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CONTRACT ADMINISTRATION ORGANIZATION: A CASE STUDY OF THE U.S. MARINE CORPS ADVANCED AMPHIBIOUS ASSAULT VEHICLE PROGRAM

by
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As weapon systems have become more complex and costly, the DoD has explored a variety of methods to decrease the acquisition cycle, reduce costs, and enhance performance of the systems acquired. Current DoD initiatives have focused upon reducing Government specifications and activities that are not cost effective. This has lead to a reexamination of Government policies and practices regarding oversight of contractors. This shift toward a more team-oriented approach to weapon systems acquisition has caused a change in the management techniques used by the Government, and consequently, has impacted the structure and relationships between the Government organizations responsible for monitoring and controlling contract performance. This thesis develops a continuum of organizational models based upon the level of control the Government desires in managing a weapon system program. The need for control is based upon the confidence and trust placed in the contractor's capabilities and motivations. The U.S. Marine Corps Advanced Amphibious Assault Vehicle program is then analyzed in terms of the continuum to develop a generic model of the structure and inter-organizational agreements needed to promote a culture of partnership between industry and the various Government agencies that are responsible for contract management.

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CONTRACT ADMINISTRATION ORGANIZATION: A CASE STUDY OF THE U.S. MARINE CORPS ADVANCED AMPHIBIOUS ASSAULT VEHICLE PROGRAM

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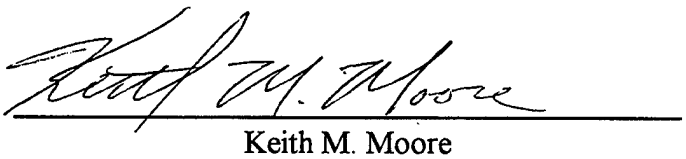
Author: 
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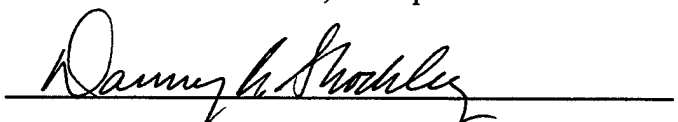
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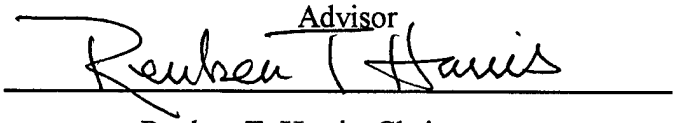
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ABSTRACT

As weapon systems have become more complex and costly, the DoD has explored a variety of methods to decrease the acquisition cycle, reduce costs, and enhance performance of the systems acquired. Current DoD initiatives have focused upon reducing the Government unique specifications and activities that are not cost effective. This has lead to a reexamination of Government policies and practices regarding oversight of contractors. This philosophical shift toward a more team oriented approach to major weapon systems acquisition has caused a change in the management techniques used by the Government, and consequently, has impacted the structure and relationships between the Government organizations responsible for monitoring and controlling contract performance. This thesis develops a continuum of organizational models based upon the level of control the Government desires in managing a weapon system program. The need for control is based upon the confidence and trust placed in the contractor's capabilities and motivations. The U.S. Marine Corps Advanced Amphibious Assault Vehicle program is then analyzed in terms of the continuum to develop a generic model of the types of organizational structure and inter-organizational agreements needed to promote a culture of partnership between industry and the various Government agencies that are responsible for contract management.

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I. INTRODUCTION

A. BACKGROUND

The Federal Acquisition System is designed to deliver the best value products to customers while maintaining the public's trust and fulfilling public policy objectives. The goals of the system include: ensuring timely delivery, reasonable cost and high quality; reducing administrative costs; and conducting business with integrity, fairness, and openness.[Ref. 1:sec. 1.102]

The Federal Acquisition Regulation (FAR) states that fulfilling these goals and objectives is accomplished by the Acquisition Team. The team is made up of representatives from technical, supply, and procurement communities, their customers, and the contractors who provide the goods and services. [Ref. 1:sec. 1.102]

For Department of Defense (DoD) acquisitions, this team includes the Service program manager (PM) as the user's representative, the Defense Contract Audit Agency which audits contractor's book and records for negotiations and payments, the Defense Contract Management Command which provides administrative support, technical evaluations, and surveillance of the contractor, and the contractor.

As weapon systems have become more complex and costly, the DoD has explored a variety of methods to decrease the acquisition cycle, reduce costs, and enhance the performance of the systems acquired. Currently, reform initiatives have focused on reducing Government unique specifications and activities that are not cost effective. The Secretary of Defense in his memo Acquisition Reform: A Mandate for Change stated, "We must shift from an environment of

regulation and enforcement to one of incentivized performance [Ref. 2]." This change in approach to managing acquisition will make the contractor a more equal partner in the process.

The change in philosophy regarding acquisition management may lead to significant changes in the structure and roles of those organizations which perform contract administration tasks. The reform initiatives have encouraged PMs and Program Executive Officers to be innovative in planning and executing their programs. One initiative has been to collocate the program management office (PMO) with the contractor. The belief is that close communication and teamwork between the user's representative and contractor will facilitate the delivery of high quality systems on time and on budget.

