ACQUISITION RESEARCH SPONSORED REPORT SERIES

Assessment of Army Contracting Command's Contract Management Processes

16 June 2010

by

Dr. Rene G. Rendon, Associate Professor

Graduate School of Business & Public Policy

Naval Postgraduate School

Approved for public release, distribution is unlimited.

Prepared for: Naval Postgraduate School, Monterey, California 93943

ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL

ACQUISITION RESEARCH PROGRAM
GRADUATE SCHOOL OF BUSINESS & PUBLIC POLICY
NAVAL POSTGRADUATE SCHOOL

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 been previously 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. 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. 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 Army Contracting Command.

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

THIS PAGE INTENTIONALLY LEFT BLANK

About the Authors

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 US 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.

Rene G. Rendon, D.B.A
Associate Professor
Graduate School of Business and Public Policy
Naval Postgraduate School
Monterey, CA 93945-5197
Tel: (831) 656-3464
E-mail: rgrendon@nps.edu

ACQUISITION RESEARCH SPONSORED REPORT SERIES

Assessment of Army Contracting Command's Contract Management Processes

16 June 2010

by

Dr. Rene G. Rendon, Associate Professor

Graduate School of Business & Public Policy

Naval Postgraduate School

THIS PAGE INTENTIONALLY LEFT BLANK

Table of Contents

I.   Overview

The contract management process continues to be an increasingly important function in the federal government, and specifically in the Department of Defense. The Department of Defense (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 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 (DoD IG) 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 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 the period 2008–2009 using the Contract Management Maturity Model (CMMM). The CMMM is used to assess an organization's contract management process capability and to develop a roadmap for implementing improvement initiatives for the contract management process. Using the Web-based survey assessment tool, the CMMM was applied to three Army Contracting Command contracting centers: 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. 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 Contract Management Maturity Model. The assessed Army Contracting Command 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.

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 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 on the highest technically rated offer), and administered (centralized or decentralized, level and type of

surveillance, use of project teams, etc.), which is also known as the contract management process, has its basis in agency theory and the principal-agent problem. 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), performance work statement (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. This process 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 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 practice 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. Since then, the CMMM has been applied at Air Force, Army, Navy, and defense contractor organizations. The Contract Management Maturity Model 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. "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 below.

C.   Contract Management Process Maturity

The five levels of contract management process maturity range from an Ad Hoc level (Level 1) to a level in which Optimized processes focused on continuous improvement and adoption of lessons learned and best practices (Level 5). What follows is a brief description of each maturity level.

1.   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.

2.   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 other than the required contracts.

3.   **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.

4.   **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 customer 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 contracts-related decisions.

5.   **Level 5—** The fifth and highest level of maturity reflects **Optimized:**an organization whose management systematically uses performance metrics to measure the quality and to 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.

THIS PAGE INTENTIONALLY LEFT BLANK

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 back-up 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 that 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 2 certification in contracting under DAWIA. Level 2 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 643 eligible survey participants, 335 completed the survey, generating a response rate of approximately 52%. Below are profiles of the contracting agencies that participated in the survey.

B.   Assessment Organizations

During the period between 2008 and 2009, CMMM assessments were conducted at three specific Army Contracting Command (ACC) contracting centers. These organizations included the Army Aviation and Missile Command (AMCOM) Contracting Center, the Joint Munitions and Lethality (JM&L) Contracting Center, and the National Capital Region (NCR) Contracting Center.

The Army Aviation and Missile Command (AMCOM) Contracting Center is responsible for lifecycle management of army missile, helicopter, unmanned ground vehicle and unmanned aerial vehicle weapon systems. These weapon systems include the Patriot air defense missile system, Hellfire and Javelin missile system, and Apache, Black Hawk, and Chinook helicopters. The AMCOM Contracting Center provides acquisition and contracting support for these weapon systems. In FY08, the AMCOM Contracting Center processed approximately 23,600 contract actions and obligated approximately $20.6 billion (AMCOM, 2009). The AMCOM contracting offices assessed using the CMMM included the Aviation Logistics (AL), Apache (AP), Army Replacement Helicopter (AH), Black Hawk (BH), Chinook (CH), Operations and Services (OS), Research and Development (RD), Air Defense (SM), and Tactical Missile Systems (TM).

The Joint Munitions & Lethality (JM&L) Contracting Center is responsible for providing procurement support for lifecycle program management of armaments and munitions. Some of the systems procured by JM&L include research and development prototypes to major weapon systems, such as the Army's 155mm Precision Guided Extended Range Artillery Projectile, known as ExcaliburXM982. The total JM&L contract dollars obligated in FY2008 was $3.5 billion (Puma & Sherr, 2009). The JM&L contracting offices assessed using the CMMM included the Close Combat Systems Contracting Center (CC), Combat Ammo Systems Contracting Center (CA), Emerging Technologies Contracting Center (ET), Soldier Weapons Contracting Center (SW), Maneuver Ammo & Grounds Systems Contracting Center (MA), and Joint Armaments Contracting Center (JA).

The National Capital Region (NCR) Contracting Center consists of the Contracting Center of Excellence (CCE) and the Information Technology, E-Commerce and Commercial Contracting Center (ITEC4). CCE provides contracting support to the Army Secretariat and the Army Staff for the procurement of telecommunication equipment and services, advertising, training, and studies. The ITEC4 provides worldwide information technology contracting support and procures

enterprise information technology support and equipment for Army and other DoD activities. During FY2009, CCE awarded 3,663 actions, totaling approximately $1.2 billion. ITEC4 awarded 6,526 actions, totaling approximately $2.5 billion during fiscal year 2009 (Jeffers, 2009).

Although these defense contracting agencies acquire and procure different types of supplies and services, such as aircraft/missiles, munitions, and information technology equipment and services, the contract management processes used are common to all organizations (Rendon & Snider, 2008). Additionally, the contract management processes used at these contracting centers are 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 Contract Management Maturity Model (CMMM) organizational assessments can be analyzed at different levels. The CMMM assessment tool allows for identification of the respondent's specific program and contracting office within the assessed agency. For example, the assessment of the Army Missile and Aviation Command (AMCOM) includes the agency's program and contracting offices, such as the Tactical Missile Systems, Air Defense Systems, and Helicopter Systems. Thus, within an agency such as AMCOM, CMMM assessment results can be analyzed at the program level of analysis. This level of analysis can be used to determine the contract management process maturity ratings for each program's contracting office; comparisons of maturity ratings can be made among these contracting offices; and process improvement initiatives can be developed specifically for these contracting offices.

In addition to analysis of assessments at the program-office 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. Using AMCOM as an example again, at this enterprise level of analysis, the CMMM results can be compared to other contracting agencies 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 Department of Defense (DoD) agencies.

For the purpose of this paper, the CMMM analysis is conducted both at the program office level within the agency, and then at the enterprise level. Our purpose is to compare the CMMM assessment results among the individual program offices within each agency: AMCOM, JM&L, and NCR. The overall CMMM assessment results for these agencies within Army Contracting Command will also be analyzed

and compared. This analysis will attempt to identify consistencies in contract management processes 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 three contracting agencies are reflected in Tables 1 through 3. 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, and number of responses for each contracting agency.

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.

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

AMCOM

Key Process/Item Number/ Description	AL Mean	AP Mean	AR Mean	BH Mean	CH Mean	OS Mean	RD Mean	SM Mean	TM Mean	n
Procurement Planning										
1.1 Process Strength	4.73	4.63	3.92	4.56	4.57	3.70	4.60	4.50	4.67	180
1.2 Process Strength	4.11	4.17	2.58	4.44	4.21	2.80	3.80	4.31	3.60	180
1.3 Process Strength	4.07	3.90	3.92	3.89	4.21	3.50	3.90	4.31	3.80	180
1.4 Successful Results	3.82	4.03	4.08	3.78	3.71	3.10	3.90	4.00	4.33	180
1.5 Management Support	3.98	4.17	4.25	4.56	4.07	3.20	4.07	3.88	3.93	180
1.6 Process Integration	3.52	4.17	4.00	4.67	3.93	3.80	3.97	3.88	4.13	180
1.7 Process Integration	3.64	3.93	3.50	4.67	4.21	3.80	4.00	3.88	3.87	180
1.8 Process Integration	3.36	4.07	4.08	4.44	4.29	2.80	3.70	3.81	3.47	180
1.9 Process Measurement	2.91	3.37	3.00	4.11	3.36	2.80	3.27	2.88	2.73	180
1.10 Process Measurement	3.32	3.07	3.58	4.33	4.07	3.30	3.53	2.75	3.00	180
Total	37.45	39.50	36.92	43.44	40.64	32.80	38.73	38.19	37.53	
Solicitation Planning										
2.1 Process Strength	4.26	4.27	4.50	4.00	4.57	4.11	4.03	4.47	4.64	176
2.2 Process Strength	3.60	3.90	3.83	3.89	4.43	3.44	3.33	4.40	3.93	176
2.3 Process Strength	3.86	4.00	4.42	3.89	4.29	3.89	3.80	4.40	4.29	176
2.4 Successful Results	4.19	4.23	4.42	4.56	4.29	3.78	4.20	4.20	4.43	176
2.5 Management Support	3.49	4.10	4.50	4.56	4.36	3.56	3.57	3.93	3.50	176
2.6 Process Integration	3.37	4.00	4.42	4.67	3.93	3.67	3.97	3.87	4.00	176
2.7 Process Integration	3.44	4.07	4.42	4.56	3.93	3.67	3.70	3.80	3.93	176
2.8 Process Integration	3.60	3.57	4.00	3.67	4.07	3.78	3.70	4.33	3.57	176
2.9 Process Measurement	3.23	2.90	2.92	3.00	3.86	3.00	3.13	3.00	2.71	176
2.10 Process Measurement	3.49	3.43	4.08	4.44	4.21	3.33	3.57	2.87	3.43	176
Total	36.53	38.47	41.50	41.22	41.93	36.22	37.00	39.27	38.43	
Solicitation										
3.1 Process Strength	4.26	3.60	4.58	3.89	4.29	3.67	4.17	4.40	4.43	176
3.2 Process Strength	3.53	3.30	4.00	3.89	3.64	3.44	3.50	4.13	3.71	176
3.3 Process Strength	3.65	3.57	4.42	3.67	3.86	3.56	3.93	4.07	3.93	176
3.4 Successful Results	3.98	3.73	3.83	3.33	4.14	3.78	4.00	4.20	3.93	176
3.5 Management Support	3.60	3.93	4.50	3.67	3.79	3.33	3.90	3.73	4.14	176
3.6 Process Integration	3.35	4.27	4.25	4.00	4.14	3.67	3.87	3.73	3.86	176
3.7 Process Integration	3.44	4.07	4.33	3.78	4.21	3.67	3.67	3.73	3.50	176
3.8 Process Integration	2.60	3.53	2.75	3.22	3.43	3.00	3.00	3.53	3.14	176
3.9 Process Measurement	3.30	3.17	3.00	2.89	4.14	2.56	2.93	3.07	3.00	176
3.10 Process Measurement	3.40	3.20	3.75	3.67	4.29	3.33	3.57	3.40	3.86	176
Total	35.12	36.37	39.42	36.00	39.93	34.00	36.53	38.00	37.50	

Table 1b. **AMCOM CMMM Survey Item Responses for Source Selection, Contract Administration, and Contract Closeout**

AMCOM

Key Process/Item Number/ Description	AL	AP	AR	BH	CH	OS	RD	SM	TM	
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	*n*
Source Selection										
4.1 Process Strength	4.12	4.43	4.33	4.67	4.64	3.78	4.23	4.57	4.29	175
4.2 Process Strength	3.74	4.13	4.25	4.44	4.36	3.67	3.50	4.57	3.43	175
4.3 Process Strength	3.60	4.33	4.25	4.33	4.21	4.11	3.93	4.29	3.71	175
4.4 Successful Results	4.14	4.40	4.50	4.33	4.71	4.11	4.23	4.50	3.79	175
4.5 Management Support	3.51	4.03	4.58	4.67	4.50	4.00	4.13	3.79	4.14	175
4.6 Successful Results	3.88	4.30	3.83	4.33	4.07	4.00	4.07	3.93	3.93	175
4.7 Successful Results	3.91	4.07	4.33	4.44	4.29	4.56	4.17	3.86	4.07	175
4.8 Process Integration	3.28	3.93	4.25	4.00	4.64	4.33	4.17	4.00	3.86	175
4.9 Process Integration	3.35	3.97	4.25	4.33	4.43	4.00	4.30	3.93	3.71	175
4.10 Process Measurement	3.40	3.03	3.17	3.33	4.36	2.56	3.40	3.00	3.21	175
4.11 Process Measurement	3.26	3.07	4.08	4.00	4.43	3.33	3.77	3.50	3.86	175
Total	40.19	43.70	45.83	46.89	48.64	42.44	43.90	43.93	42.00	
Contract Administration										
5.1 Process Strength	3.63	4.13	3.75	4.33	4.29	3.56	3.50	3.57	3.64	175
5.2 Process Strength	3.09	3.73	2.67	4.11	4.21	3.44	3.20	3.64	2.93	175
5.3 Process Strength	3.49	3.90	3.33	3.89	4.07	3.89	3.40	3.64	3.57	175
5.4 Successful Results	3.35	3.70	3.42	4.00	4.07	3.56	3.37	3.93	3.57	175
5.5 Management Support	3.40	3.87	3.67	4.22	3.93	3.22	3.33	3.57	3.93	175
5.6 Process Integration	3.19	4.03	3.67	3.67	4.00	4.00	3.83	3.86	3.64	175
5.7 Process Integration	3.12	4.20	3.83	4.33	4.07	3.67	3.60	3.71	3.93	175
5.8 Process Integration	2.86	3.63	3.58	3.56	3.71	3.00	3.00	3.50	3.50	175
5.9 Process Integration	2.65	3.37	3.58	3.67	3.43	3.00	2.90	3.64	3.57	175
5.10 Process Measurement	3.02	2.97	2.50	3.00	3.64	3.00	3.07	3.00	3.21	175
5.11 Process Measurement	3.00	3.17	3.25	4.11	4.21	3.33	3.20	3.21	3.86	175
Total	34.79	40.70	37.25	42.89	43.64	37.67	36.40	39.29	39.36	
Contract Closeout										
6.1 Process Strength	3.72	3.73	3.75	3.22	4.57	3.11	4.00	3.43	3.86	175
6.2 Process Strength	3.42	3.57	2.83	3.22	4.43	3.00	3.13	3.00	3.43	175
6.3 Process Strength	3.35	3.77	3.50	2.56	4.21	3.11	3.67	2.86	3.57	175
6.4 Successful Results	3.93	3.77	3.83	3.89	4.36	2.78	4.37	3.64	4.50	175
6.5 Management Support	2.84	3.37	2.50	3.11	3.64	2.67	3.00	3.21	3.64	175
6.6 Process Integration	2.79	3.07	2.33	3.22	3.50	3.11	3.00	3.00	3.36	175
6.7 Process Integration	2.86	3.30	2.67	3.33	3.71	3.11	3.23	3.57	3.43	175
6.8 Process Measurement	2.60	2.83	1.42	2.22	4.00	2.22	3.00	3.14	3.14	175
6.9 Process Measurement	2.47	2.93	1.83	2.33	4.00	2.67	3.23	2.71	3.71	175
6.10 Process Measurement	2.42	2.83	1.67	2.56	3.07	2.11	2.20	1.93	2.64	175
Total	30.40	33.17	26.33	29.67	39.50	27.89	32.83	30.50	35.29	

Table 2a.   JM&L CMMM Survey Item Responses for Procurement Planning, Solicitation Planning, and Solicitation

