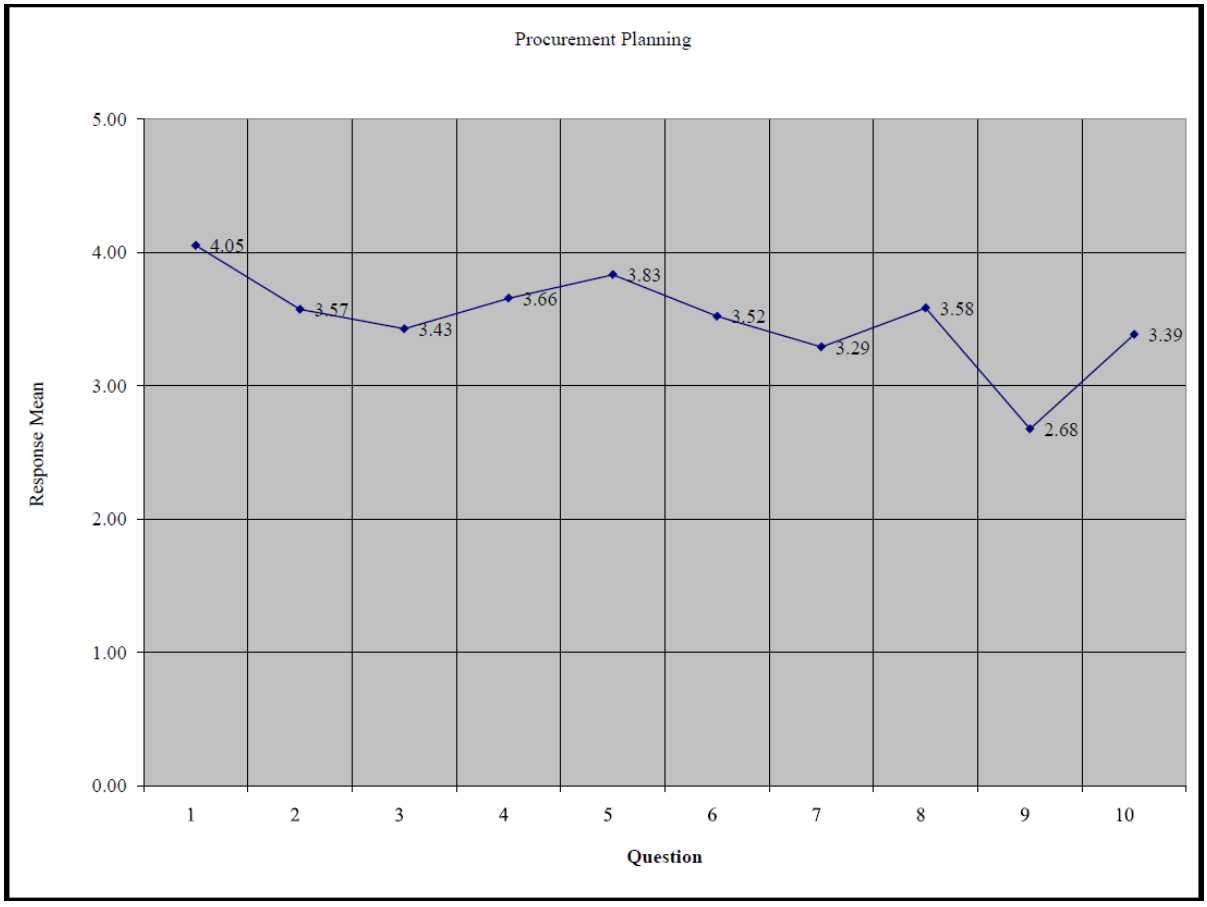

Figure B1. RDECOM Procurement Planning

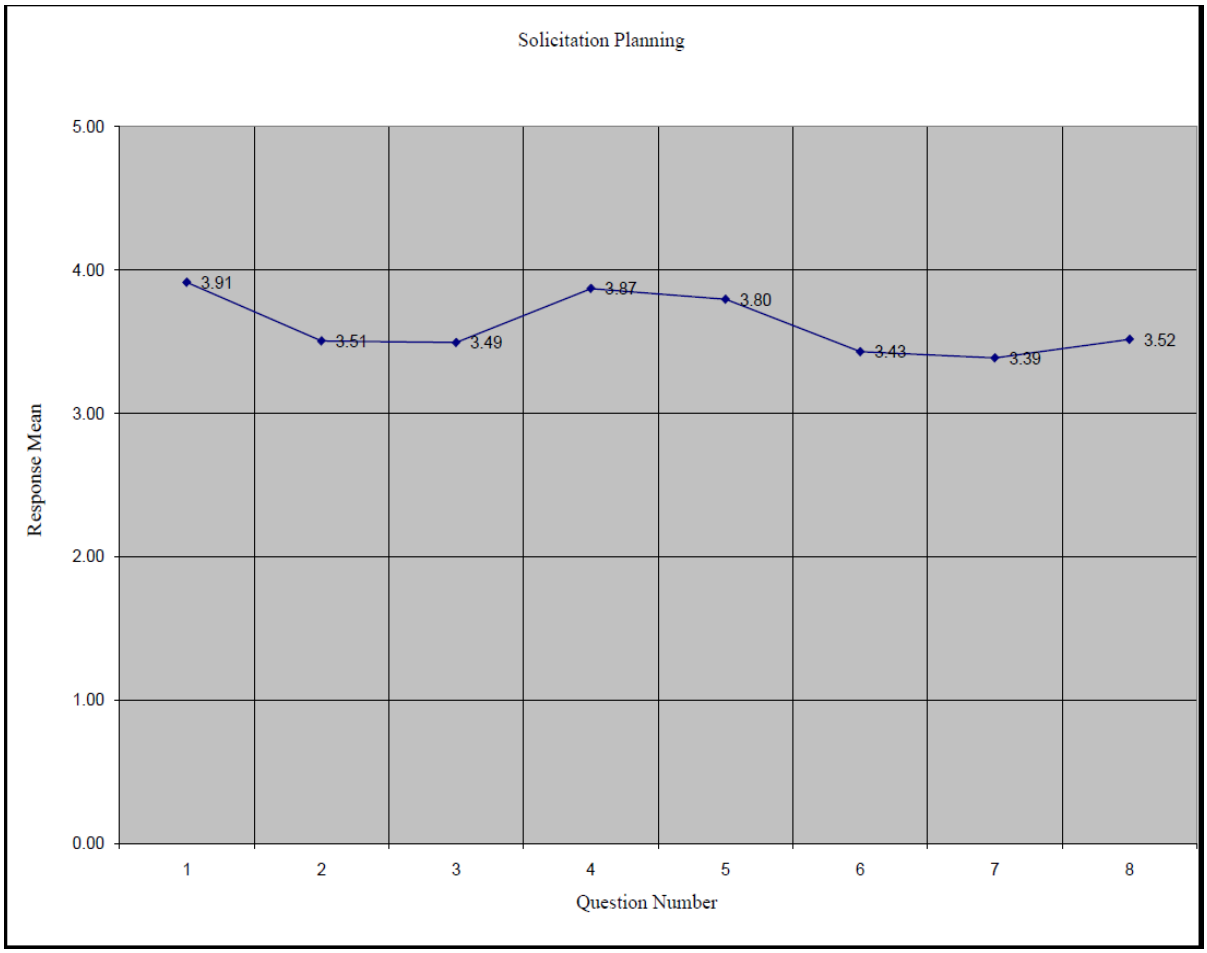

Figure B2. RDECOM Solicitation Planning

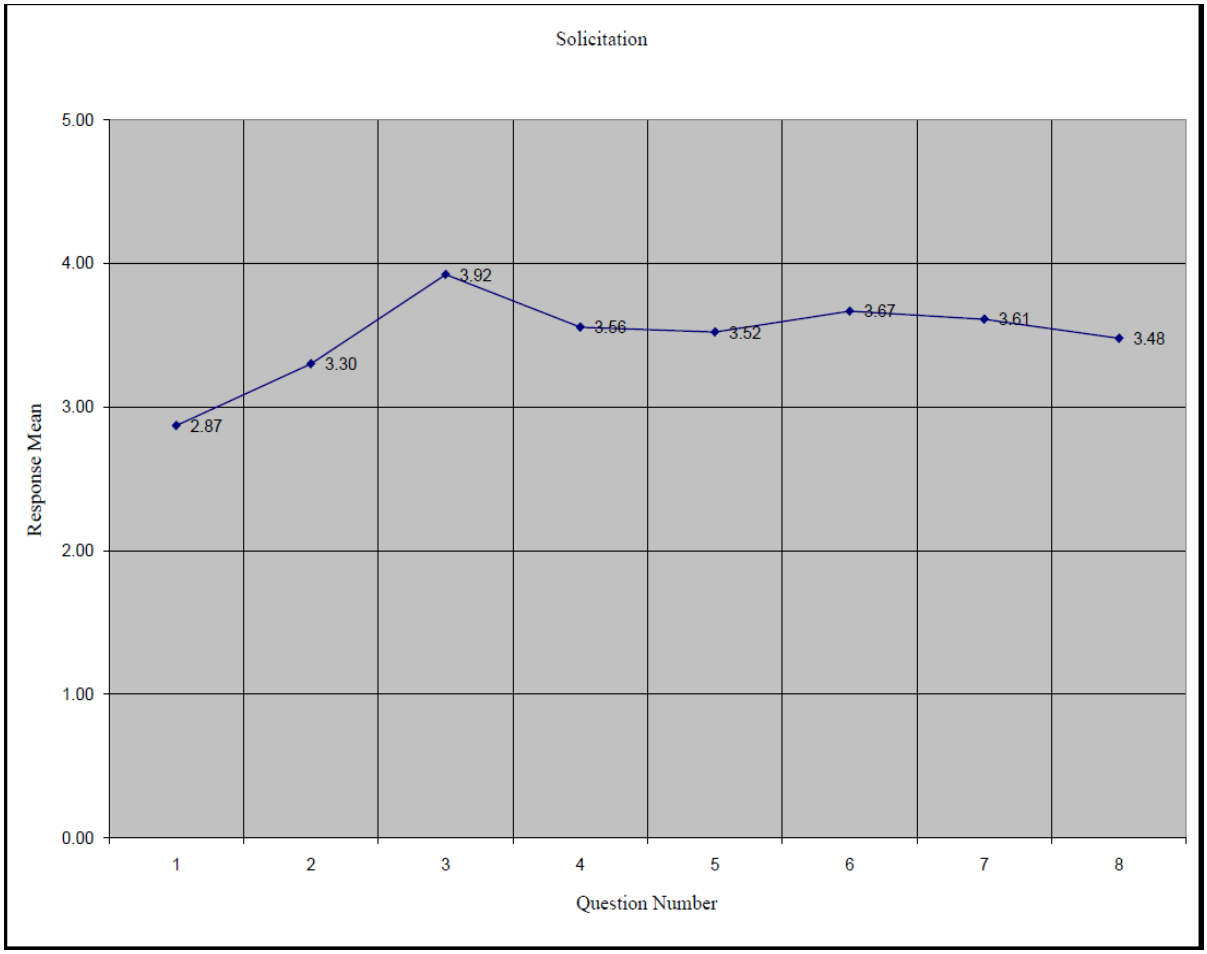

Figure B3. RDECOM Solicitation

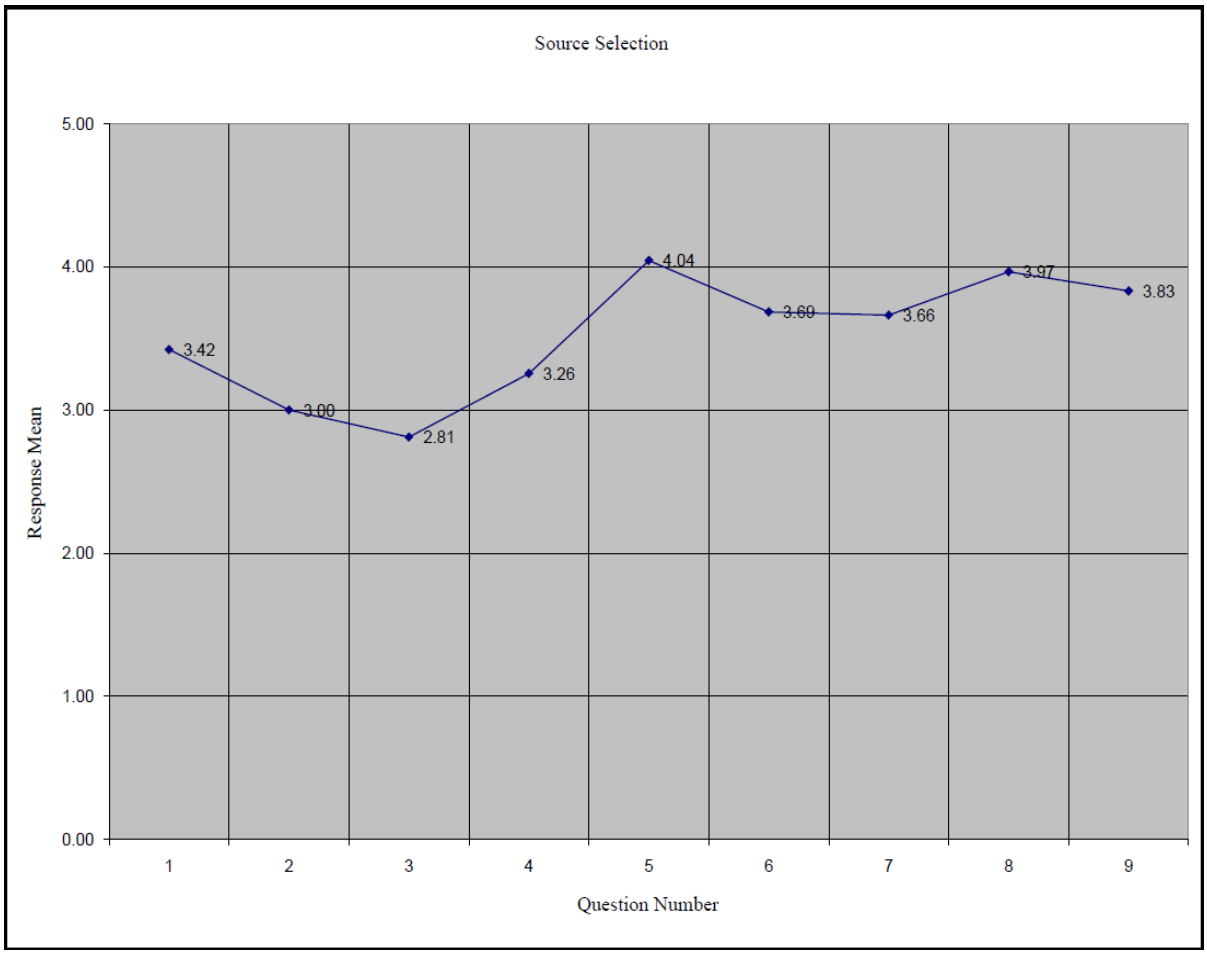

Figure B4. RDECOM Source Selection

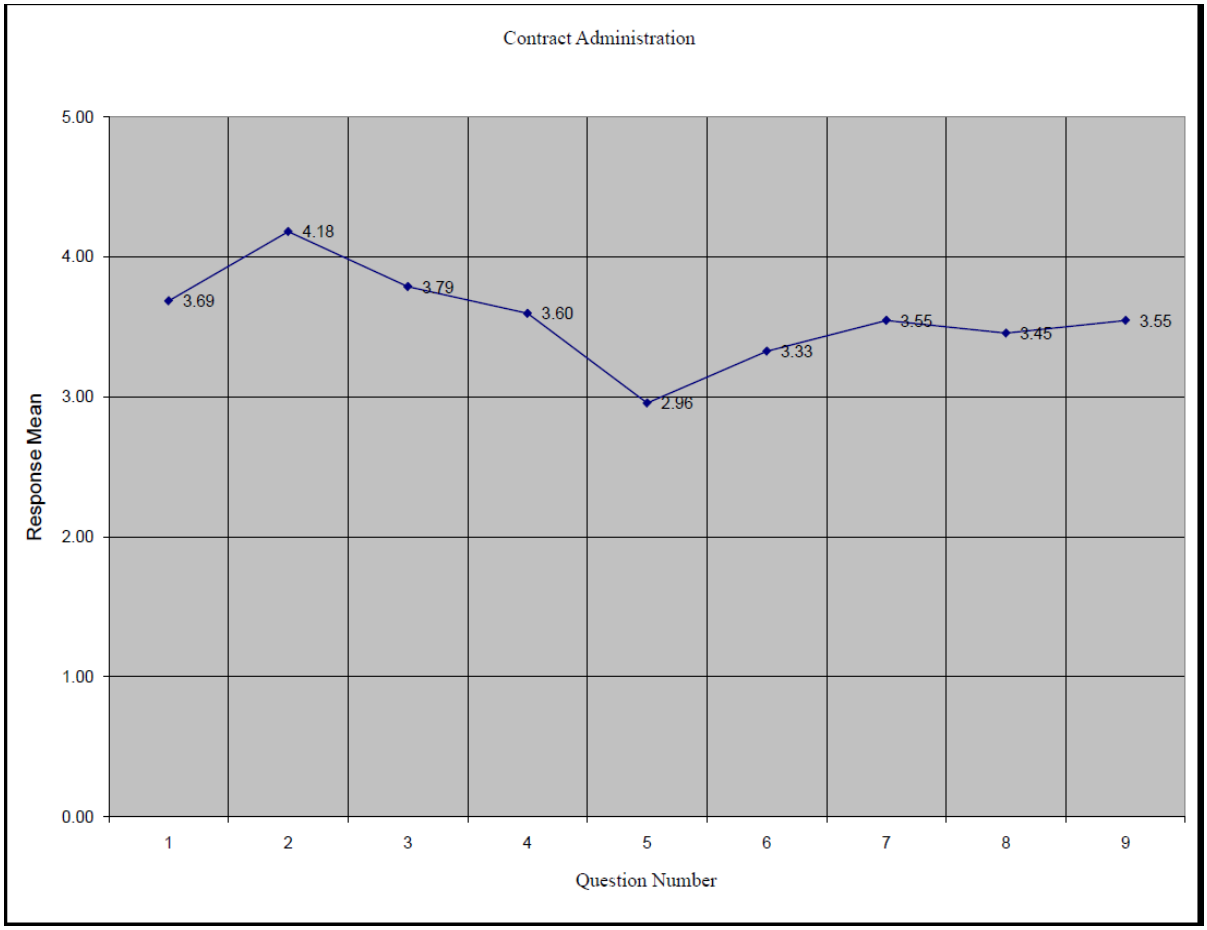

Figure B5. RDECOM Contract Administration

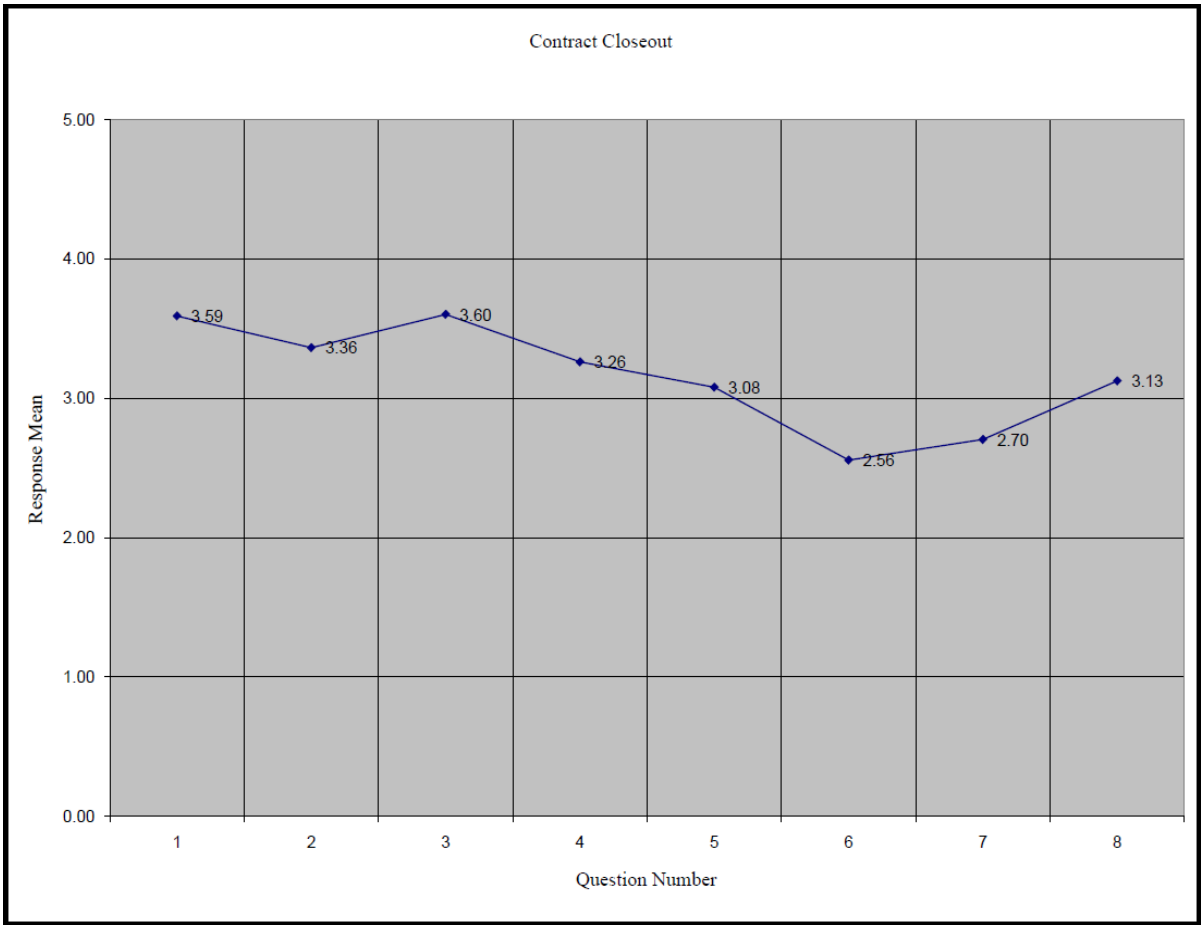

Figure B6. RDECOM Contract Closeout

2003 - 2011 Sponsored Research Topics

Acquisition Management

- Acquiring Combat Capability via Public-Private Partnerships (PPPs)