DCMC has fulfilled the role of Government on-site presence at contractor facilities since its formation in 1990, through its in-plant and geographic area field offices. DCMC's mission is: "to provide worldwide CAS in support of DoD components, NASA, and other federal and international organizations [Ref. 3:p. 2]."

Although presenting an opportunity for several benefits, collocation of a PMO in a contractor's facility presents the potential for conflict, redundancy, and confusion. Careful coordination and teamwork is required to maintain the Government's single-face-to-industry concept. Under this organizational arrangement, the traditional roles of the PM and DCMC will need to be redefined. The U. S. Marine Corps Advanced Amphibious Assault Vehicle (AAAV) program is collocated with the system prime contractor, General Dynamics Amphibious Systems and is currently establishing an agreement with DCMC on integration of a Program Support Team (PST) into the facility.

The AAAV program was approved for entry into the Program Definition and Risk Reduction (PDRR) phase of the acquisition cycle in March of 1995. Two contractors had been involved in the Concept Exploration (CE) phase. The acquisition strategy calls for a 'down select' to one contractor, who will be the sole source for all phases through Production, Fielding/Deployment and Operational Support. The PDRR award was made in June 1996.

The AAAV program office used Integrated Product Teams (IPTs) in several areas during CE. The PM believes that a close relationship with the contractor through the IPT concept is a key to the success of the program. To further enhance teaming, the contractor and program office moved into a common facility in September 1996.

In the process of developing the PMO structure that would collocate with the contractor, the AAAV Program Manager was made aware of an opportunity to create a PST structure using DCMC resources. [Ref. 3] This team would work in the PMO and provide expertise in a variety of technical areas in addition to their traditional contract administration and contractor surveillance functions.

During the defense drawdown, DCMC has restructured and sought opportunities to provide a broader range of services to their customers. In his first newsletter, Major General Drewes, the DCMC Commander, listed his Top Ten Challenges. [Ref. 3:p. 8] Providing substantive Early Contract Administration Services (EarlyCAS) and Integrated Process Team participation headed the list. DCMC has had substantial experience in integrated teams from its Process Oriented Contract Administration Services (PROCAS). PROCAS involves forming cross-functional teams with a contractor to review critical business and manufacturing processes. The goal is to reduce the level of oversight required to protect the Government's interests.

DCMC's approach to providing this support is to open discussions with the PMs to get them to identify the types and kinds of DCMC services that they might need, in an unconstrained environment. The next step is to then develop a critical personnel requirements list for a PST. This PST then acts as an integral part of the PM's staff.

DRPM AAAV has identified areas of support in software development, technical cost estimation support, engineering surveillance and normal contract administration services. After initial meetings in February 1996, a strawman PST was proposed for phasing into the PM's office and various IPTs. DCMC and DRPM AAAV are currently developing an operating agreement for PST support.

B. RESEARCH OBJECTIVE

This study describes the traditional assignment of responsibility for contract administration tasks and develops several different models for managing contract performance. An analysis of the decisions regarding organizational structure and interorganizational agreements between DRPM AAAV, DCMC and the Marine Corps Systems Command (MARCORSYSCOM) will be made. Analysis of these decisions will be used to identify key issues in implementing a teaming arrangement for major weapon system acquisitions.

C. RESEARCH QUESTIONS

The primary research question is: Can a general model for implementing a Defense Contract Management Command structure into a program management office be developed from an analysis of the management decisions made in developing the Advanced Assault Amphibian Vehicle Program Management Office? The subsidiary questions are as follows:

1. What were DRPM AAAV's principal objectives in developing the Program Management Office team, and to what extent were they achieved?

2. How were Integrated Product Team concepts incorporated into the development of the integrated Program Office team?

3. What obstacles had to be addressed and overcome in developing the Program Office team?

4. What unique participation of DCMC resources were necessary in developing this Program Office team structure and what advantages and disadvantages did this have?

5. What unique organizational agreements were necessary to aid development?

6. What decisions and resources will be required to sustain the Program Office team in the long term?

7. How will understanding the development of the AAAV PMO be used in organizing future weapon system program offices?

D. SCOPE, LIMITATIONS AND ASSUMPTIONS

The scope of the thesis will be limited to a case study of the integration of a DCMC organization into the DRPM AAAV office. The study will explore the methods used and decisions made in integrating the DCMC Product Support Team and the AAAV Program Management Office. A review of the lessons learned will be used to develop a generic model of this type of arrangement for use by other program managers. This study was prepared as the organization of the PMO was being established and agreements with DCMC and MARCORSYSCOM were still being negotiated. This limits the study to a description and analysis of discrete decisions without the benefit of data on the results of these decisions. This study assumes that the reader commands a general knowledge or familiarity with Government contracting and program management.