JM&L

Key Process/Item Number/ Description	CA	CC	ET	JA	MA	SW	
	Mean	Mean	Mean	Mean	Mean	Mean	*n*
Procurement Planning							
1.1 Process Strength	4.88	4.43	4.60	4.56	4.58	4.80	46
1.2 Process Strength	4.50	3.86	4.60	4.00	4.25	4.80	46
1.3 Process Strength	4.38	4.29	4.40	4.00	4.00	4.40	46
1.4 Successful Results	4.13	4.00	4.20	4.11	3.92	4.20	46
1.5 Management Support	4.88	4.29	5.00	4.22	4.58	4.40	46
1.6 Process Integration	4.50	4.14	4.60	4.22	4.42	4.20	46
1.7 Process Integration	4.63	4.00	4.60	4.00	4.33	4.20	46
1.8 Process Integration	4.50	4.00	4.20	4.33	4.17	4.20	46
1.9 Process Measurement	3.50	3.71	4.00	4.00	3.17	3.20	46
1.10 Process Measurement	3.88	4.14	4.20	4.00	3.92	3.60	46
Total	43.75	40.86	44.40	41.44	41.33	42.00	
Solicitation Planning							
2.1 Process Strength	4.63	4.43	4.60	4.22	4.75	4.80	46
2.2 Process Strength	4.50	4.00	4.80	4.00	4.33	4.60	46
2.3 Process Strength	4.50	4.14	4.20	4.44	4.33	4.60	46
2.4 Successful Results	4.50	4.29	4.40	4.22	4.42	4.80	46
2.5 Management Support	4.38	4.29	4.60	3.89	4.75	4.60	46
2.6 Process Integration	4.50	4.14	4.60	3.89	4.42	4.40	46
2.7 Process Integration	4.50	4.00	4.20	3.89	4.58	4.40	46
2.8 Process Integration	4.38	4.14	4.40	3.67	4.00	4.40	46
2.9 Process Measurement	4.00	3.71	3.80	3.89	4.33	4.40	46
2.10 Process Measurement	3.75	4.43	4.20	3.89	3.92	4.40	45
Total	43.63	41.57	43.80	40.00	43.83	45.40	
Solicitation							
3.1 Process Strength	5.00	4.29	4.40	4.00	4.73	4.60	45
3.2 Process Strength	4.75	4.14	4.40	3.78	4.27	4.60	45
3.3 Process Strength	4.63	4.00	4.20	3.89	4.27	4.40	45
3.4 Successful Results	4.50	4.00	4.20	4.11	4.27	4.80	45
3.5 Management Support	4.50	4.43	4.40	3.67	4.55	4.60	45
3.6 Process Integration	4.50	4.14	4.60	3.89	4.09	4.40	45
3.7 Process Integration	4.63	4.00	4.20	3.67	4.45	4.40	45
3.8 Process Integration	3.63	3.43	4.20	3.78	3.73	3.60	45
3.9 Process Measurement	4.13	3.86	4.40	3.78	3.82	4.40	44
3.10 Process Measurement	3.88	4.14	4.20	3.78	3.91	4.60	44
Total	44.13	40.43	43.20	38.33	42.09	44.40	

Table 2b.   JM&L CMMM Survey Item Responses for Source Selection, Contract Administration, and Contract Closeout

JM&L

Key Process/Item Number/Description	CA	CC	ET	JA	MA	SW	
	Mean	Mean	Mean	Mean	Mean	Mean	*n*
Source Selection							
4.1 Process Strength	4.75	4.50	4.80	4.56	4.73	4.80	44
4.2 Process Strength	4.50	4.17	4.80	4.33	4.27	4.80	44
4.3 Process Strength	4.38	4.00	4.40	4.22	4.18	4.60	44
4.4 Successful Results	4.63	4.50	4.80	4.56	4.82	4.80	44
4.5 Management Support	4.25	4.67	4.80	3.89	4.64	4.60	44
4.6 Successful Results	4.50	4.33	4.20	4.33	4.09	4.80	44
4.7 Successful Results	4.75	4.67	4.60	4.67	4.73	5.00	44
4.8 Process Integration	4.75	4.33	4.60	4.44	4.27	4.60	44
4.9 Process Integration	4.75	4.00	4.40	4.22	4.55	4.60	44
4.10 Process Measurement	4.00	4.17	4.40	4.22	3.91	4.40	44
4.11 Process Measurement	3.88	4.67	4.20	4.22	4.09	4.40	44
Total	49.13	48.00	50.00	47.67	48.27	51.40	
Contract Administration							
5.1 Process Strength	4.38	4.00	4.40	3.67	4.09	4.40	44
5.2 Process Strength	4.13	4.00	4.20	3.67	3.91	4.20	44
5.3 Process Strength	4.13	4.33	4.20	3.78	3.55	4.20	44
5.4 Successful Results	4.38	4.33	3.80	3.89	3.82	4.60	44
5.5 Management Support	4.00	4.33	4.20	3.44	4.18	4.20	44
5.6 Process Integration	4.25	4.50	4.20	3.78	4.18	4.60	44
5.7 Process Integration	4.38	4.50	4.40	3.56	3.91	4.40	44
5.8 Process Integration	3.75	4.17	4.20	3.44	3.64	4.00	44
5.9 Process Integration	4.50	3.83	4.40	4.22	4.00	4.00	44
5.10 Process Measurement	3.00	4.00	4.20	3.56	3.09	4.40	44
5.11 Process Measurement	3.63	4.50	4.20	3.56	3.36	4.60	44
Total	44.50	46.50	46.40	40.56	41.73	47.60	
Contract Closeout							
6.1 Process Strength	3.38	4.33	3.60	3.33	3.45	4.40	44
6.2 Process Strength	2.88	4.17	3.80	3.56	3.36	4.60	44
6.3 Process Strength	2.88	4.17	3.60	3.44	2.82	4.20	44
6.4 Successful Results	3.88	4.50	4.40	3.44	3.18	4.60	44
6.5 Management Support	3.38	4.33	3.80	3.00	3.45	4.20	44
6.6 Process Integration	3.13	4.17	3.60	3.33	3.27	4.20	44
6.7 Process Integration	3.50	4.17	3.60	3.33	2.82	4.40	44
6.8 Process Measurement	2.75	3.33	3.80	3.11	2.36	4.00	44
6.9 Process Measurement	3.00	4.33	4.00	3.22	2.36	4.00	44
6.10 Process Measurement	2.50	3.67	3.80	3.11	2.00	3.80	44
Total	31.25	41.17	38.00	32.89	29.09	42.40	

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

NCR

Key Process/Item Number/ Description	ITEC4 Mean	CCE Mean	n
Procurement Planning			
1.1 Process Strength	3.84	2.75	137
1.2 Process Strength	3.27	2.55	137
1.3 Process Strength	3.21	1.75	137
1.4 Successful Results	3.44	2.50	137
1.5 Management Support	3.72	2.85	137
1.6 Process Integration	3.71	2.65	137
1.7 Process Integration	3.33	2.00	137
1.8 Process Integration	3.56	2.10	137
1.9 Process Measurement	2.37	1.55	137
1.10 Process Measurement	3.10	2.35	137
Total	33.55	23.05	
Solicitation Planning			
2.1 Process Strength	3.78	2.73	130
2.2 Process Strength	3.32	2.07	130
2.3 Process Strength	3.55	2.47	130
2.4 Successful Results	3.77	2.60	130
2.5 Management Support	3.67	2.20	130
2.6 Process Integration	3.70	2.13	130
2.7 Process Integration	3.37	2.13	130
2.8 Process Integration	3.59	2.60	130
2.9 Process Measurement	2.55	2.27	130
2.10 Process Measurement	3.22	2.40	130
Total	34.51	23.60	
Solicitation			
3.1 Process Strength	3.58	2.73	127
3.2 Process Strength	3.21	2.00	127
3.3 Process Strength	3.27	2.47	127
3.4 Successful Results	3.54	2.93	127
3.5 Management Support	3.60	2.40	127
3.6 Process Integration	3.68	2.13	127
3.7 Process Integration	3.42	2.27	127
3.8 Process Integration	3.38	2.27	127
3.9 Process Measurement	2.63	2.13	127
3.10 Process Measurement	3.21	2.33	127
Total	33.52	23.67	

Table 3b.   NCR CMMM Survey Item Responses for Source Selection, Contract Administration, and Contract Closeout

NCR

Key Process/Item Number/ Description	ITEC4 Mean	CCE Mean	n
Source Selection			
4.1 Process Strength	3.90	2.87	121
4.2 Process Strength	3.11	2.40	121
4.3 Process Strength	3.42	2.67	121
4.4 Successful Results	4.10	3.07	121
4.5 Management Support	3.86	2.40	121
4.6 Successful Results	3.59	3.33	121
4.7 Successful Results	4.08	3.27	121
4.8 Process Integration	3.99	2.20	121
4.9 Process Integration	3.50	1.67	121
4.10 Process Measurement	2.60	2.00	121
4.11 Process Measurement	3.21	2.53	121
Total	39.37	28.40	
Contract Administration			
5.1 Process Strength	3.59	1.86	118
5.2 Process Strength	3.20	1.86	118
5.3 Process Strength	3.38	1.86	118
5.4 Successful Results	3.56	2.00	118
5.5 Management Support	3.52	1.93	118
5.6 Process Integration	3.98	2.36	118
5.7 Process Integration	3.50	2.07	118
5.8 Process Integration	3.15	1.64	118
5.9 Process Integration	2.81	1.71	118
5.10 Process Measurement	2.63	1.57	118
5.11 Process Measurement	3.13	1.71	118
Total	36.45	20.57	
Contract Closeout			
6.1 Process Strength	3.53	1.62	116
6.2 Process Strength	3.18	1.46	116
6.3 Process Strength	3.32	1.54	116
6.4 Successful Results	3.69	1.62	116
6.5 Management Support	2.84	1.46	116
6.6 Process Integration	2.84	1.23	116
6.7 Process Integration	2.67	1.23	116
6.8 Process Measurement	2.28	1.15	116
6.9 Process Measurement	2.61	1.54	116
6.10 Process Measurement	2.36	1.46	116
Total	29.34	14.31	

Figures 1 through 3 are graphic presentations of the maturity levels for each contracting office within each organization (AMCOM, JM&L, and NCR).

CONTRACT MANAGEMENT MATURITY MODEL©

MATURITY LEVEL	PROCUREMENT PLANNING	SOLICITATION PLANNING	SOLICITATION	SOURCE SELECTION	CONTRACT ADMIN	CONTRACT CLOSEOUT
5 OPTIMIZED						
4 INTEGRATED	B H			B H, C H		
3 STRUCTURED	AL, CH, AP, SM, TM, AR, RD	AL, CH, BH, AP, SM, TM, AR, RD	AR, CH	SM, AP, RD, TM, OS	SM, AP, RD, TM, A, P, B, H, C, H	CH, TM
2 BASIC	OS	OS	AL, BH, AP, OS	AL	AL, SM, AR, RD, OS, TM	AL, BH, AP, OS, RD, AR
1 AD HOC						

ACC AMCOM   n = 175

Figure 1.   Contract Management Maturity Model for AMCOM

Figure 2.   Contract Management Maturity Model for JM&L

Figure 3. Contract Management Maturity Model for NCR

THIS PAGE INTENTIONALLY LEFT BLANK

VI.   Discussion

A.   Contracting Center Analysis

1.   AMCOM

The contract management process assessment results for the Aviation and Missile Command (AMCOM) Contracting Center reflect some consistencies in terms of process maturity levels for each of the contract management processes areas. For example, based on the survey responses, the majority of contracting offices achieved a Structured (Level 3) maturity level for Procurement Planning, Solicitation Planning, Solicitation, and Source Selection. Additionally, the majority of contracting offices achieved a Basic (Level 2) maturity level for the Contract Administration and Contract Closeout process areas. Finally, the disparity between maturity levels ranges from Basic to Integrated (Level 4) for Procurement Planning and Source Selection, and Basic to Structured for the Solicitation Planning, Solicitation, Contract Administration, and Contract Closeout key process areas.

2.   JM&L

The contract management process assessment results for the Joint Munitions and Lethality (JM&L) Command 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 rating of Structured (Level 3) for Procurement Planning and Contract Administration and Integrated (Level 4) for Solicitation Planning and Source Selection. The maturity level for the Solicitation process area was split between Structured (Level 3) and Integrated (Level 4). The maturity level for the Contract Closeout key process area was split between Basic (Level 2) and Structured (Level 3). Finally, the disparity of maturity levels ranged from Structured to Integrated for all phases except Contract Administration and Contract Closeout, which ranged from Basic to Structured.

3. NCR

Based on the survey responses, the National Capitol Region (NCR) maturity ratings were the lowest of the three assessed organizations. The two contracting offices (CCE and ITEC4) were evenly split between the Ad Hoc (Level 1) and Basic (Level 2) maturity levels for all key process areas except Source Selection. The Source Selection key process area attained a Basic maturity level. Thus, NCR attained the lowest maturity ratings and also had the least disparity in terms of maturity levels.

B.   Comparative Analysis

When the CMMM assessment results of AMCOM, JM&L, and NCR are compared, some consistencies can be identified in terms of key process area item means as well as in process capability maturity ratings. The purpose of this analysis is to discuss the implications that these consistencies have in terms of contract management process capability within these three 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 1 through 3 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 key process areas. This is especially true for AMCOM and JM&L. AMCOM attained a lower maturity level (Basic) for Contract Administration and Contract Closeout. JM&L attained a predominantly Structured maturity level for Contract Administration and a split Structured and Basic level for Contract Closeout. NCR's maturity levels for the Contract Administration and Contract Closeout key process areas were split at the Basic and Ad Hoc levels.

Second, we see that the Source Selection key process area, as reflected in the item means, seems to be the highest maturity level of all of the contract management key process areas for the three contracting centers. For AMCOM, the majority of contracting offices attained a Structured level of maturity, with some contracting offices even reaching the Integrated level. In addition, all of the JM&L contracting offices attained the Integrated maturity level for the Source Selection key process area. Finally, although NCR's contracting offices attained the lowest of the maturity levels for all contract management key process areas (split between Basic and Ad Hoc), the Source Selection key process area reflected the highest maturity level (Basic) for the two NCR contracting offices.

These consistencies in maturity levels for the Contract Administration, Contract Closeout, and Source Selection key process areas may reflect differences in the use of best practices related to process strength, process outcomes, organizational management support, process integration, and process measurement. For the Contract Administration and Contract Closeout key process areas, we can expect to see the lack of contract management best practices related to these areas.

C.   Agency–Level Analysis

Table 4 provides 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.

Table 4a. Summary CMMM Survey Item Responses for Procurement Planning, Solicitation Planning, and Solicitation

Summary

Key Process/Item Number/ Description	AMCOM Mean	JM&L Mean	NCR Mean	n
Procurement Planning				
1.1 Process Strength	4.53	4.63	3.68	363
1.2 Process Strength	3.89	4.28	3.17	363
1.3 Process Strength	3.97	4.20	3.00	363
1.4 Successful Results	3.89	4.07	3.30	363
1.5 Management Support	4.02	4.54	3.59	363
1.6 Process Integration	3.92	4.35	3.55	363
1.7 Process Integration	3.88	4.28	3.14	363
1.8 Process Integration	3.73	4.24	3.34	363
1.9 Process Measurement	3.12	3.57	2.25	363
1.10 Process Measurement	3.36	3.96	2.99	363
Total	38.33	42.11	32.01	
Solicitation Planning				
2.1 Process Strength	4.29	4.57	3.66	352
2.2 Process Strength	3.79	4.33	3.18	352
2.3 Process Strength	4.03	4.37	3.42	352
2.4 Successful Results	4.24	4.41	3.64	352
2.5 Management Support	3.84	4.41	3.50	352
2.6 Process Integration	3.87	4.30	3.52	352
2.7 Process Integration	3.84	4.28	3.22	352
2.8 Process Integration	3.75	4.11	3.48	352
2.9 Process Measurement	3.10	4.04	2.52	352
2.10 Process Measurement	3.57	4.04	3.12	351
Total	38.32	42.87	33.25	
Solicitation				
3.1 Process Strength	4.13	4.51	3.48	348
3.2 Process Strength	3.61	4.29	3.07	348
3.3 Process Strength	3.81	4.22	3.17	348
3.4 Successful Results	3.91	4.29	3.46	348
3.5 Management Support	3.83	4.33	3.46	348
3.6 Process Integration	3.84	4.22	3.50	348
3.7 Process Integration	3.77	4.22	3.28	348
3.8 Process Integration	3.08	3.71	3.25	348
3.9 Process Measurement	3.16	4.00	2.57	347
3.10 Process Measurement	3.53	4.02	3.10	347
Total	36.67	41.82	32.35	

Table 4b. **Summary CMMM Survey Item Responses for Source Selection, Contract Administration, and Contract Closeout**