- BCA: Contractor vs. Organic Growth
- Defense Industry Consolidation
- EU-US Defense Industrial Relationships
- Knowledge Value Added (KVA) + Real Options (RO) Applied to Shipyard Planning Processes
- Managing the Services Supply Chain
- MOSA Contracting Implications
- Portfolio Optimization via KVA + RO
- Private Military Sector
- Software Requirements for OA
- Spiral Development
- Strategy for Defense Acquisition Research
- The Software, Hardware Asset Reuse Enterprise (SHARE) repository

Contract Management

- Commodity Sourcing Strategies
- Contracting Government Procurement Functions
- Contractors in 21st-century Combat Zone
- Joint Contingency Contracting
- Model for Optimizing Contingency Contracting, Planning and Execution
- Navy Contract Writing Guide
- Past Performance in Source Selection
- Strategic Contingency Contracting
- Transforming DoD Contract Closeout
- USAF Energy Savings Performance Contracts
- USAF IT Commodity Council
- USMC Contingency Contracting

Financial Management

- Acquisitions via Leasing: MPS case
- Budget Scoring
- Budgeting for Capabilities-based Planning
- Capital Budgeting for the DoD
- Energy Saving Contracts/DoD Mobile Assets
- Financing DoD Budget via PPPs
- Lessons from Private Sector Capital Budgeting for DoD Acquisition Budgeting Reform
- PPPs and Government Financing
- ROI of Information Warfare Systems
- Special Termination Liability in MDAPs
- Strategic Sourcing
- Transaction Cost Economics (TCE) to Improve Cost Estimates

Human Resources

- Indefinite Reenlistment
- Individual Augmentation
- Learning Management Systems
- Moral Conduct Waivers and First-Term Attrition
- Retention
- The Navy's Selective Reenlistment Bonus (SRB) Management System
- Tuition Assistance

Logistics Management