E. METHODOLOGY

To answer the primary and subsidiary questions, two research methods were employed. First, a comprehensive review of available literature dealing with program management, contract administration, and Integrated Product and Process Development was conducted. Research included a review of documentation related to the roles and functions of DCMC, implementation guidance for IPPD, documentation from DRPM AAAV and DCMC Manassas and the DCMC headquarters at Fort Belvoir, Virginia. Second, interviews with various personnel from the AAAV program office, DCMC headquarters and the field office in Manassas, Virginia were conducted. These interviews included General Drewes, the Commander DCMC, the AAAV PM, Deputy PM, contract manager, Procuring Contracting Officer (PCO) and the program legal counsel.

F. ORGANIZATION OF STUDY

The research is organized in the following manner: Chapter I presented the background and research questions for the study. Chapter II contains a discussion of the various program office structures, a description of contract administration organization, and a general description of the IPPD concept. Chapter III introduces the traditional organization for contract administration employed by the Government, including the interorganizational agreements established by the PMO and Contract Administration Organization (CAO). Chapter IV discusses the rationale for the contract administration tasks and develops four alternate organizational structures for managing the acquisition of major weapon systems. Chapter V presents the background and current organizational structure of the DRPM AAAV PMO and their use of IPTs to manage the AAAV program. Chapter VI provides conclusions derived from the research, and

recommendations for future implementation of Government organizational teaming in major weapon system acquisition.

II. BACKGROUND

A. INTRODUCTION

This chapter will focus on the environment in which major weapon systems are developed and procured. This environment includes: the program office organization, the contract administration organization (CAO) and the management concept of Integrated Product and Process Development (IPPD).

A program office is organized by a Program Manager (PM). PMs are responsible for acquiring a weapon system, subject to such constraints as cost, schedule, and performance. In attaining these goals the PM is responsible for defining the work to be done, the quantity of work, and schedules for work and funding. The organizational structure of the program office will have a significant impact on the ability of the PM to fulfill his charter. Current directives allow wide latitude to the PM in program structure and execution. Four organizational models of the program office will be discussed.

Once a contract is awarded, the program office must then focus on monitoring and controlling contractor efforts, and where appropriate, directing changes. During contract performance the PM traditionally relies on a CAO. This office provides monitoring of both the contract and the contractor to ensure performance in accordance with the contract provisions. DCMC is chartered with providing this "in-plant" presence.

The overall management concept of IPPD, an approach to managing large, complex programs has been successfully used in industry for many years. In May of 1995,

Secretary of Defense Perry mandated its used in DoD to the maximum extent practicable. [Ref. 4]

B. PROGRAM MANAGEMENT ORGANIZATION

The majority of literature on program management identifies two categories of organizational structure, pure and matrix. [Ref. 5:p. 70] Within these two categories the literature further separates them into as few as two types and as many as five. It should be noted that these pure conceptual types will not be frequently found in practice, as individual circumstances may dictate a PM's choice of structure. For the purposes of this discussion, four types are identified and their main characteristics described.

1. Pure or Completely Projectized

The pure program management structure is the simplest. It will also be the most familiar to individuals who are not accustomed to program management. The lines of authority and accountability are the same as those in a classical management structure. All personnel needed for the program are assigned to the PM. The PM has full control over all personnel assigned to work on the program. He is responsible for hiring, firing, performance evaluation, training and all other personnel administration. [Ref. 5:p. 68]

The pure organization holds several advantages. The PM has the greatest amount of control over all program resources. [Ref. 5:p. 68] Because he directly controls all the functional areas supporting the program, communication both up and down in the organization is more efficient. [Ref. 6:p. 118] This single line of authority also makes the organization capable of reacting rapidly in a changing situation.[Ref. 6:p. 118] The organizational structure of the pure model is a classical hierarchy. Lines of authority and

communication are clear. The familiarity of the organization and relationships make it easier for individuals to adapt. Also, with everyone involved in program execution working for the same boss, it is easier to develop a sense of unity and purpose among the diverse functional areas. [Ref. 6:p. 120]

On the other hand there are some significant disadvantages to the pure program structure. The expense in personnel is a prime concern. The PM's responsibilities for hiring and personnel administration take away from the time and resources he has to manage the program. It is difficult to find someone technically qualified to lead the program as well as possessing the skills needed to effectively manage the functional areas supporting the program. [Ref. 5:p. 69] Many individuals may be hired before they are needed or retained after their contribution to the program is finished. It may be difficult to attract the highest quality workforce because of concerns about future assignments after project completion. Lastly, if problems develop in program execution, the program is limited to the skills and experiences resident in the program office. [Ref. 6:p. 120]

2. Attachment or Task Force

In this organization the PM exercises broad authority over all functional support to the program. The PM is responsible for the administrative support and evaluation of all support personnel assigned. He does not have the authority to hire or fire an individual; replacement of an unsatisfactory performer requires coordination with the supporting functional manager. The PM identifies requirements to the various functional managers for personnel. The functional managers then assign full-time support personnel to the PM. The PM maintains complete control of the work done by the functional areas to include

operating policies and procedures which may differ from the parent functional area. [Ref. 5:pp. 75-76] A PM has the authority to direct support personnel assigned to deviate from the established policy or procedures of their functional area, if such action is in the interests of the program.