Summary

Key Process/Item Number/ Description	AMCOM Mean	JM&L Mean	NCR Mean	*n*
Source Selection				
4.1 Process Strength	4.31	4.68	3.77	340
4.2 Process Strength	3.93	4.43	3.02	340
4.3 Process Strength	4.01	4.27	3.33	340
4.4 Successful Results	4.28	4.68	3.98	340
4.5 Management Support	4.02	4.43	3.68	340
4.6 Successful Results	4.03	4.34	3.56	340
4.7 Successful Results	4.11	4.73	3.98	340
4.8 Process Integration	3.91	4.48	3.77	340
4.9 Process Integration	3.93	4.43	3.27	340
4.10 Process Measurement	3.30	4.14	2.53	340
4.11 Process Measurement	3.57	4.20	3.12	340
Total	43.39	48.82	38.01	
Contract Administration				
5.1 Process Strength	3.78	4.11	3.38	337
5.2 Process Strength	3.38	3.98	3.04	337
5.3 Process Strength	3.64	3.95	3.20	337
5.4 Successful Results	3.58	4.09	3.37	337
5.5 Management Support	3.62	4.02	3.33	337
5.6 Process Integration	3.70	4.20	3.79	337
5.7 Process Integration	3.71	4.11	3.33	337
5.8 Process Integration	3.28	3.80	2.97	337
5.9 Process Integration	3.17	4.16	2.68	337
5.10 Process Measurement	3.05	3.57	2.51	337
5.11 Process Measurement	3.34	3.84	2.96	337
Total	38.25	43.84	34.57	
Contract Closeout				
6.1 Process Strength	3.77	3.66	3.32	335
6.2 Process Strength	3.37	3.61	2.99	335
6.3 Process Strength	3.48	3.39	3.12	335
6.4 Successful Results	3.97	3.84	3.46	335
6.5 Management Support	3.10	3.59	2.69	335
6.6 Process Integration	3.00	3.52	2.66	335
6.7 Process Integration	3.19	3.50	2.51	335
6.8 Process Measurement	2.79	3.07	2.16	335
6.9 Process Measurement	2.88	3.30	2.49	335
6.10 Process Measurement	2.42	2.95	2.26	335
Total	31.97	34.43	27.66	

CONTRACT MANAGEMENT MATURITY MODEL©

MATURITY LEVEL	PROCUREMENT PLANNING	SOLICITATION PLANNING	SOLICITATION	SOURCE SELECTION	CONTRACT ADMIN	CONTRACT CLOSEOUT
5 OPTIMIZED						
4 INTEGRATED		JML		JML		
3 STRUCTURED	AM / JML	AM	AM / JML	AM	JML	
2 BASIC	NCR	NCR	NCR	NCR	AM / NCR	AM / JML / NCR
1 AD HOC						

ACC Summary   *n* = 363

Figure 4.   Contract Management Maturity Model Summary for AMCOM, JM&L, and NCR

As can be seen in Figure 4, and as noted in the previous discussion, the contract management key process areas of Procurement Planning and Solicitation were predominantly at the Structured (Level 3) maturity level. This indicates that these contracting agencies' key process areas are fully established, institutionalized, and mandated throughout the entire contracting agency. Additionally, these contracting agencies have developed formal documentation for these contract management processes and standards, and some processes may even be automated. Furthermore, these contracting agencies allow the tailoring of contract management 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). This maturity level also reflects that the contracting agencies' senior management are involved in providing

guidance, direction, and even—when required—approval of key contracting strategy, decisions, related contract terms and conditions, and contract management documents. However, Figure 4 also indicates that for these contracting agencies' specific key process areas, processes are not fully integrated with other agency core processes, nor is the contract's end-user customer an integral member of the contracting 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.

Also as reflected in Figure 4, the contract management key process areas of Contract Administration and Contract Closeout were predominantly at the Basic (Level 2) maturity level. This indicates that the contracting agencies have established some basic contract management processes, 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. Additionally, the Basic maturity level reflects that these agencies have developed some formal documentation for the Contract Administration and Contract Closeout contract management processes. However, Figure 4 also reflects that there is no organizational policy requiring the consistent use of these Contract Administration and Contract Closeout processes on other than the required contracts. Finally, the agencies do not consider these contract management processes well-established or institutionalized throughout the entire organization.

As reflected in Figure 4, JM&L attained the Integrated maturity level in Solicitation Planning and Source Selection. This indicates that these key process areas 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 customer is also an integral member of the buying or selling contracts team. The organization's management periodically uses metrics to measure various aspects of the contract management process and to make contracts-related decisions.

D.   Process Capability Comparisons

The results of the CMMM assessment for these three Army Contracting Command agencies 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 through 7 provide CMMM summary-level survey-response means, broken out for each of the six contract management key process areas. Appendices A, B, and C provide detailed-level response means for each contract management key process areas.

AMCOM Summary Ratings

	1	2	3	4	5	6	7	8	9	10	11
Procurement Planning	4.53	3.89	3.97	3.89	4.02	3.92	3.88	3.73	3.12	3.36	
Solicitation Planning	4.29	3.79	4.03	4.24	3.84	3.87	3.84	3.75	3.10	3.57	
Solicitation	4.13	3.61	3.81	3.91	3.83	3.84	3.77	3.08	3.16	3.53	
Source Selection	4.31	3.93	4.01	4.28	4.02	4.03	4.11	3.91	3.93	3.30	3.57
Contract Administration	3.78	3.38	3.64	3.58	3.62	3.70	3.71	3.28	3.17	3.05	3.34
Contract Closeout	3.77	3.37	3.48	3.97	3.10	3.00	3.19	2.79	2.88	2.42	

Question

Figure 5.   AMCOM Summary Ratings

JM&L Summary Ratings

	1	2	3	4	5	6	7	8	9	10	11
■ Procurement Planning	4.63	4.28	4.20	4.07	4.54	4.35	4.28	4.24	3.57	3.96	
▲ Solicitation Planning	4.57	4.33	4.37	4.41	4.41	4.30	4.28	4.11	4.04	4.04	
✕ Solicitation	4.51	4.29	4.22	4.29	4.33	4.22	4.22	3.71	4.00	4.02	
✳ Source Selection	4.68	4.43	4.27	4.68	4.43	4.34	4.73	4.48	4.43	4.14	4.20
● Contract Administration	4.11	3.98	3.95	4.09	4.02	4.20	4.11	3.80	4.16	3.57	3.84
+ Contract Closeout	3.66	3.61	3.39	3.84	3.59	3.52	3.50	3.07	3.30	2.95	

Question

Figure 6.   JM&L Summary Ratings

NCR Summary Ratings

	1	2	3	4	5	6	7	8	9	10	11
Procurement Planning	3.68	3.17	3.00	3.30	3.59	3.55	3.14	3.34	2.25	2.99	
Solicitation Planning	3.66	3.18	3.42	3.64	3.50	3.52	3.22	3.48	2.52	3.12	
Solicitation	3.48	3.07	3.17	3.46	3.46	3.50	3.28	3.25	2.57	3.10	
Source Selection	3.77	3.02	3.33	3.98	3.68	3.56	3.98	3.77	3.27	2.53	3.12
Contract Administration	3.38	3.04	3.20	3.37	3.33	3.79	3.33	2.97	2.68	2.51	2.96
Contract Closeout	3.32	2.99	3.12	3.46	2.69	2.66	2.51	2.16	2.49	2.26	

Question

Figure 7.   NCR Summary Ratings

As reflected in Table 4 and Figure 5, AMCOM's highest scoring survey-response means were in the key process areas of Procurement Planning (4.53), Solicitation Planning (4.24), and Source Selection (4.28, 4.11). AMCOM's lowest scoring survey-response means were in the key process area of Contract Closeout (3.00, 2.79, 2.88, 2.42).

As reflected in Table 4 and Figure 6, JM&L's highest scoring survey-response means were in the key process area of Source Selection (4.68, 4.68, 4.73). JM&L's lowest scoring survey-response means were in the key process area of Contract Closeout (3.39, 3.07, 3.30, 2.95).

As reflected in Table 4 and Figure 7, NCR's highest scoring survey-response means were in the key process area of Source Selection (3.98, 3.98). NCR's lowest scoring survey-response means were in the key process area of Contract Closeout (2.16, 2.49, 2.26).

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

In addition to the analysis based on contract management key process areas, consistencies among the three 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 Table 4 and Figures 8 through 12. For example, the first three survey items (Items 1, 2, 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, 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 Table 4 and Figures 8 through 12, 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.

Process Strength

	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
AMCOM	4.53	3.89	3.97	4.29	3.79	4.03	4.13	3.61	3.81	4.31	3.93	4.01	3.78	3.38	3.64	3.77	3.37	3.48
JM&L	4.63	4.28	4.20	4.57	4.33	4.37	4.51	4.29	4.22	4.68	4.43	4.27	4.11	3.98	3.95	3.66	3.61	3.39
NCR	3.68	3.17	3.00	3.66	3.18	3.42	3.48	3.07	3.17	3.77	3.02	3.33	3.38	3.04	3.20	3.32	2.99	3.12
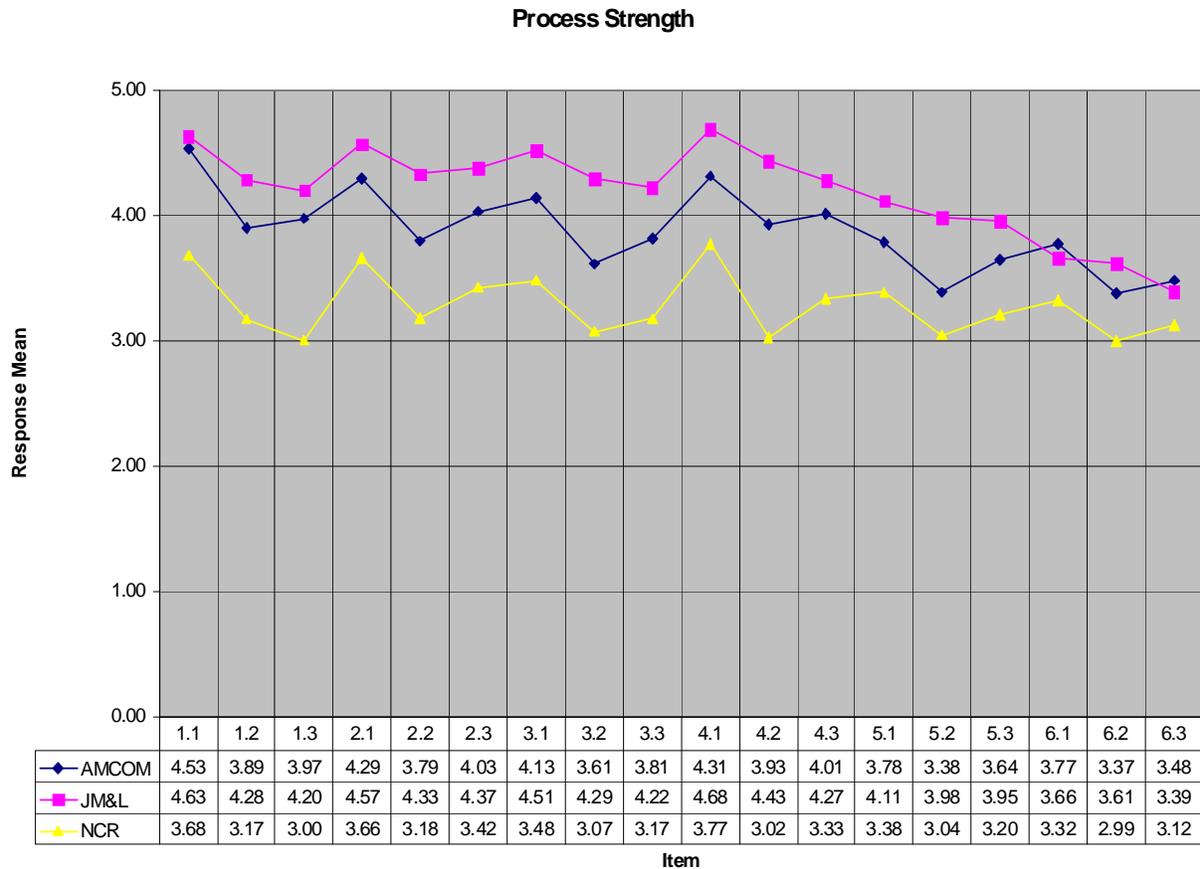
Figure 8.   Process Strength

E.   Process Strength

In Figure 8, we see a consistency in relatively higher and lower levels of Process Strength, as reflected in the survey-response means. All three contracting centers (AMCOM, JM&L, and NCR) 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, all three contracting centers reflect relatively lower levels of Process Strength, specifically in the area of having standardized, mandatory, and documented processes (Items 1.3, 2.2, 3.2, 4.2, 5.2, 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 of Process Strength best practices involved having established contract management processes, while the weaker use of Process Strength best practices involved having established processes being standardized, mandated, and documented. This holds true for all six of the contract management key process

areas.

Successful Results

	1.4	2.4	3.4	4.4	4.6	4.7	5.4	6.4
◆ AMCOM	3.89	4.24	3.91	4.28	4.03	4.11	3.58	3.97
■ JM&L	4.07	4.41	4.29	4.68	4.34	4.73	4.09	3.84
▲ NCR	3.30	3.64	3.46	3.98	3.56	3.98	3.37	3.46
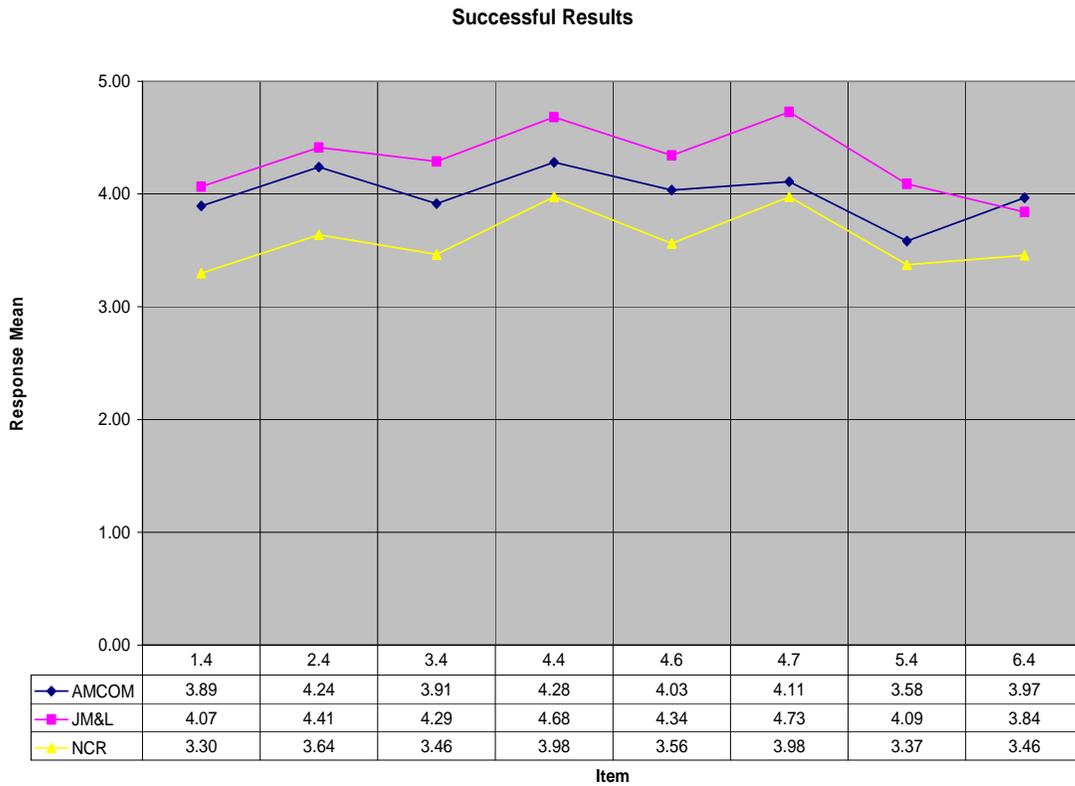
Figure 9.   Successful Results

F.   Successful Results

In Figure 9, we see a consistency in relatively higher and lower levels of Successful Results, as reflected in the survey-response means. All three contracting centers reflect relatively higher levels of Successful Results, specifically in the area of using appropriate evaluation criteria and evaluating past performance and technical capability in contractor proposal evaluation (Items 4.4 and 4.7). This indicates a stronger use of Successful Results best practices (proposal evaluation) in the contract management key process area of Source Selection.

On the other hand, all three contracting centers reflect relatively lower levels of Successful Results, specifically in the areas of documented acquisition plans,

accurate and complete proposals, use of independent government cost estimates, accurate and timely contractor payments and 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 only in the Source Selection key process area, whereas the lower levels of these best practices were evenly distributed across all contract management key process areas.