- Analysis of LAV Depot Maintenance
- Army LOG MOD
- ASDS Product Support Analysis
- Cold-chain Logistics
- Contractors Supporting Military Operations
- Diffusion/Variability on Vendor Performance Evaluation
- Evolutionary Acquisition

- Lean Six Sigma to Reduce Costs and Improve Readiness
- Naval Aviation Maintenance and Process Improvement (2)
- Optimizing CIWS Lifecycle Support (LCS)
- Outsourcing the Pearl Harbor MK-48 Intermediate Maintenance Activity
- Pallet Management System
- PBL (4)
- Privatization-NOSL/NAWCI
- RFID (6)
- Risk Analysis for Performance-based Logistics
- R-TOC AEGIS Microwave Power Tubes
- Sense-and-Respond Logistics Network
- Strategic Sourcing

Program Management

- Building Collaborative Capacity
- Business Process Reengineering (BPR) for LCS Mission Module Acquisition
- Collaborative IT Tools Leveraging Competence
- Contractor vs. Organic Support
- Knowledge, Responsibilities and Decision Rights in MDAPs
- KVA Applied to AEGIS and SSDS
- Managing the Service Supply Chain
- Measuring Uncertainty in Earned Value
- Organizational Modeling and Simulation
- Public-Private Partnership
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