The attachment approach avoids the necessity of the PM hiring and providing training for the various technical personnel. Even if the PM receives the functional support on a reimbursement basis, it will be less expensive. The phasing in and out of personnel to match the workload is much easier. The single line of authority still exists, making it possible to make decisions rapidly in a fluid environment. Because the PM maintains direct control over and evaluates all personnel, unity of purpose is maintained. [Ref. 5:p. 76]

The most significant disadvantage to the attachment structure is the difficulty in obtaining high quality support from the functional managers. If the program is expected to be of long duration, functional managers will be less likely to give up their "best and brightest" to the program. Additionally, highly skilled personnel may avoid being assigned to the program, if they perceive that the move will adversely affect their career path within their functional organization. [Ref. 5:p. 76]

3. Direct Support Matrix

This organization is characterized by a small planning and control staff that works for the PM augmented by a matrix support structure.. This staff is responsible for defining the project in terms of schedules and tasks. Each functional area in the matrix organization provides dedicated support personnel to the program. The assigned

personnel may be either full-time or part-time. These personnel may physically reside either in the program office or in the functional area. The PM only controls the assignment of work; functional managers determine the policies and procedures under which the work is done.[Ref. 7:p. 12.30]

There are several advantages to the direct support model. Direct support is considerably less expensive than the forms previously discussed. Expense is reduced because personnel are assigned to a program when they are needed and reassigned as the workload drops off. The PM is not responsible for the bulk of personnel training and administration tasks and is better able to focus upon programmatic and coordination issues. The matrix form also lends itself to a higher degree of technical innovation because the assigned technical specialists are still "plugged-in" to the functional area and can draw on colleagues' expertise more readily in resolving issues. Worker motivation is higher because assignment to a project does not remove individuals from their functional department structure. It is also easier to match the personnel to a time phased workload. Management levels of the organization also gain better visibility of conflicts and can more readily resolve them. [Ref. 5:p. 73-74]

The direct support matrix also has some significant disadvantages. First, the coordination and agreement between the program and supporting managers regarding policies, procedures and priorities can be time consuming and result in continuing conflict. The functional personnel report to two separate chains of command; this generates ambiguity and conflict. The goals of the functional departments and the program will probably not be congruent, resulting in potentially not meeting program support

requirements. Because this model relies heavily on multidimensional communication and consensus building between the PM and functional managers, the ability of the organization to adapt in a fast-paced, changeable environment is seriously impeded. [Ref. 6:p. 127]

4. General Support Matrix

This model is similar to the direct support model in that the program staff is small. The PMO defines the work to be performed and requests functional area support. The level and type of support is then determined by the functional manager. There are no functional personnel dedicated 100 percent to the project. In its purest form, tasks from the program office flow to the next available person in the functional area. The functional manager exercises full autonomy over the policies, procedures and flow of work. [Ref. 7:p. 12.30]

This model provides the same advantages as the direct support model. The most significant impact is that the PM loses additional control and flexibility. This model will require a higher level of involvement by the organization's management above the program and functional managers. [Ref 5:p. 74-75]

C. CONTRACT ADMINISTRATION ORGANIZATION

Once the buying activity has awarded a contract, the assignment of contract administration is delegated to the DCMC. This delegation is required for all contracts which will be performed primarily in a contractor's facility. For contracts involving work on military istallations or various types of services these functions can be retained by the buying command. A list of the exceptions to delegation is found in the Defense Federal

Acquisition Regulation Supplement (DFARS). [Ref. 8:sec. 242.203] When determined necessary by the PM, he can assign technical representatives to duties inside contractor's facilities. These technical representatives may conduct non-contract administration technical duties. [Ref. 8:sec. 242.74] DCMC maintains field offices throughout the country and abroad in contractor plants. Area offices are established to provide contract administration services for contractors in a specified region. These offices may be located in a contractor facility, but service other contractors whose operations do not warrant a full-time presence. [Ref. 9:pp. 6.1-6.6]

There are four major goals in establishing a centralized contract administration organization within DoD: uniformity, economy of scale, professional standards and development, and an independent monitoring and reporting system in DoD. [Ref. 10]

Uniformity is a major concern to defense contractors. At one time, each Service maintained separate contract administration offices. These offices interpreted laws and regulations differently or implemented regulations under vastly different policies. [Ref 11:p. 44] This forced contractors to develop multiple ways to accomplish identical tasks, incurring higher costs. Often confusion about which policy or regulation governed a particular contract put additional strain on the relationship between Government and industry. One study identified over 200 separate acceptance and delivery procedures a contractor was required to follow to satisfy his Government contracts.[Ref. 10]

DoD recognized that the overlapping tasks and responsibilities being performed by each of the Services' contract administration offices could be more efficiently accomplished by a smaller centralized workforce. This would reduce overall

administration costs through a reduction of manpower, equipment, and support resources. [Ref. 11:p. 44]