Management Support

Item	1.5	2.5	3.5	4.5	5.5	6.5
AMCOM	4.02	3.84	3.83	4.02	3.62	3.10
JM&L	4.54	4.41	4.33	4.43	4.02	3.59
NCR	3.59	3.50	3.46	3.68	3.33	2.69
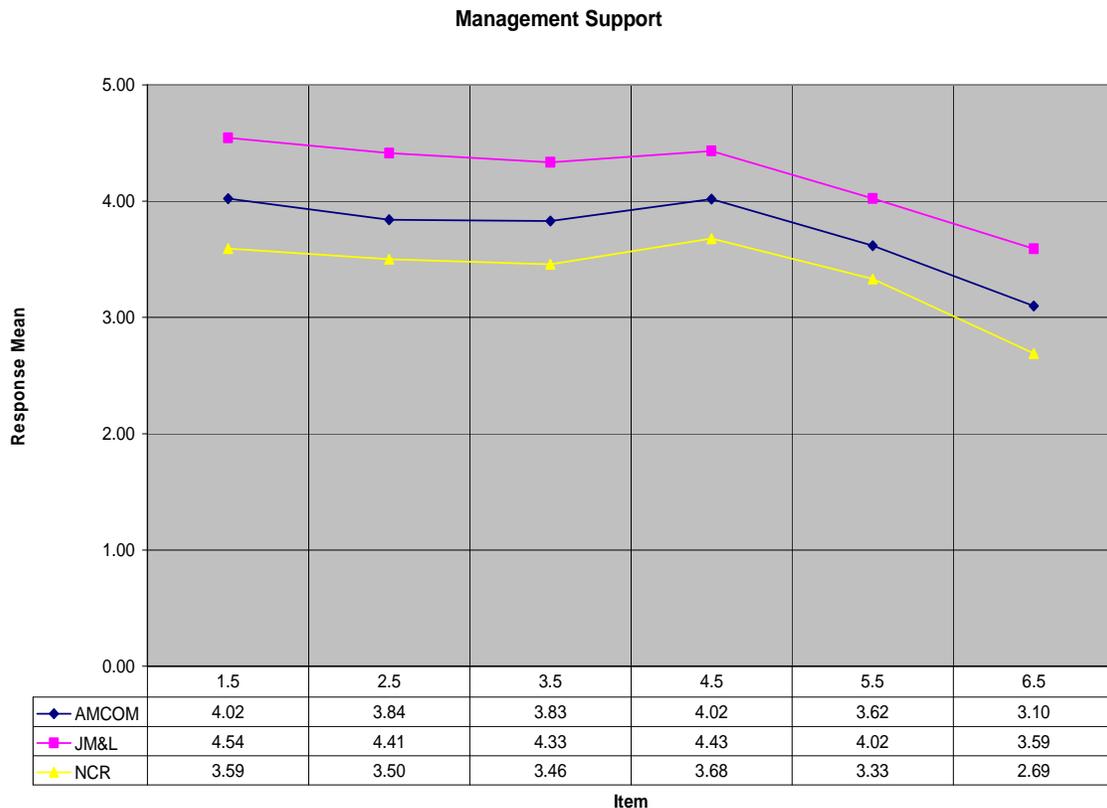
Figure 10. Management Support

G. Management Support

In Figure 10, we see a consistency in relatively higher levels and lower levels of Management Support, as reflected in the survey-response means. All three 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.

On the other hand, all three 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.

	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
AMCOM	3.92	3.88	3.73	3.87	3.84	3.75	3.84	3.77	3.08	3.91	3.93	3.70	3.71	3.28	3.17	3.00	3.19
JM&L	4.35	4.28	4.24	4.30	4.28	4.11	4.22	4.22	3.71	4.48	4.43	4.20	4.11	3.80	4.16	3.52	3.50
NCR	3.55	3.14	3.34	3.52	3.22	3.48	3.50	3.28	3.25	3.77	3.27	3.79	3.33	2.97	2.68	2.66	2.51
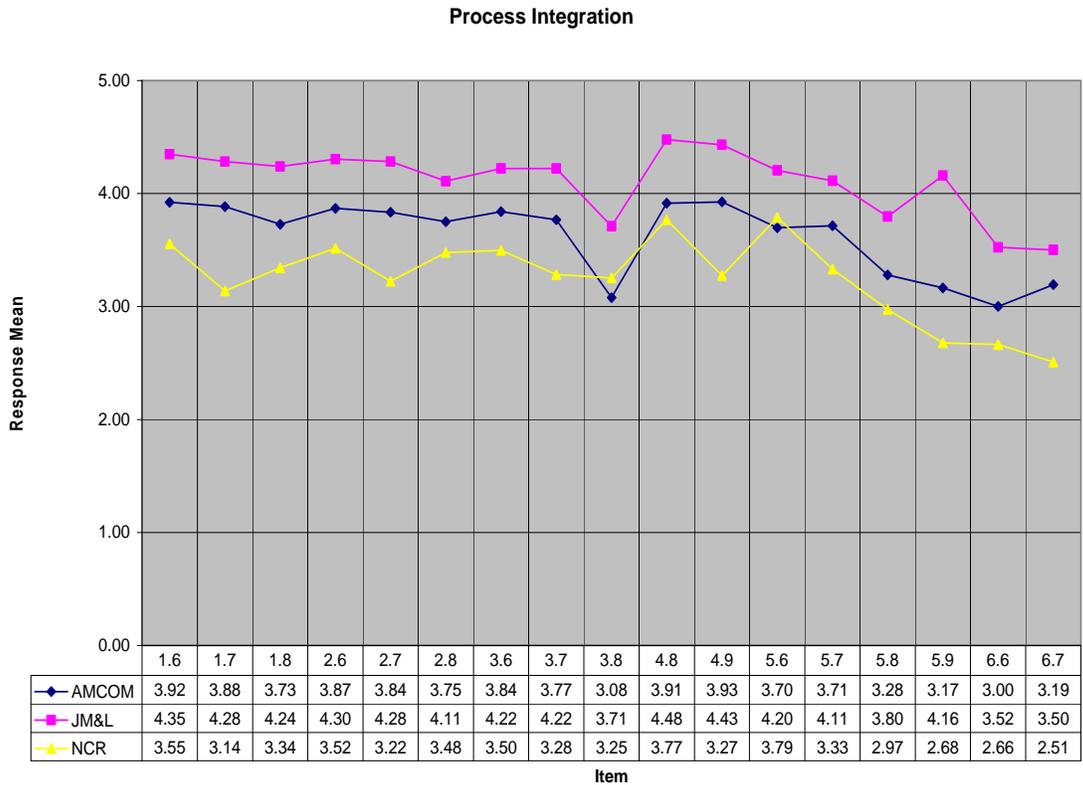
Figure 11.   Process Integration

Process Integration

In Figure 11, we see a consistency in relative higher levels and lower levels of Process Integration, as reflected in the survey-response means. All three 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.

On the other hand, all three contracting centers reflect relatively lower levels of Process Integration in the area of incorporating industry inputs in developing solicitation documents, using cross-functional contract closeout teams, and having integrated contract closeout processes (Items 3.8, 6.6, 6.7). This indicates a weaker

use of Process Integration best practices (industry input and integrated project teams) in Solicitation 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 and Contract Closeout process areas.

Process Measurement

	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
AMCOM	3.12	3.36	3.10	3.57	3.16	3.53	3.30	3.57	3.05	3.34	2.79	2.88	2.42
JM&L	3.57	3.96	4.04	4.04	4.00	4.02	4.14	4.20	3.57	3.84	3.07	3.30	2.95
NCR	2.25	2.99	2.52	3.12	2.57	3.10	2.53	3.12	2.51	2.96	2.16	2.49	2.26
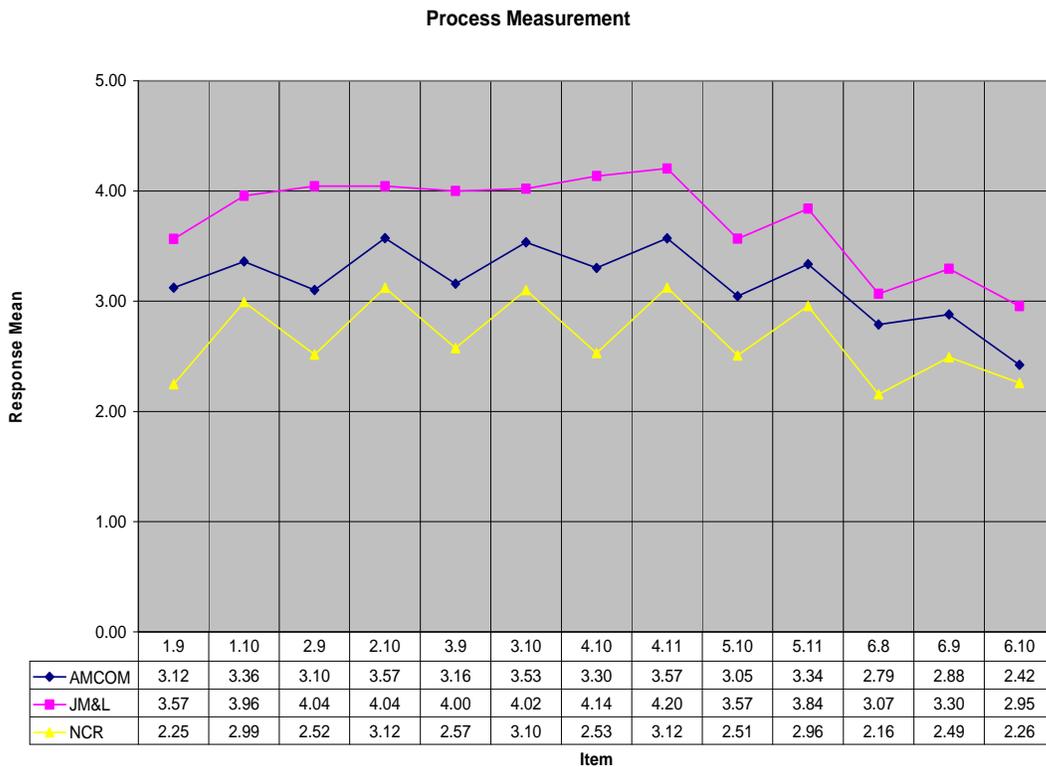
Figure 12.   Process Measurement

H.   Process Measurement

In Figure 12, we see a consistency in relatively higher and lower levels of Process Measurement, as reflected in the survey-response means. All three contracting centers reflect relatively higher levels of Process Measurement, specifically in the area of adopting lessons learned and best practices for continuous

process improvement (Item 4.11). This indicates a stronger use of Process Measurement best practices (continuous process improvement) in the contract management key process area of Source Selection.

On the other hand, all three contracting centers reflect relatively lower levels of Process Measurement in the areas of using efficiency and effectiveness metrics in process evaluation and in maintaining a database for lessons learned and best practices (Items 6.8, 6.10). This indicates a weaker use of Process Measurement best practices (use of metrics and maintaining a database for lessons learned and best practices) in Contract Closeout.

Once again, a clear distinction can be seen in the levels of Process Measurement best practices. The higher level of Process Measurement best practices was identified in the Source Selection process area, whereas the lower level of Process Measurement best practices was identified in the Contract Closeout process area.

I.   Summary Analysis

In the final analysis, the CMMM assessment results for the three Army Contracting Command contracting centers, as reflected in Figure 4, show that the contract management key process areas of Procurement Planning and Solicitation were predominantly at the Structured (Level 3) maturity level. In addition, the contract management key process areas of Contract Administration and Contract Closeout were predominantly at the Basic (Level 2) maturity level. Finally, as reflected in Figure 4, only one contracting agency, JM&L, attained the Integrated maturity level in Solicitation Planning and Source Selection. These levels of maturity are due to the existence of contract management best practices within each contract management key process area.

Across all six contract management key process areas, the higher levels of best practices for Process Strength involved having established contract

management processes, while the lower levels involved these established processes being standardized, mandated, and documented. The higher-level best practices for Successful Results were only in the Source Selection key process area, whereas the lower levels were evenly distributed across all six contract management key process areas. The higher-level best practices for Management Support were identified in Procurement Planning and Source Selection, whereas the lower levels were identified in Contract Administration and Contract Closeout. The higher–level best practices for Process Integration were identified in the Source Selection process area, whereas the lower levels were identified in the Solicitation and Contract Closeout process areas. The higher-level best practices for Process Measurement were identified in the Source Selection process area, whereas the lower levels were identified in the Contract Closeout process area. Thus, generally, the higher-level best practices were identified in the Source Selection key process area, whereas the lower-level best practices were identified in the Contract Closeout key process area.

Another interesting insight from the combined CMMM assessment results in Figure 4 is the minimal number of contracting agencies rated at the Integrated level of process maturity for any of the contract management key process areas. 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 customer is an integral member of the procurement organization (Garrett & Rendon, 2005). Within the DoD, integration in defense procurement projects 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 (DoD, 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 agencies seem to reflect the ineffectiveness of the integrated project teams.

It is interesting to note the number of contracting agencies rated at Basic (Level 2) for the Contract Administration (AMCOM and NCR) and Contract Closeout (AMCOM, JM&L, and NCR) key process areas. One can see the relationship between the low Management Support best practices and the low maturity level for these two key process areas.

It is also interesting to note that recent reports by the Government Accountability Office (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; GAO, 2006a; GAO, 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" (DOD IG, 2007, p. i).

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 three ACC contracting centers.

A. AMCOM

As previously discussed and as reflected in Figure 1, the majority of AMCOM contracting offices 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), AMCOM 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, AMCOM should also ensure that the procurement

project's end-user and customer are 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 1, the majority of AMCOM contracting offices 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, AMCOM 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, AMCOM 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.

Finally, as reflected in Figure 1, the disparity between AMCOM's maturity levels ranges from Basic to Integrated for Procurement Planning and Source Selection, and Basic to Structured for the Solicitation Planning, Solicitation, Contract Administration, and Contract Closeout. The disparity among maturity levels provides opportunities for knowledge-transferring and knowledge-sharing within AMCOM. AMCOM should pursue knowledge-sharing between the contracting offices with the higher maturity levels (for example BH for Procurement Planning and Source

Selection) with the contracting offices with the lower maturity levels (for example, OS for Procurement Planning and AL for Source Selection).

B.   JM&L

As previously discussed and as reflected in Figure 2, the majority of JM&L contracting offices were rated at the Structured maturity level (Level 3) for Procurement Planning and Contract Administration. To progress to the Integrated maturity level (Level 4), JM&L 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. The Contract Administration activities include monitoring and measuring contractor performance, managing the contract change process, and managing the contractor payment process.

The majority of the JM&L contracting offices achieved an Integrated level (Level 4) for the Solicitation Planning and Source Selection key process areas. To progress to the Optimized maturity level (Level 5), JM&L should ensure that the Solicitation Planning and Source Selection activities are evaluated periodically using effectiveness and efficiency metrics and that continuous process improvement, such as process streamlining initiatives, be implemented to further develop these processes. JM&L should also ensure that databases for lessons learned and best practices are established and used to improve the Solicitation Planning and Source Selection processes, standards, and documentation (Garrett & Rendon, 2005). The Solicitation Planning and Source Selection activities that should be evaluated periodically using metrics include determining the procurement method, determining the evaluation strategy, developing solicitation documents, evaluating proposals, applying evaluation criteria, negotiating contract terms, and selecting contractors.

The JM&L contracting office maturity level for the Solicitation key process area was evenly divided between Structured (Level 3) and Integrated (Level 4). Because of these assessment results, it is recommended that JM&L initially dedicate its process improvement effort to raising its Solicitation maturity level to Integrated by ensuring its Solicitation key process area is integrated with other organizational core processes, such as customer service, financial management, schedule management, performance management, and risk management. These Solicitation process activities include advertising procurement opportunities, conducting solicitation and pre-proposal conferences, and amending solicitation documents as needed.

The JM&L contracting office maturity level for the Contract Closeout key process area was evenly divided between Basic (Level 2) and Structured (Level 3). Because of these assessment results, it is recommended that JM&L initially dedicate its process improvement effort to raising its Contract Closeout maturity level to Structured by ensuring that these processes are fully established, institutionalized, and mandated throughout the organization. Formal documentation should be developed for these Contract Closeout process activities, such as 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 Closeout strategy, decisions, related contract terms and conditions, and documents (Garrett & Rendon, 2005).

Finally, as reflected in Figure 2, the disparity of JM&L's maturity levels ranges from Structured to Integrated for all phases except Contract Closeout, which ranged from Basic to Structured. The disparity among maturity levels provides opportunities for knowledge-transferring and knowledge-sharing within JM&L. JM&L should pursue knowledge-sharing between the contracting offices with the higher maturity levels (for example, CA and ET for Procurement Planning, Solicitation Planning, and

Solicitation) with the contracting offices with the lower maturity levels (for example JA for those key process areas).

C. NCR

As previously discussed and as reflected in Figure 3, NCR's contract management process maturity ratings were the lowest of the three assessed Army Contracting Command organizations. The two contracting offices (CCE and ITEC4) were evenly divided between the Ad Hoc (Level 1) and Basic (Level 2) maturity levels for all key process areas except Source Selection. Both contracting offices attained a Basic maturity level for the Source Selection key process area. Thus, NCR attained the lowest maturity ratings and also had the least disparity in terms of maturity levels.