Professional standards and development could best be realized by centralizing the functional personnel. [Ref. 10] A centralized organization has members who are exposed to a wide variety of working situations. Centralization will enhance the ability to share information on current practices and techniques. This type of workforce also makes it possible to provide more opportunities for formal training of personnel without losing the ability to carry on vital functions. A central agency could identify and promulgate broad standards and policies governing the workforce. Additionally a larger agency would have the critical mass necessary to conduct the education, training, and support services necessary to produce a high quality workforce. Centralization created an organization providing career path opportunities, enhancing employee motivation and attracting better skilled workers. [Ref. 10]

Concern over the perceived waste and abuse in DoD procurement during the defense build-up of the 1980s led to reform of the procurement process to fix the problems. Poor planning and program control had not been evident to higher levels in DoD until huge overruns and schedule slippage culminated in the termination of the Navy A-12 program. In the Air Force, the C-17 program developed serious program deficiencies that nearly caused its cancellation. [Ref. 10] DoD realized a need for an "independent" review and assessment of program issues and progress to allow DoD insight into program problems while they could still be successfully managed. [Ref. 10]

While the staffing of a particular field office will vary with the type and number of contracts being administered, the general tasks and functions are similar. A field office will have Administrative Contracting Officers (ACOs), and a variety of technical specialists including: industrial specialists, engineers (mechanical, software, electrical), quality assurance, and cost analysts. [Ref. 9:pp. 6.4-6.8] Additionally the Defense Contract Audit Agency (DCAA) will have auditors assigned on either a permanent or itinerant basis. The auditors are independent of the DCMC structure, but for the purposes of this study, a CAO will include auditors unless specifically excluded.

DCMC provides support through field offices and "in-plant" offices utilizing PSTs. These teams are made up of appropriate personnel to accomplish tasks related to contract administration, quality assurance, engineering, production and industrial resources, property management, finance, transportation, and program support. The team is led by a Program Integrator (PI). The PI becomes the focal point for communication between the program office and the PST. Technical specialists on the team are responsible for surveillance of the contractor, providing input on schedule performance and forecasts on completion of work. Additionally they will provide input for any proposed changes affecting their area of expertise. The PI collects information from each functional area and compiles a program status report for use by the PM in program control and by DCMC to fulfill their charter for independent oversight of programs. [Ref. 12:pp. 3.11.1-4]

CAOs have a dual role in the acquisition process. They manage current contracts and support PMs in both pre- and post-award requirements. Their other responsibility is

to conduct reviews and evaluations of a contractor's business systems. These systems generally impact all the work being accomplished by the contractor. [Ref. 12:p. 3.11-3]

This split focus often causes tension between the PM and CAO. The CAO must continuously balance specific program needs against all other programs and the contractor. Cooperation and understanding must be achieved between the two organizations. The delegation of functions to a CAO as required by the FAR and DFARS [Ref. 1:sec. 42.302; Ref. 8:sec. 242.203] and any additions or deletions will be coordinated and established in a Memorandum of Agreement (MOA) signed by the PM and the local DCMC commander. [Ref. 12:p. 3.11-3]

D. INTEGRATED PRODUCT AND PROCESS DEVELOPMENT

In April of 1995, Secretary of Defense Perry issued a memorandum entitled 'Acquisition Reform: A Mandate for Change'. [Ref. 13] In that memorandum he charged the Department of Defense to reduce acquisition costs by reengineering the oversight process and eliminating those activities that are not necessary or cost effective. Secretary Perry further commissioned a process action team to develop:

> ...a comprehensive plan to reengineer the oversight and review process for system acquisition, both in the Components and Office of the Secretary of Defense (OSD) to make it more effective and efficient while maintaining an appropriate Oversight and Review process.

The Process Action Team report was accepted by the Under Secretary of Defense (Acquisition and Technology), and issued with a directive to immediately implement a management program for Oversight and Review that used the Integrated Product and Process Development (IPPD) concept and Integrated Product Teams (IPTs) to

fundamentally change the role that OSD and Component staffs had played in overseeing acquisition programs. [Ref. 2]

In May of 1995, Secretary Perry issued a Memorandum entitled 'Use of Integrated Product and Process Development and Integrated Product Teams in DoD Acquisition'. [Ref. 4] In that memo he directed "a fundamental change in the way the Department acquires goods and services. The concepts of IPPD and IPTs shall be applied throughout the acquisition process to the maximum extent practicable." [Ref. 4] The following guidance was given in the memo:

> Perform as many acquisition functions as possible, including oversight and review, using IPTs, in a spirit of teamwork, with participants empowered and authorized to the maximum extent possible to make commitments for the organization or functional area they represent. Involve key personnel early, and encourage timely decision making. Promote flexible, tailored approaches to oversight and review based on mutual trust, while considering program size, risk, and complexity.