Because of these assessment results, it is recommended that NCR initially dedicate its process improvement effort to raising its Procurement Planning, Solicitation Planning, Solicitation, Contract Administration, and Contract Closeout maturity level to the Basic level for both of its contracting offices. NCR should establish processes and standards for these key process areas and require its personnel to use them on their contracts. NCR leadership should also develop formal documentation for these processes and standards and institutionalize them throughout the organization (Garrett & Rendon, 2005).

Finally, NCR should also pursue knowledge-sharing opportunities between ITEC4 and CCE in sharing tools, techniques, and guidance for managing the contracting activities within these key process areas.

The CMMM assessment results also indicate a need for an increased emphasis on the Army Contracting Command'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 5 and the discussion below 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 5.   Contract Management Phases
(Rendon, 2009)

Contract Management Phase	Major Activities, Tools, Techniques	FAR Part
Procurement Planning	Requirements Analysis	11
	Acquisition Planning	7
	Stakeholder Analysis	
	Market Research	5, 10
	Outsource Analysis	
	Business Case Analysis	
Solicitation Planning	Determine Procurement Method	12, 13, 14, 15
	Document Competition Environment	6
	Determine Evaluation Strategy	12, 13, 14, 15
	Determine Contract Type/Incentive	16
	Determine Terms and Conditions	
	Develop Solicitation Documents	12, 13, 14, 15
Solicitation	Advertise Procurement Activities	5
	Conduct Conferences (pre-sol, pre-proposal)	5, 12, 13, 14, 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	12, 13, 14, 15
	Select contractor	12, 13, 14, 15
	Manage Protests, Disputes and Appeals	33
Contract Administration	Conduct conferences (post-award, pre-performance)	42
	Comply with terms and conditions	
	Manage GFP	45
	Monitor contractor's management of subcontracting	44
	Monitor and measure contractor performance	46
	Manage contract change process	43
	Manage contractor payment process	30, 31, 32
	Manage Protests, Disputes and Appeals	33
Contract Close Out	Verify contract completion	42
	Verify contractor compliance	42
	Ensure contract completion documentation	4
	Make final payment	42
	Process contract terminations, if applicable	49
	Dispose of buyer-furnished property/equipment	45
	Process contract closeout procedures	4

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 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, and 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 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).

The CMMM assessment results from the Army Contracting Command AMCOM, JM&L, and NCR contracting centers are 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; GAO, 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.

THIS PAGE INTENTIONALLY LEFT BLANK

VIII. Conclusion

This paper analyzed the results of contract management process capability assessments conducted at the Army Contracting Command's Aviation Missile Command (AMCOM), Joint Munitions and Lethality Command (JM&L), and National Capitol Region (NCR) contracting centers by using the Contract Management Maturity Model (CMMM).

Although the CMMM assessment results indicated different contract management key process maturity levels, ranging from Ad Hoc to Integrated 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. Higher maturity levels were indicated in the Source Selection key process area, while 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.

THIS PAGE INTENTIONALLY LEFT BLANK

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.

THIS PAGE INTENTIONALLY LEFT BLANK

List of References

Ahern, D. M., Clouse, A., & Turner, R. (2001). *CMMI, distilled*. Boston: Addison-Wesley.

Army Aviation and Missile Command (AMCOM)(2009). AMCOM Fact Sheet Retrieved June 15, 2010 from http://www.amcom.redstone.army.mil/

Bhote, K. R. (1989). *Strategic supply management: A blueprint for revitalizing the manufacturer-supplier partnership*. New York: AMACOM.

Bolles, D. (2002). *Building project management centers of excellence*. New York: AMACOM.

Burt, D. N., Dobler, D. W., & Starling, S. L. (2003). *World class supply management: The key to supply chain management*. New York: McGraw-Hill Irwin.

Crawford, J. K. (2001). *Project management maturity model: Providing a proven path to project management excellence*. New York: Marcel Dekker.

Creswell, J. W. (2003). *Research design: Qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, CA: Sage.

Crosby, P. B. (1979). *Quality is free*. New York: McGraw-Hill.

Curtis, B., Hefley, W. E., & Miller, S. A. (2001). *People capability maturity model*. Boston: Addison-Wesley.

Defense Acquisition Workforce Improvement Act (DAWIA), 10 U.S.C. Chapter 87 (2009).

Deming, W. E. (1986). *Out of the crisis*. Cambridge, MA: MIT Center for Advanced Engineering.

Department of Defense (DoD). (2003). *The defense acquisition system* (DoD Directive 5000.1). Washington, DC: Author. Retrieved September 1, 2007, from http://www.acq.osd.mil/ie/bei/pm/reflibrary/ dodd/d50001p.pdf

Department of Defense (DoD). (2007). *USD (AT&L), AT&L human capital strategic plan* (Ver. 3.0). Washington, DC: Author.

Department of Defense Inspector General (DoD IG). (2007, December). *FY 2006 DoD purchases made through the U.S. Department of Veterans Affairs* (D-2008-036). Washington, DC: Author.

Dinsmore, P. C. (1998). *Winning in business with enterprise project management.* New York: AMACOM.

Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *Academy of Management Review, 14*(1), 57-74.

Federal Acquisition Regulation (FAR), 48 C.F.R. Chapter 1 (2009, January).

Foti, R. (2002, September). Maturity, noun, 21st century. Synonym: survival. *PM Network*, 39-43.

Frame, D. L. (1999). *Project management competence: Building key skills for individuals, teams, and organizations.* San Francisco: Jossey-Bass.

Freeman, V. T., & Cavinato, J. L. (1990, Winter). Fitting purchasing to the strategic firm: Frameworks, processes, and values. *Journal of Purchasing and Materials Management*, 6-10.

Garrett, G. A., & Rendon, R. G. (2005). *Contract management organizational assessment tools.* McLean, VA: National Contract Management Association.

Government Accountability Office (GAO). (2001, April). *Best practices: DoD teaming practices not achieving potential results* (GAO-01-510). Washington, DC: Author.

Government Accountability Office (GAO). (2002, July). *Acquisition workforce: Agencies need to better define and track the training of their employees* (GAO 02-737). Washington, DC: Author.

Government Accountability Office (GAO). (2005, March). *Contract management: Opportunities to improve surveillance on Department of Defense service contracts* (GAO-05- 274). Washington, DC: Author.

Government Accountability Office (GAO). (2006a, September). DoD acquisitions: Contracting for better outcomes (GAO-06-800T). Washington, DC: Author.

Government Accountability Office (GAO). (2006b, September). *Highlights of a GAO forum: Federal acquisition challenges and opportunities in the 21st century* (GAO-07-45SP). Washington, DC: Author.

Government Accountability Office (GAO). (2007a, January). *Defense acquisitions: Improved management and oversight needed to better control DoD's acquisition of services* (GAO-07-832T). Washington, DC: Author.

Government Accountability Office (GAO). (2007b, January). *High risk series: An update* (GAO-07-310). Washington, DC: Author.

Government Accountability Office (GAO). (2007c, July). *Federal acquisitions and contracting: Systemic challenges need attention* (GAO-07-1098T). Washington, DC: Author.

Government Accountability Office (GAO). (2007d, July). *Federal contracting: Use of contractor performance information* (GAO-07-1111T). Washington, DC: Author.

Government Accountability Office (GAO). (2009, January). *High-risk series: An update* (GAO-09-271). Washington, DC: Author.

Henderson, B. D. (1975, Summer). The coming revolution in purchasing. *Journal of Purchasing and Materials Management*, *11*(2), 44-46. (Reprint from *Purchasing Magazine*, April 20, 1964.)

Jeffers, D. T. (2009). Contract Specialist Turnover Rate and Contract Management Maturity in the National Capital Region Contracting Center: An Analysis. MSCM Joint Applied Project, Naval Postgraduate School, Monterey, CA.

Juran, J. M. (1988). *Juran on planning for quality*. New York: MacMillan.

Kelman, S. (2001, July 30). *Contracting at the core*. Retrieved January 4, 2008, from http://www.govexec.com/story_page.cfm?filepath=/dailyfed/0701/07 3001ff.htm

Kerzner, H. (2001). *Strategic planning for project management: Using a project management maturity model*. New York: John Wiley & Sons.

Kovack, C. T. (2008). *Analysis of the contracting processes and organizational culture at naval air systems command* (Master's Thesis). Monterey, CA: Naval Postgraduate School.

Kraljic, P. (1983, September-October). Purchasing must become supply management. *Harvard Business Review*, *61*, 109-117.

Lee, L., & Dobler, D. W. (1971). *Purchasing and materials management: Text and cases*. New York: McGraw-Hill.

Leenders, M. R., & Blenkhorn, D. L. (1988). *Reverse marketing: The new buyer-supplier relationship*. New York: The Free Press.

McMillan, J. H., & Schumacher, S. (2001). *Research in education: A conceptual introduction*. New York: Addison Wesley Longman.

Newell, E. (2007, October 23). *Report: Contracting workforce needs more training*. Retrieved January 4, 2008, from http://www.govexec.com/mailbagDetails.cfm?aid=38356.

Patel, V. (2006, April 1). Contract management: The new competitive edge. *Supply Chain Management Review*. Retrieved January 4, 2008, from http://www.scmr.com/article/CA6329864.html

Persse, J. R. (2001). *Implementing the capability maturity model*. Hoboken, NJ: John Wiley and Sons.

Puma, K. P., & Sherr, B. A. (2009). Assessing Contract Management Maturity: U.S. Army Joint Munitions and Lethality Contracting Center, Army Contracting Command, Picatinny Arsenal. MSCM Joint Applied Project, Naval Postgraduate School, Monterey, CA.

Quinn, F. J. (2005, December 1). The power of procurement. *Supply Chain Management Review*. Retrieved January 4, 2008, from http://www.scmr.com/article/CA6306054.html

Reck, R. F., & Long, B. G. (1988, Fall). Purchasing: A competitive weapon. *Journal of Purchasing and Materials Management, 24*(3), 2-8.

Rendon, R. G. (2003). *A systematic approach to assessing organizational contract management maturity*. Unpublished doctoral dissertation, School of Business, Argosy University, Orange County, CA.

Rendon, R. G. (2008). Procurement process maturity: Key to performance measurement. *Journal of Public Procurement*, 200-2148(2).

Rendon, R. G., & Snider, K. F. (Eds.). (2008). Management of Defense Acquisition Projects. Reston, VA: American Institute of Aeronautics and Astronautics.

Rendon, R. G. (2009). Contract Management Phases. Unpublished lecture notes, MN3303, Monterey, CA: Naval Postgraduate School.

Sheehan, B. H., Moats, S. D., & VanAssche, D. J. (2008, January). Analysis of the contracting processes and ethical culture at Ogden Air Logistics Center, Hill AFB, UT (Master's Thesis). Monterey, CA: Naval Postgraduate School. Retrieved February 1, 2008, from http://www.acquisitionresearch.org/_files/FY2007/NPS-CM-07-120.pdf

Thai, K. (2004). *Introduction to public procurement*. Herndon, VA: National Institute of Governmental Purchasing.

United States Air Force. (2007). Airman: The book [Special issue]. In *Air Force News Agency* (Vol. 51). Publication Location: Secretary of the Air Force Office of Public Affairs.

United States Transportation Command. (2009). Retrieved from http://www.transcom.mil/organization2.cfm

Yeung, A. K., Ulrich, D. O., Nason, S. W., & von Glinow, M. A. (1999). *Organizational learning capability*. New York: Oxford University Press.