1. Integrated Product And Process Development Defined

DoD defines IPPD as:

> A management process that integrates all activities from the product concept through production/field support, using a multifunctional team, to simultaneously optimize the product and its manufacturing and sustainment processes to meet cost schedule and performance objectives. [Ref. 14]

IPPD is closely related to concurrent engineering, where interrelated tasks are accomplished simultaneously instead of sequentially. However, it goes beyond concurrent engineering, in that it includes all facets of business practice, not just the technical disciplines. IPPD has been used in diverse segments of industry, most notably the auto and electronics industries. [Ref. 15]

IPPD breaks down barriers and enhances communication horizontally through organizations, linking functional areas at the lowest possible levels to prevent conflicts. The use of sound business practices and common sense decision making are vital to the success of IPPD. Because most organizations are structured along lines of functional hierarchy, cultural change is necessary for successful implementation of IPPD. In essence, IPPD provides a formal structure and set of tenets that have been the goal of program management. The ten tenets of IPPD are included in the Appendix. [Ref. 4]

2. Integrated Product Teams Defined

As a basic organizational element for implementing IPPD, IPTs function to facilitate decision making in a timely manner based upon recommendations and input from the entire team. Teams are usually formed around functional areas such as logistics, cost/performance, etc. Each IPT is made up of individuals from the functional disciplines and varying levels of the hierarchy appropriate to the functional area. These members must have the knowledge and authority to make decisions and commitments for the areas they represent. The key to successful IPTs is that information flows horizontally through an organization as opposed to vertically. In theory this will cause all potential conflicts between functions to be traded-off so that the product will be optimized. Also, because all issues should be identified early and addressed at the lowest appropriate level, decisions need no longer be continuously revisited unless new information is developed or a major change is indicated.

There are six key principles in operating an IPT: [Ref. 14]

1. Open discussions with no secrets

2. Qualified, empowered team members
3. Consistent, success oriented, proactive participation
4. Continuous 'up the line' communications
5. Reasoned disagreement
6. Issues raised and resolved early

The PM, or contractor, will set up program IPTs for specific areas or issues. These teams will include program office personnel, representatives from the Services, contractors, subcontractors and users. These multidisciplinary teams work to manage program resources and risk, and to integrate Government and contractor efforts. Normally the leaders of these teams become members of the higher level teams, enhancing the information flow to key decision makers. [Ref. 16]

E. SUMMARY

This chapter has introduced the three main components of the weapon system acquisition environment: the PMO, the CAO and the IPPD management concept. An understanding of the structure and mission of the two organizations provides a baseline for discussion of the allocation of the responsibility for tasks that must be accomplished during contract performance. The system acquisition process is improved by the use of IPPD. Enhanced communication, early problem identification and resolution, and teamwork ensure the development and acquisition of weapon systems within cost and schedule objectives.

The next chapter will present the tasks performed in contract administration. The traditional organizational model used by the Government in contract management will be developed.

III. TRADITIONAL CONTRACT ADMINISTRATION

A. INTRODUCTION

This chapter will discuss three aspects of traditional contract administration: the organizational environment, the separate tasks involved in contract performance, and the working relationships and agreements between the organizations.

The environment consists of the organizational structure of the PMO and CAO and their location relative to the facilities where the work is actually being performed. The traditional tasks of contract administration are derived from various sources: law, regulation, policy and common business practice. The working relationships between these organizations are defined by the conceptual approach of support to the PM and contractor oversight. The approach to contractor oversight currently used by DCMC is Process Oriented Contract Administration Services (PROCAS). PROCAS involves teaming with customers and contractors to improve production and management processes. Analysis, review, and support of programs is determined jointly by the CAO and PM. This agreement and the associated measures of effectiveness are formalized in a Memorandum of Agreement (MOA).

B. ORGANIZATIONAL ENVIRONMENT

Geographical dispersion of the participants is a key feature in weapon system acquisition. This means that the contractual relationship relies heavily upon communication via telephone, electronic mail, and paper. These means are backed up by periodic visits to the contractor's facilities and conferences where the participants can build a sense of teamwork and deeper understanding of issues. The relationships between

the Government and the contractor will be affected by how the Government organizations are structured and how they interact.

1. Traditional Program Office

The most common organization for a major weapon system program office is the matrix. The actual breakdown of personnel that work for the PM and those that are provided on a matrix support basis may vary significantly. In almost all cases, the PCO and the legal counsel will be matrix support. The main reason for this arrangement is to preserve a level of independence and detachment from programmatic issues. Being removed from the direct reporting chain of the PM helps to ensure that the PCO and legal counsel are free to provide sound, unbiased advice to the PM. The PCO is the only person authorized to obligate the Government to a contract, and so is chiefly responsible for ensuring that the appropriate rules, regulations and guidelines are followed in negotiating and executing a contract. Additional matrix support required by the PM may be either full-time or part-time personnel supplied by the systems command. Determination of the level of support is made by the functional area manager based upon projected workload and availability of personnel.

The advantage to the Service of the matrix arrangement is the creation of a stable career path for functional specialists. The matrix is more economical for two reasons. First, the resources available are more fully utilized over time than under the pure program management form. Secondly the costs of hiring personnel in various geographic locations or moving them to different facilities is avoided. The disadvantage is that the PM might be out of touch with the current situation in the facility where work is being performed.

This detachment from the center of activity and reliance on more formal, less rich communication media, can cause significant problems for the PM in controlling and directing contractor effort. DCMC, in the form of a CAO, provides the "eyes and ears" for the PM in a contractor's plant. Additionally, the CAO acts as an information broker ensuring a high level of communication and understanding of program issues as they arise.

2. Contract Administration Organization

The typical CAO is located in or near the contractor's facilities. Depending upon the level and type of work performed by the contractor at a particular site, the CAO will be staffed with an ACO, auditors, quality assurance representatives, industrial specialists, engineers, cost/price analysts, and program integrators. These various functional personnel are organized into PSTs. These teams are staffed based upon a review of the contract to be administered and the letter of delegation from the PCO specifying the tasks to be accomplished by the CAO. The Federal Acquisition Regulation delineates 69 tasks normally delegated to the CAO and 11 tasks that may also be delegated. [Ref. 1:sec. 42.302] The DFARS identifies an additional 10 functions to be delegated to the CAO. The complexity of the work to be performed, the type of contract used, and any specific requests for support from the PM will also be used in determining the appropriate personnel assignment to a PST and whether they will be full-time or part-time support. [Ref. 17]

C. CONTRACT ADMINISTRATION TASKS

Contract administration is much more complex than just a system for receiving items and paying for them. The tasks involved require the integration of technical events,

interest and behavior of the parties, and the compliance with specific contract provisions. Sound judgment is the key to good contract administration. There are six broad categories of contract management responsibility: [Ref. 11:p. 97]

1. Monitoring and surveillance
2. Reports and services to PM and contractor
3. Reviews and audits of contractor's internal management systems
4. Formal decisions and actions affecting contractors
5. Direction, negotiation and agreements
6. Program sensitive contract management functions

Within these categories are various tasks and responsibilities to be fulfilled by the PMO, PCO, and CAO. Some of these overlap, others are exclusive to a particular organization. Table 3.1 presents the contract administration tasks that, in common practice, are shared responsibilities of two or more organizations. Many of these tasks have a distinct leader with others participating in some of the actions required to discharge the responsibility, while others have no clear leader but multiple participants. The latter are designated as being joint responsibilities. Table 3.2 depicts those tasks which most commonly are performed by only one organization.

It should be noted that a majority of the activities in Table 3.2 assigned to the CAO apply to a contractor's overall management systems, not to a particular contract. There are two primary reasons for these system wide activities to be done by the CAO. First, negotiation of rates that apply to more than one contract would not be efficient for

CONTRACT ADMINISTRATION TASK	PROGRAM MANAGEMENT OFFICE	PROCURING CONTRACTING OFFICER	CONTRACT ADMINISTRATION ORGANIZATION
Conduct Post-Award Conference	P	P	L
Review Contractor Maintenance, Logistics and Safety Systems	P		L
Ensure Appropriate Restrictive Markings by Contractor	L		P Evaluate/Monitor Contractor System
Conduct Audits of Cost/Schedule Control Systems Criteria	P		L
Review Cost Performance Reports	L		P
Make Administrative Changes and Corrections to Contract		P	L
Process Change Orders	L Initiate change	Authorize/Negotiate	Authorize/Negotiate
Ensure Compliance with Contract provisions	L	P	P
Process Deviations and Waivers	L Approve	P Authorize	P Evaluate/Recommend
Ensure Notification IAW Limitation of Cost Clause	L Approve Additional Funding	P Authorize	P Receive Notice
Terminate for Convenience/Default	P Termination Decision	P Termination Decision	L Negotiate Settlement
Review Proposals	J Approve Changes	J Authorize/Negotiate Changes	J Receive/Evaluate/ Recommend
Gather Pricing Data for Negotiations		L	P
Provide Adequate Funding for Contract	L Approve Funding	P Authorize Funding	
Monitor Production Status/Progress	J		J
Review Contractors Revised Estimate At Completion, Work Plans, etc.	J		J
Observe and Report on Contractor Tests of items	P		L
Process Requests for Government Property	L Evaluate/Approve	P Authorize/Negotiate	P
Manage non-Contract Use of Government Property	J Approve Use		J Authorize Use Collect Rent
Conduct Program Reviews for Configuration Management, Data Management, Design and Production	L		P
J= Joint Responsibility **L= Lead Responsibility** **P= Participant in task**			