THIS PAGE INTENTIONALLY LEFT BLANK

Appendix A.   AMCOM CMMM Assessment Results

AMCOM Procurement Planning
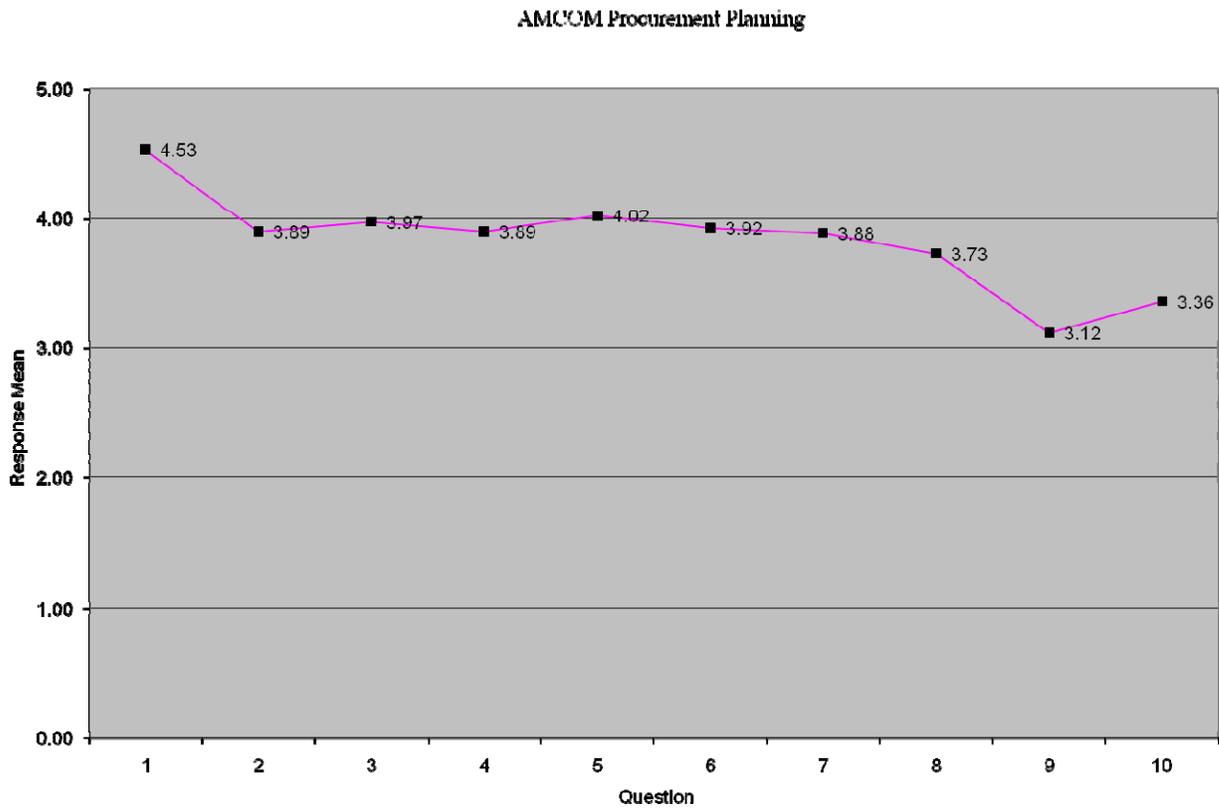
Figure 5a.   AMCOM Procurement Planning
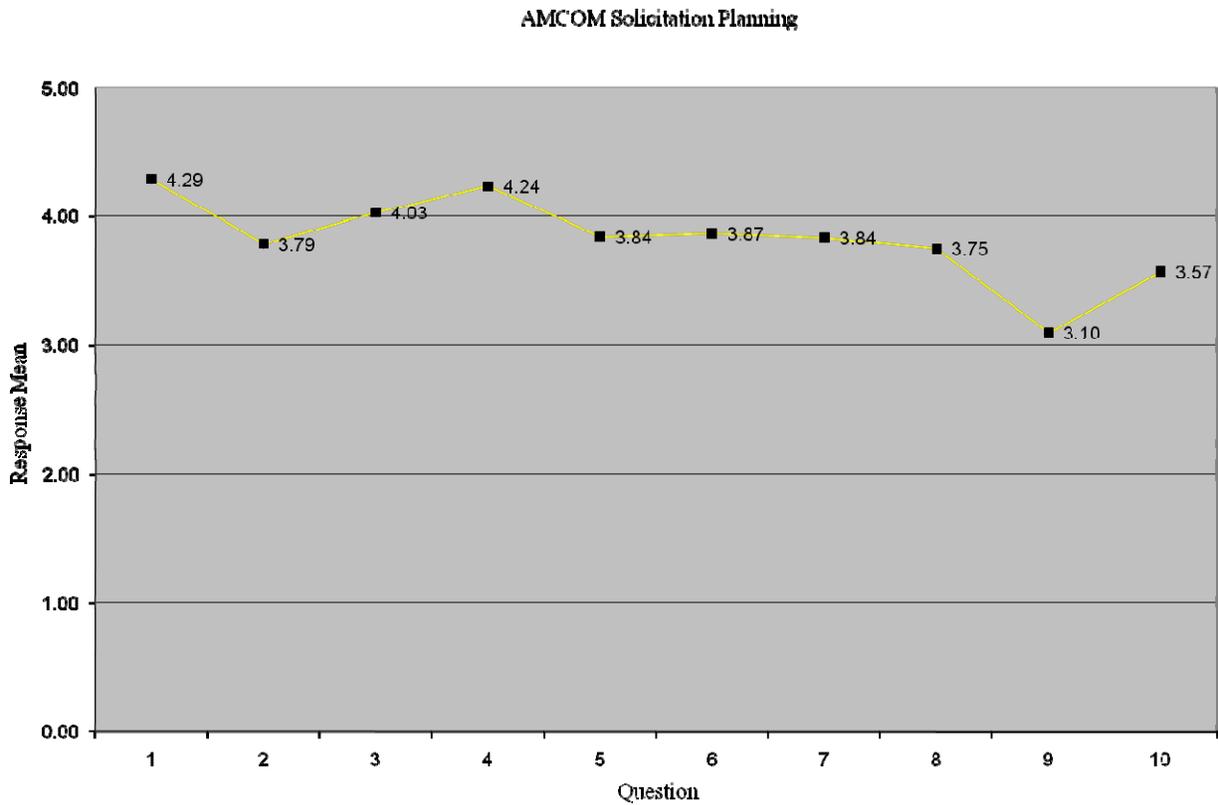
Figure 5b.   AMCOM Solicitation Planning
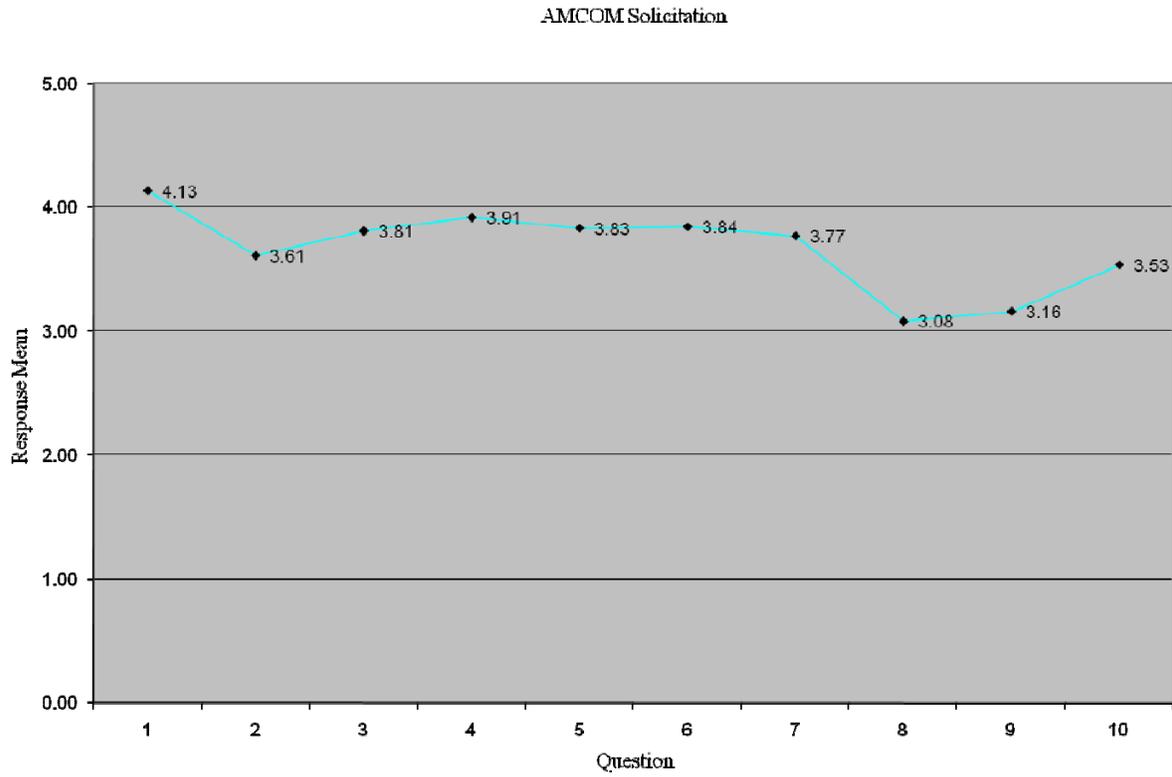
Figure 5c.   AMCOM Solicitation
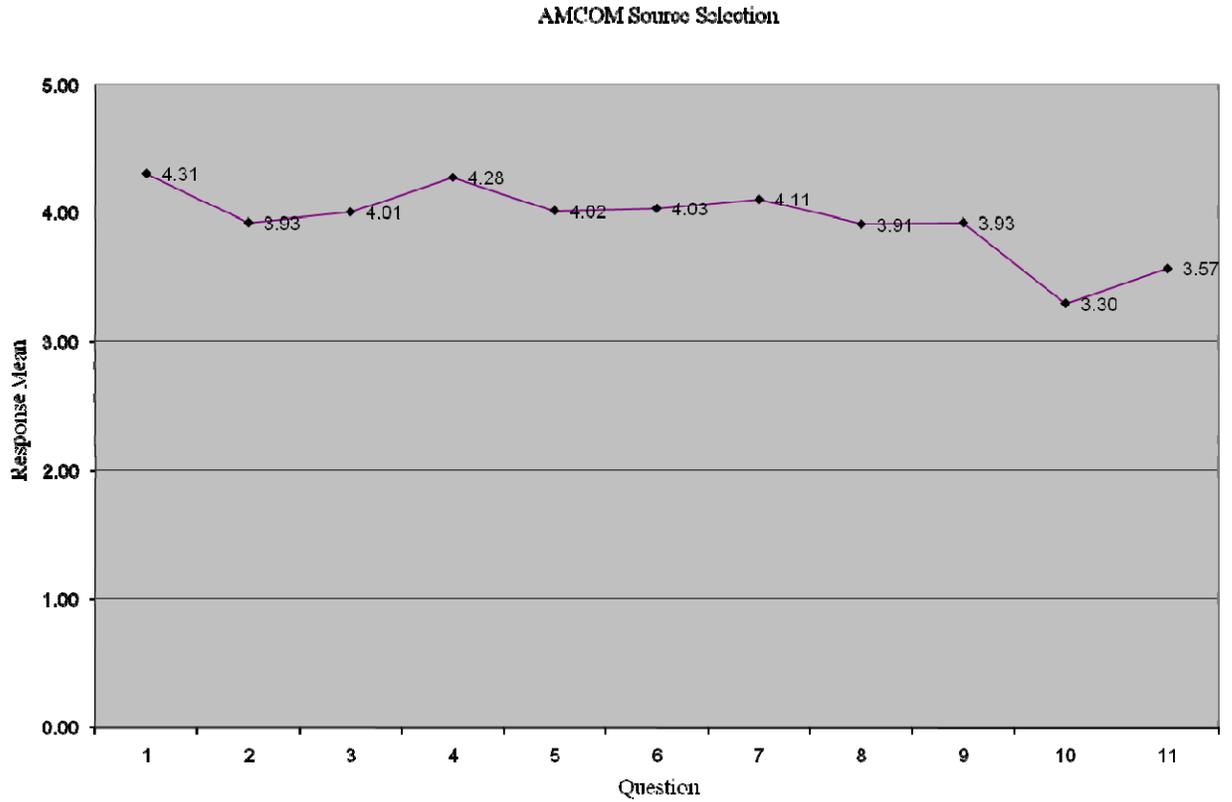
Figure 5d.   AMCOM Source Selection
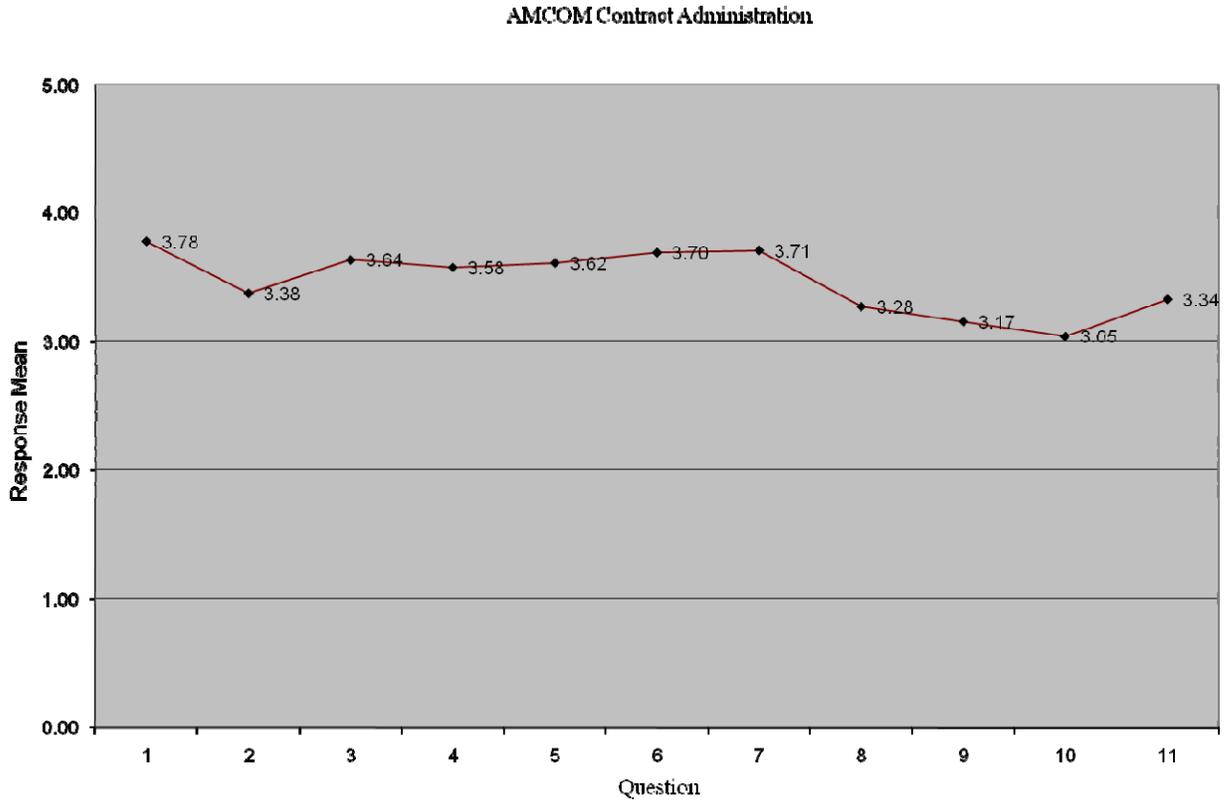
Figure 5e.   AMCOM Contract Administration
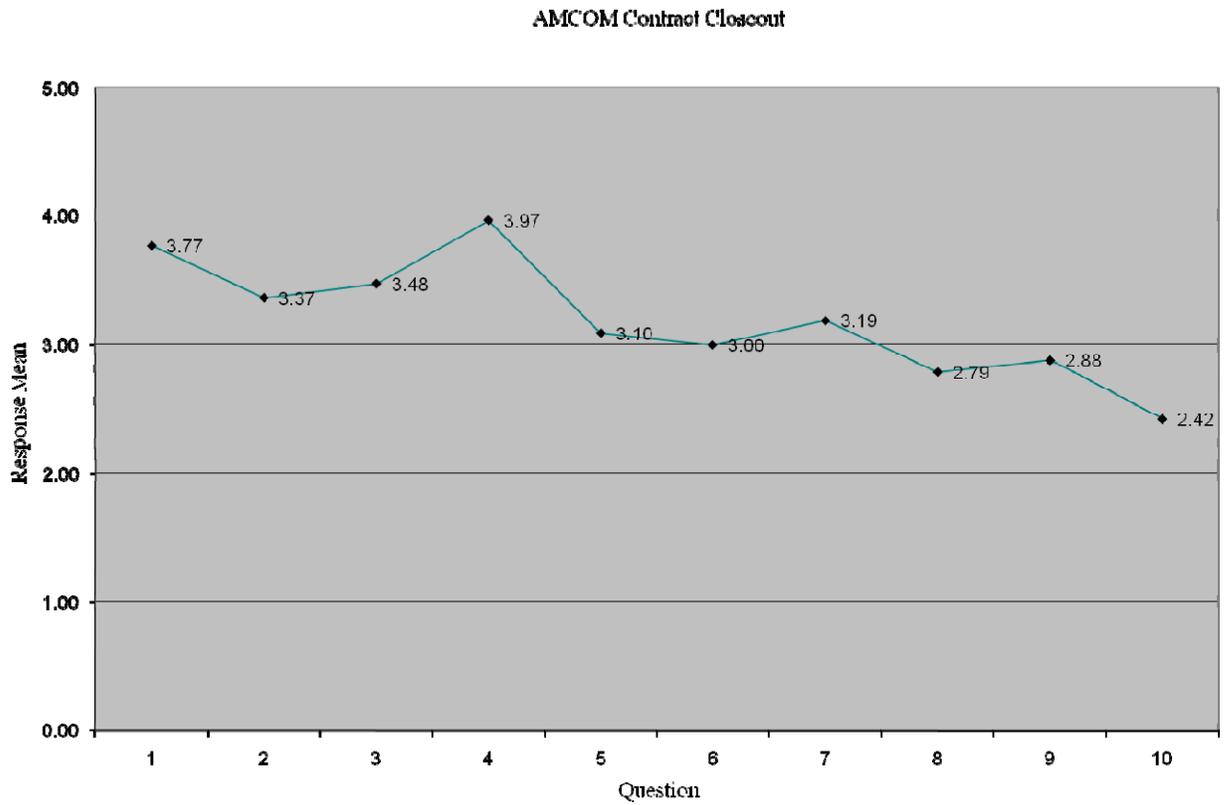
Figure 5f.   AMCOM Contract Closeout

Appendix B.   JM&L CMMM Assessment Results

JM&L Procurement Planning
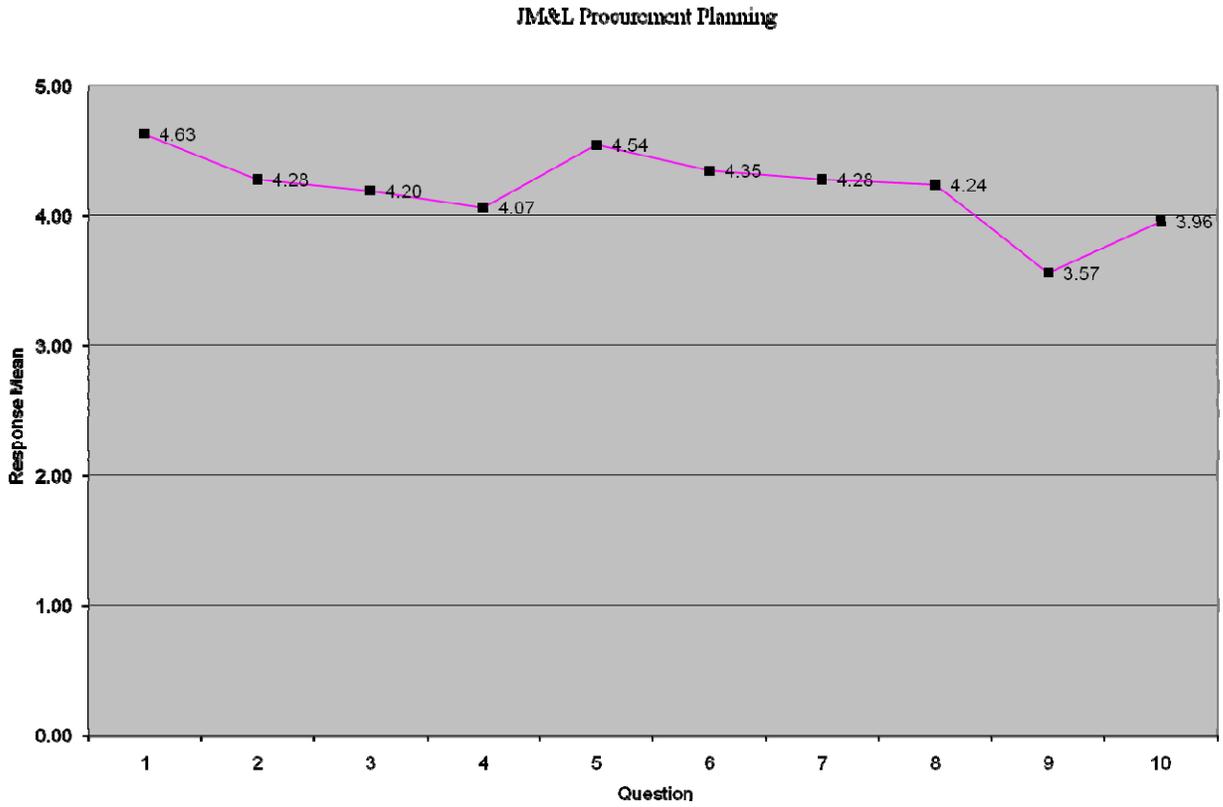
Figure 6a.   JM&L Procurement Planning
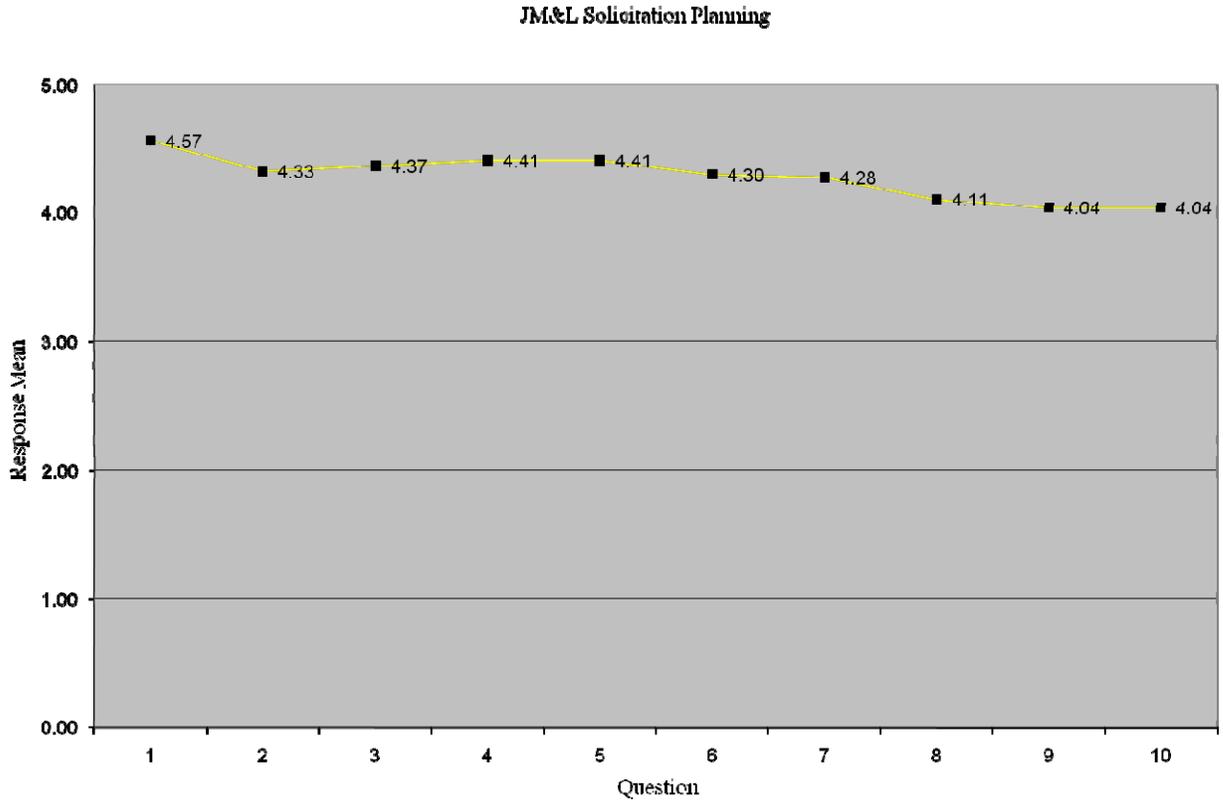
Figure 6b.   JM&L Solicitation Planning
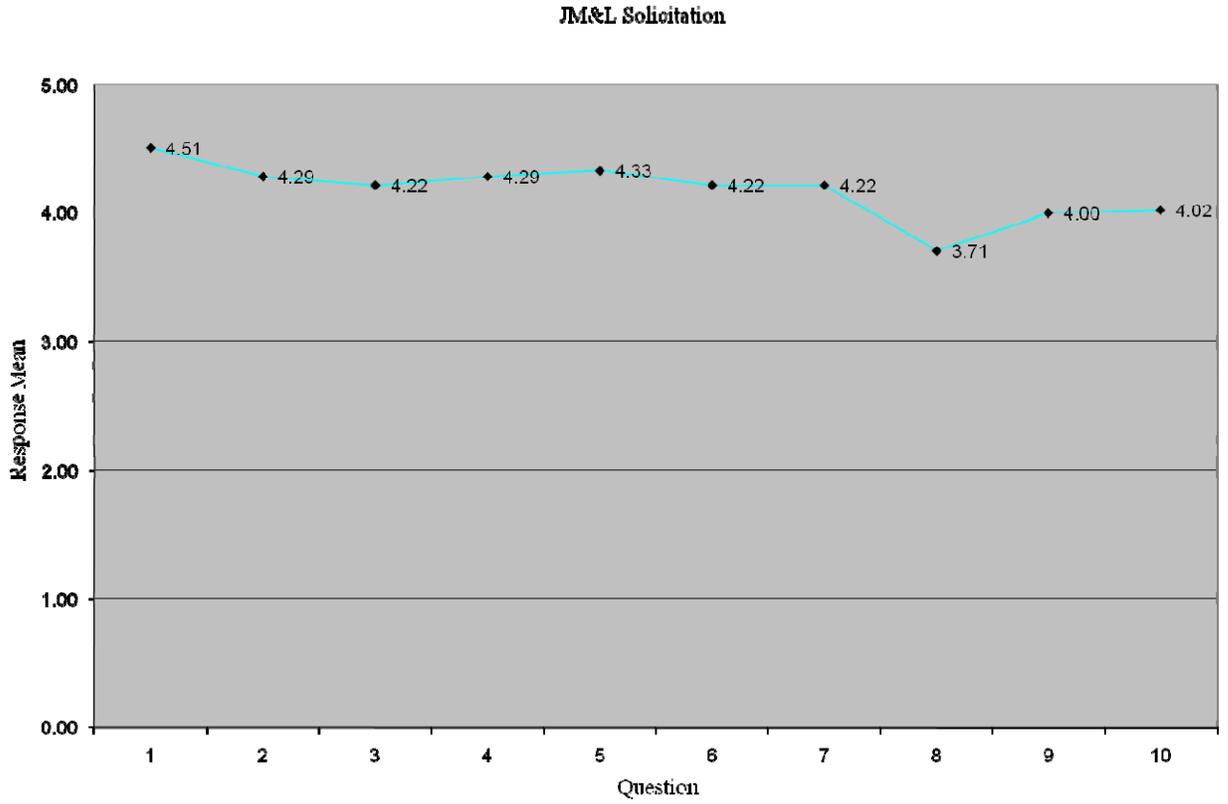
Figure 6c.   JM&L Solicitation
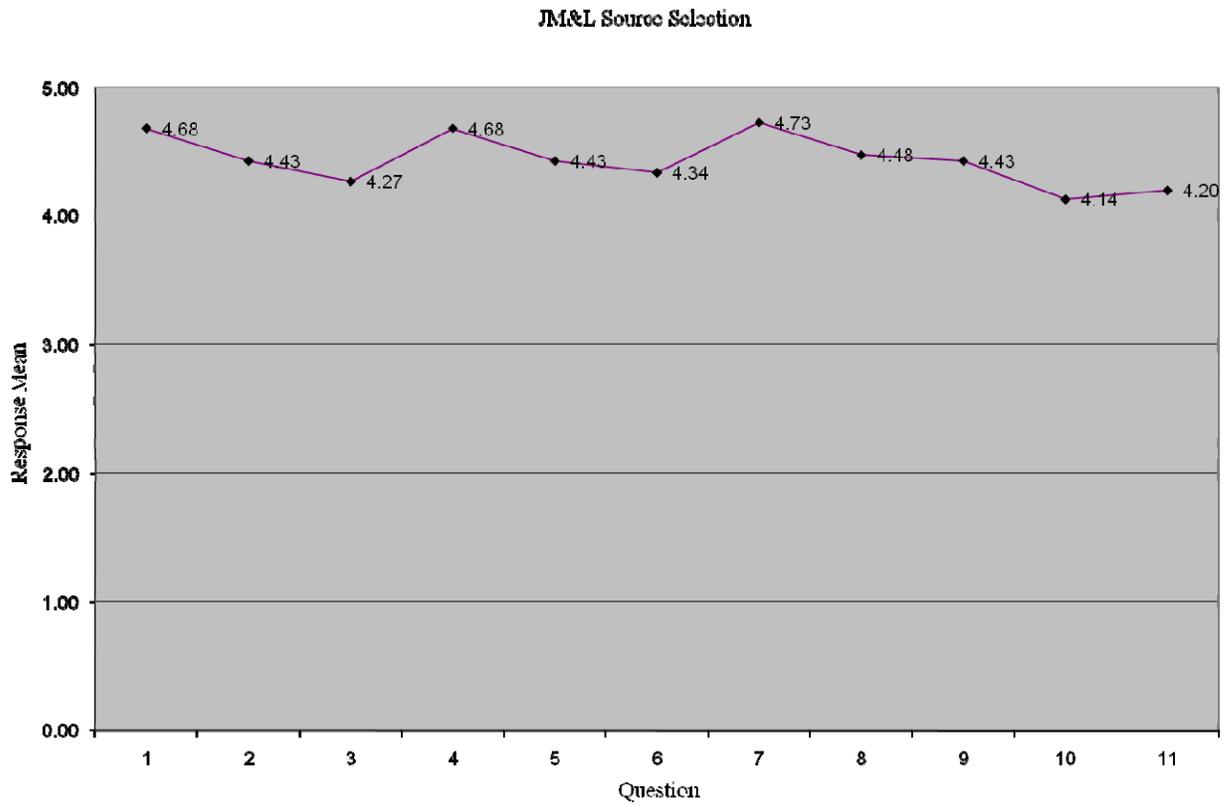
Figure 6d.   JM&L Source Selection
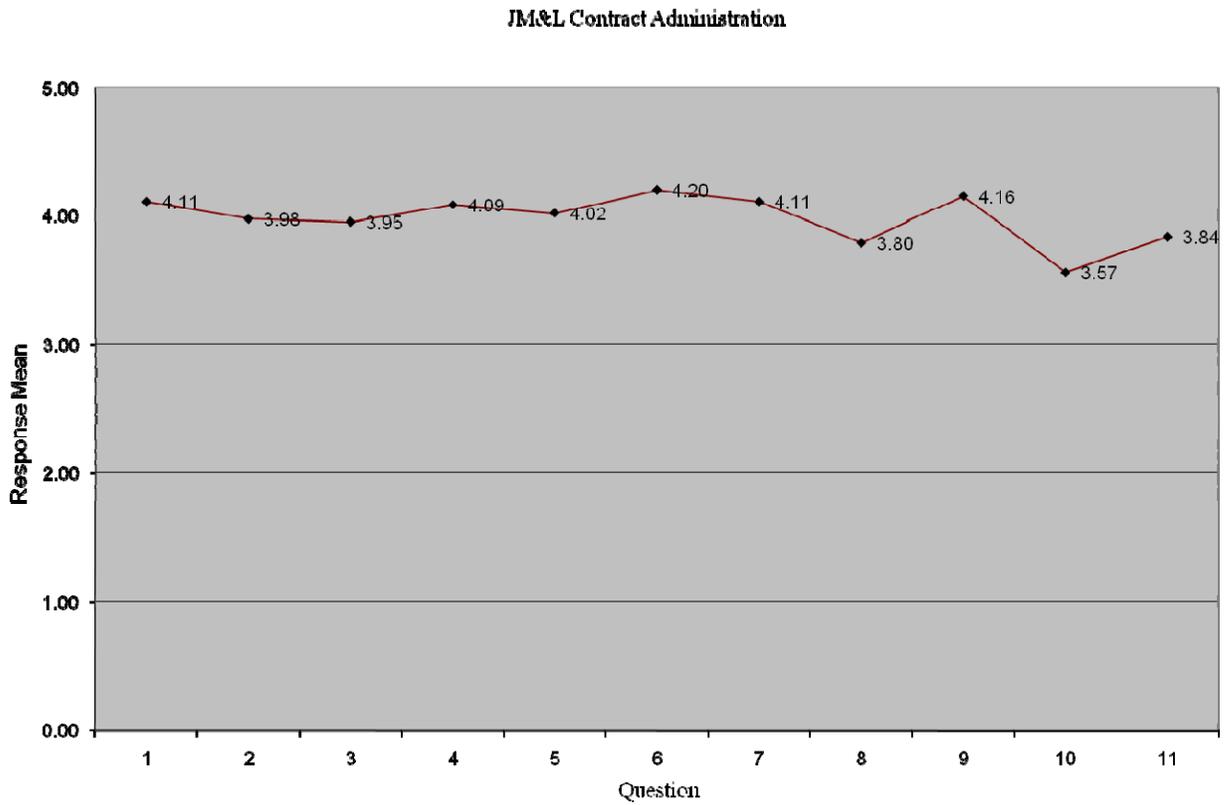
Figure 6e.   JM&L Contract Administration

JM&L Contract Closeout
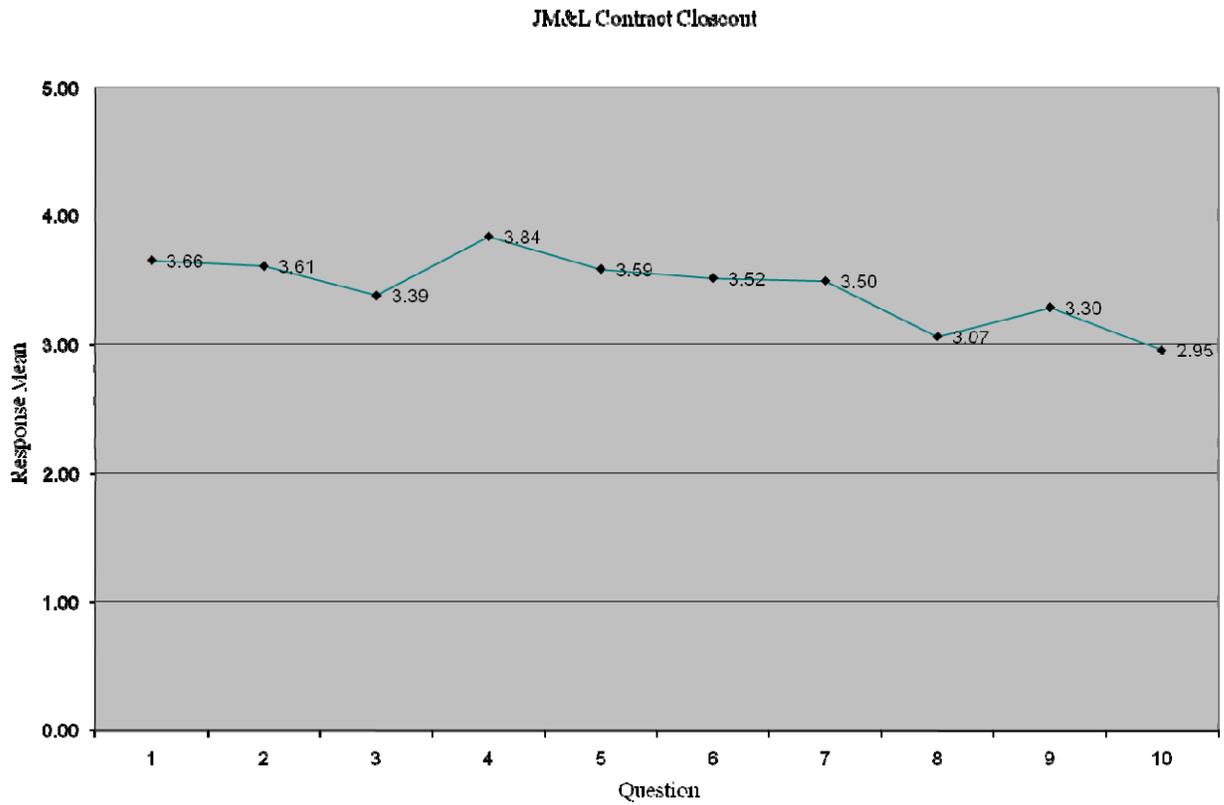
Figure 6f.   JM&L Contract Closeout

Appendix C. NCR CMMM Assessment Results
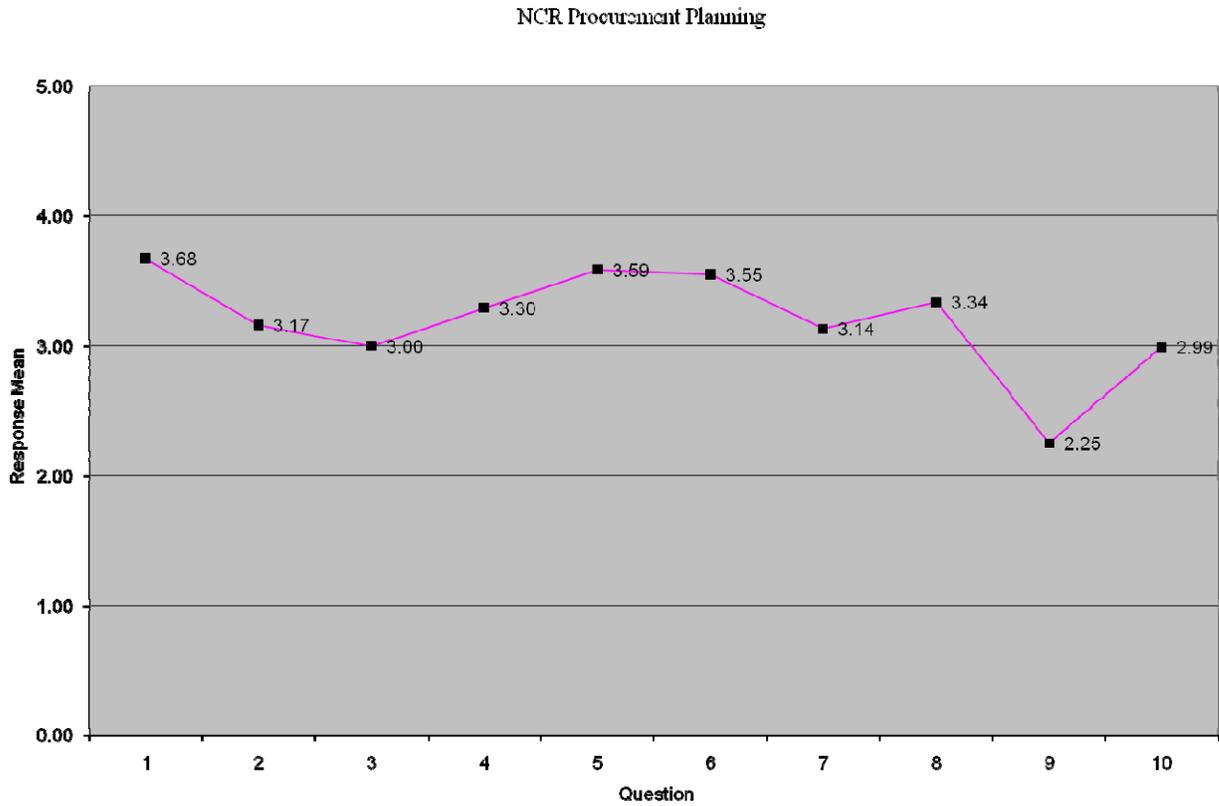
Figure 7a. NCR Procurement Planning

NCR Solicitation Planning
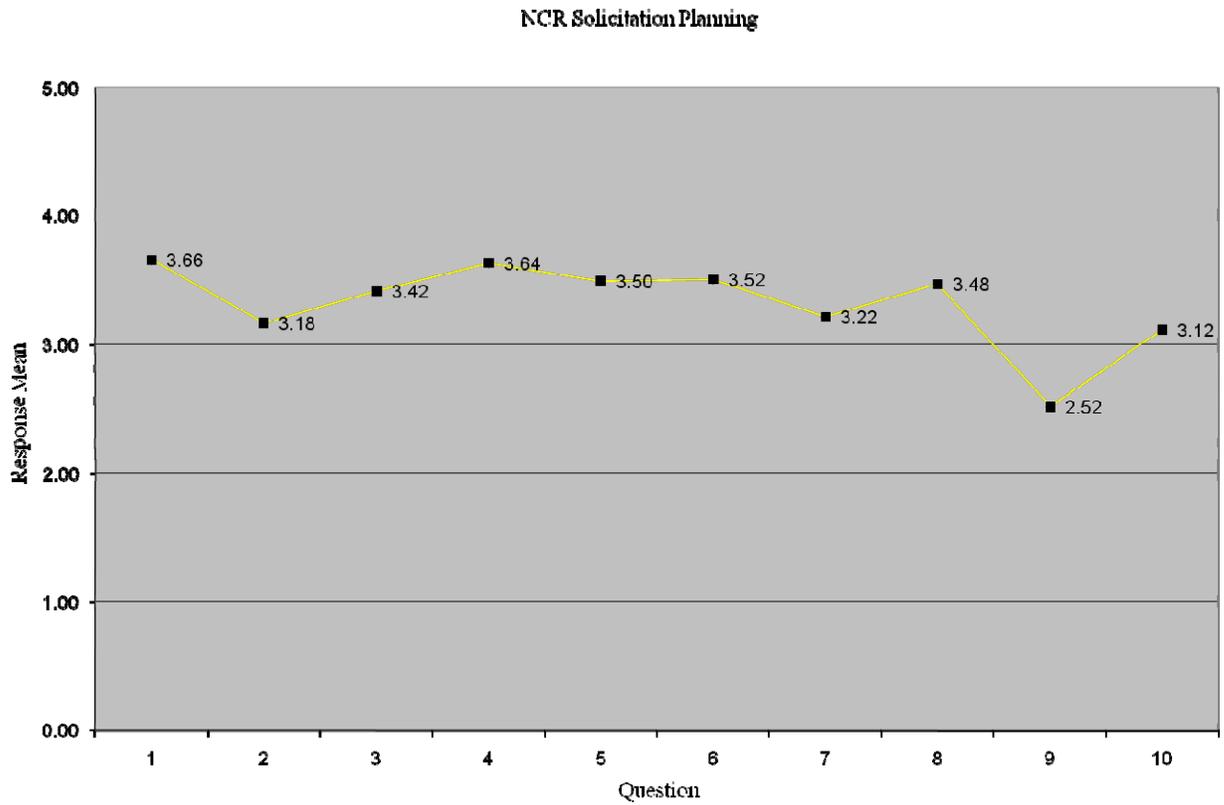
Figure 7b.   NCR Solicitation Planning
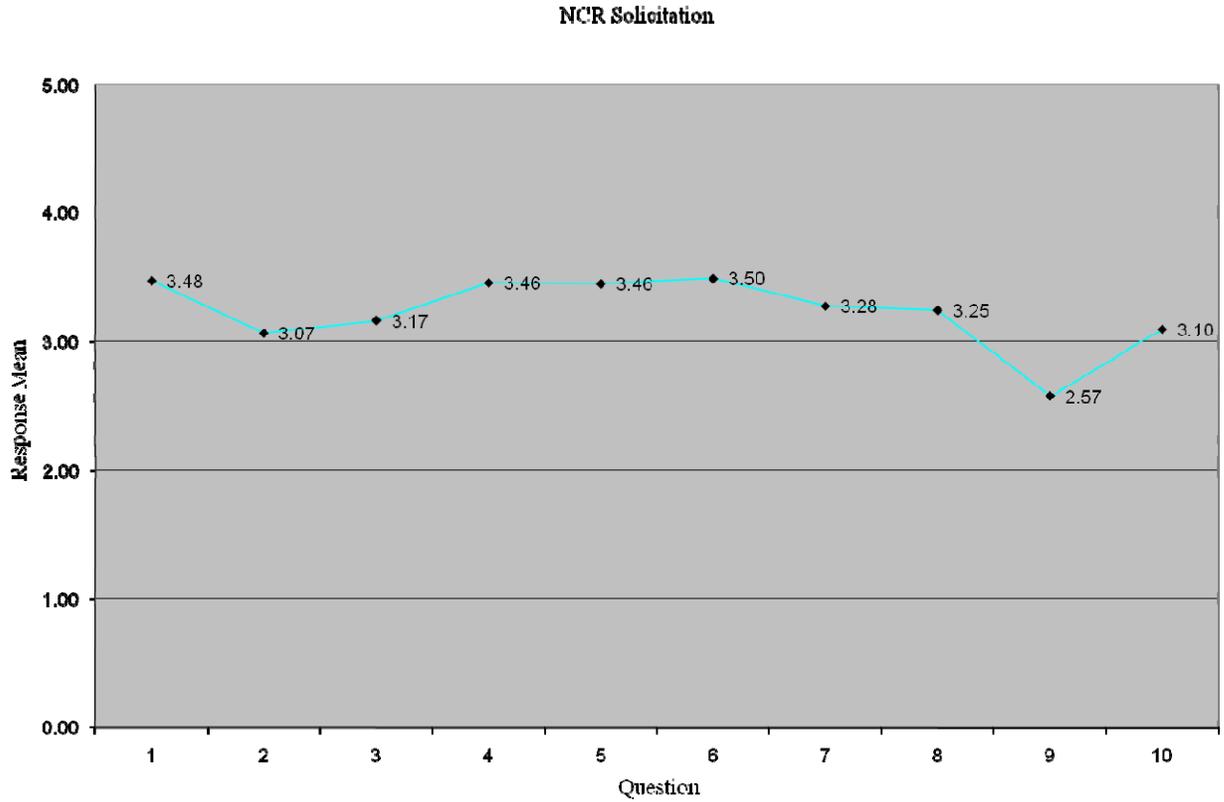
Figure 7c.   NCR Solicitation
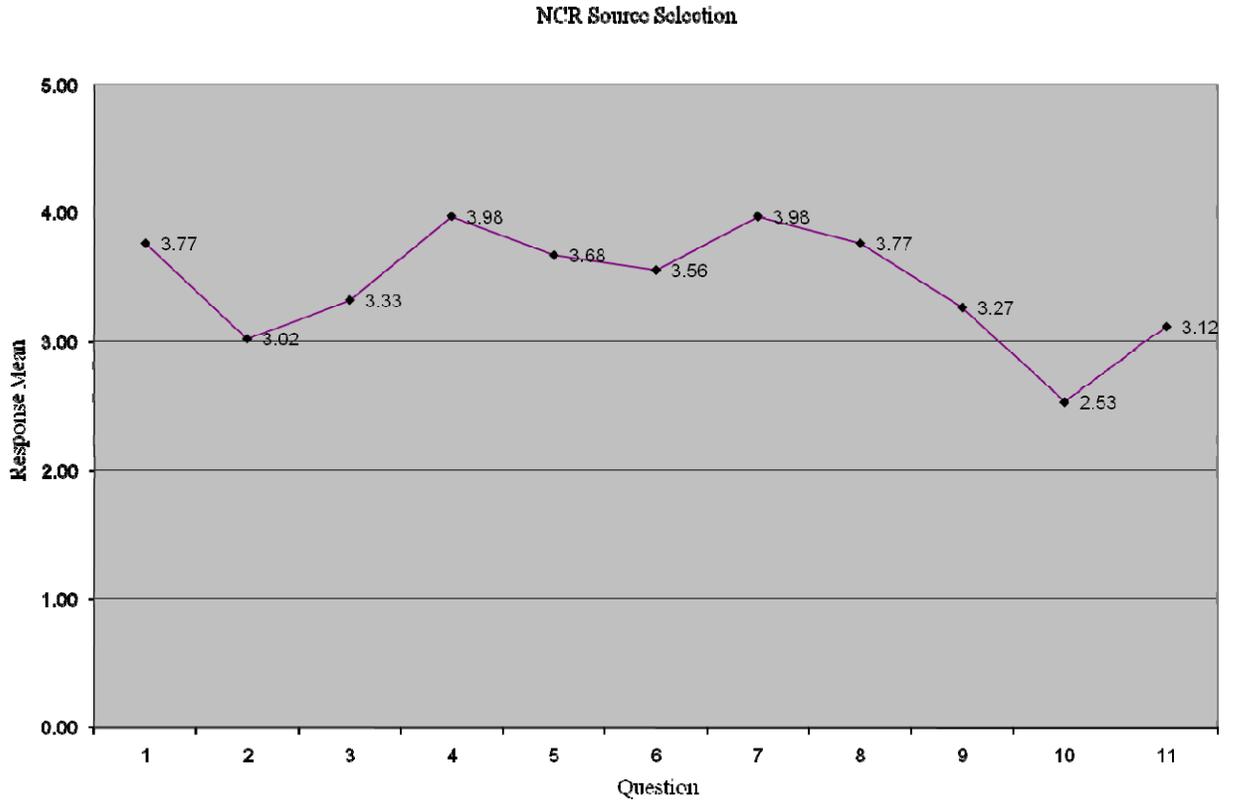
Figure 7d.   NCR Source Selection

**Figure 7e.   NCR Contract Administration**

NCR Contract Closeout
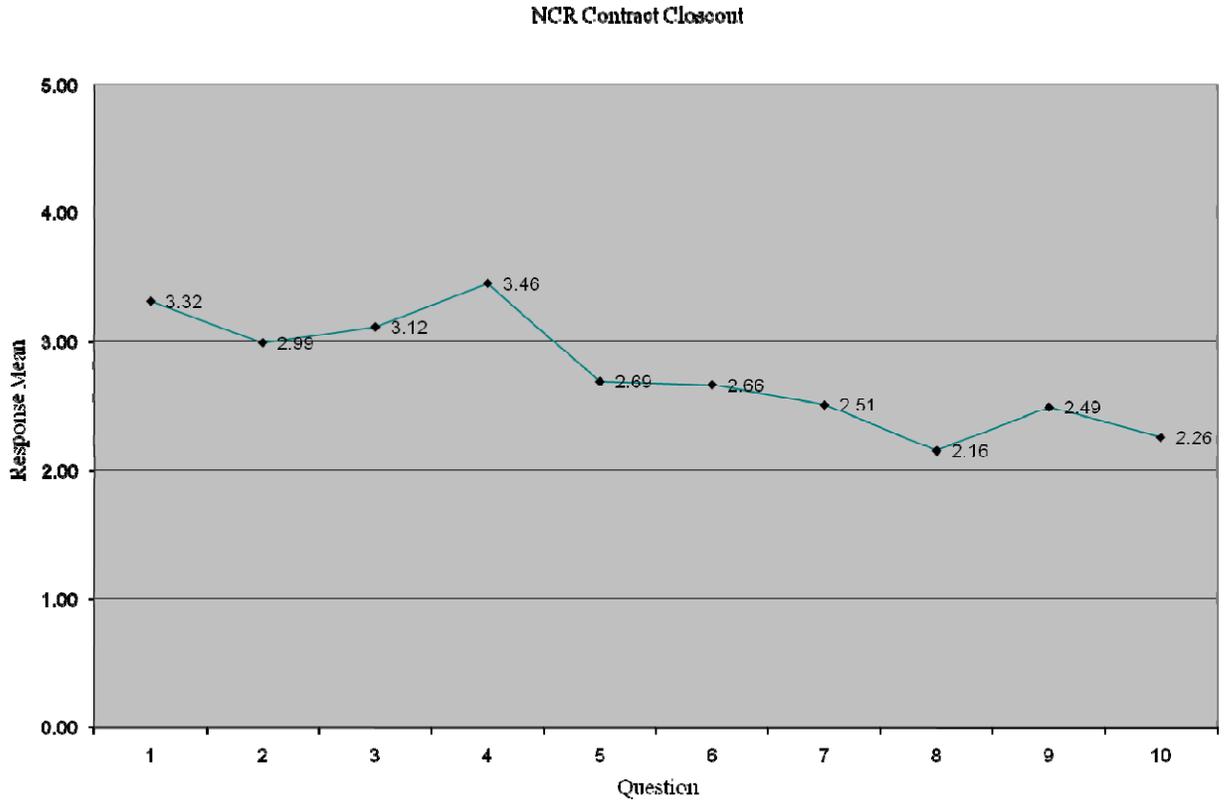
Figure 7f. NCR Contract Closeout

2003 - 2010 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-tem 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
- Terminating Your Own Program
- Utilizing Collaborative and Three-dimensional Imaging Technology

A complete listing and electronic copies of published research are available on our website: www.acquisitionresearch.org

THIS PAGE INTENTIONALLY LEFT BLANK

Initial Distribution List

1. Defense Technical Information Center   2
   8725 John J. Kingman Rd., STE 0944; Ft. Belvoir, VA 22060-6218

2. Dudley Knox Library, Code 013   2
   Naval Postgraduate School, Monterey, CA 93943-5100

3. Research Office, Code 09   1
   Naval Postgraduate School, Monterey, CA 93943-5138

4. William R. Gates   1
   Dean, GSBPP
   Naval Postgraduate School, Monterey, CA 93943

5. Stephen Mehay   1
   Associate Dean for Research, GB
   Naval Postgraduate School, Monterey, CA 93943

6. Dr. Rene G. Rendon   1
   Associate Professor, GB
   Naval Postgraduate School, Monterey, CA 93943

Copies of the Acquisition Sponsored Research Reports may be printed from our website: www.acquisitionresearch.org

THIS PAGE INTENTIONALLY LEFT BLANK