Table 3.1 Shared Contract Administration Tasks
Source: Developed by Researcher

PROGRAM MANAGEMENT OFFICE	PROCURING CONTRACTING OFFICER	CONTRACT ADMINISTRATION ORGANIZATION
Oversee Timely Submission of CDRLs	Review Requests for Advance Payment	Assign Responsibility for Supporting Contract Administration
Identify Design and Development Deficiencies	Negotiate Contract Price Adjustments	Administer Security Requirements
Conduct Engineering Reviews of Contractor Efforts	Negotiate Final Pricing of Incentives	Assist in Administration of Priorities and Allocations
Evaluate and Make Recommendations on Contractor's Engineering and Design Studies	Negotiate Advance Agreements	Monitor Contractor Industrial Relations
Review and Approve Requests to Purchase or Fabricate Special Test Equipment	Execute Supplemental Agreements	Conduct Contractor Purchasing System Reviews
		Review and Approve Subcontracts
		Release Shipments from Contractor
		Authorize Payment
		Assist Contractor in Obtaining Appropriate Tax Exemptions
		Issue Duty Free Certificates
		Administer Advance Payments; Maintain Special Bank Accounts
		Review Contractors Compensation Plan
		Verify Financial Condition of Contractor and Contract
		Verify Work Progress for Payment
		Conduct Reviews and Audit Contractor Insurance Plan
		Negotiate Forward Pricing Rate Agreements
		Negotiate Interim Billing Rates
		Negotiate Final Overhead Rates
		Issue Notice to Disallow Costs
		Determine Adequacy of Contractor's CAS Disclosure Statement
		Determine Contractor's Compliance with Disclosed CAS Practices
		Review Statements on Status of Progress Payments
		Submit Progress Reports on Activity, Potential or Actual Delays
		Review Contractor Practices for Preservation, Packaging and Packing
		Screen, Redistribute and Dispose of Residual Inventory
		Review Contractor's Property Accounting System
		Negotiate Settlement of Handling and Moving Excess Government Property by Contractor
		Negotiate Adjustments from Revised Shipping Instructions

Table 3.2 Contract Administration Tasks
Source: Developed by Researcher

either the Government or contractor. The contractor would incur a great deal of additional cost in negotiating rates for indirect labor and general and administrative expenses for each contract. These costs would be passed on to customers. The Government benefits by negotiating rates across all contracts eliminating duplication of effort and avoiding protracted negotiations on individual contracts over indirect rates. Second, the standards of audit and review of systems would be as varied as the number of DoD agencies doing business with the contractor. Consolidating these audits ensures that uniform practices and procedures are applied to the contractor's systems and the frequency of audits is reduced. The coordination and integration of these is facilitated by negotiated MOAs and the PROCAS concept.

D. WORKING RELATIONSHIPS AND AGREEMENTS

1. Memorandum of Understanding

The CAO must simultaneously accomplish two roles as it administers contracts. The first is to operate as the communications conduit between the PM and contractor. It accomplishes this mission by being the PM's "eyes and ears" in plant and acting as an information broker. The specific actions performed and products and services delivered by the CAO are jointly developed with the PMO when contract administration responsibility is delegated.

Upon receipt of the contract and letter of delegation, the CAO reviews the contract requirements and determines what functional specialists may be appropriate to support the PMO during performance. Each of the identified team members then reviews the applicable portion of the contract to familiarize themselves with the PM's goals and

objectives. They will then contact the PM's functional representative to establish communications. These discussions allow the CAO personnel an opportunity to gain insight into specific goals and to determine the level and type of support required. This may include reports, reviews, or inspections of particular work efforts.

After the various functional area representatives have coordinated efforts with the PMO, the PI will consolidate the support requests. The level and type of support is then translated into specific activities to be performed by CAO personnel. Depending upon the workload, personnel will be assigned full-time or on an as required basis to the PST. The support plan will include: key surveillance events, processes, products, the identification of measurement points, and activity schedules. During negotiation of the final MOA, a series of evaluation metrics will be developed. These metrics will be used by the PMO to evaluate the performance of delegated tasks. These evaluations will occur periodically and will provide the basis for improving CAO services and updating the MOA. [Ref. 18:Pt. 8]

2. Process Oriented Contract Administration Services

The CAO's second role is to provide assurance that the Government's interests are being protected in its dealings with the contractor. Over the years this has been accomplished through various laws and regulations requiring the contractor to open his financial records, cost and pricing information, and other business systems (purchasing, estimating, accounting) to audit and review. Additionally, a high degree of testing and inspection was done to ensure that products conformed to specifications.

In an effort to provide adequate oversight of contractors, ensure best possible price/cost analysis, and support PMO needs, DCMC instituted PROCAS. PROCAS focuses upon the analysis and continuous improvement of selected contractor and contract administration processes. [Ref. 18:Pt. 2]

Implementation of PROCAS is accomplished by forming cross-functional teams with the military customer and contractor. These teams then identify critical processes that will provide opportunities for continuous improvement. Contractor participation on teams is voluntary. In the event the contractor does not wish to participate, the CAO will continue PROCAS initiatives with the customer.

The goal of PROCAS is to extend or eliminate audits and reviews, saving time and money for the Government. Real measurable evidence that the Government's interests are not being compromised is required. The PROCAS system establishes metrics for assessing process improvements. For example, in one MOA, the DCMC field office is graded on the effectiveness of contract administration. The specific criteria used are:

- timely payment certification
- effective quality assurance and engineering support
- Government property administration
- effectiveness in ensuring safety requirements are met

For each area, DCMC personnel were evaluated on a scale of one to ten (1= far short of expectations; 10= greatly exceeds expectations). Scores below five require a written narrative describing the nature of the deficiency. Each criteria score is then summed for a

total grade in administration. Normally, the PCO is responsible for completing the evaluation.

E. SUMMARY

This chapter has addressed the traditional approach to accomplishing contract administration. The traditional model is characterized by the structure of the PMO and CAO. The relationship between these organizations is defined by the application of PROCAS concepts in surveillance of contractor efforts and the MOA developed between the PMO and CAO. PROCAS allows the CAO to apply cross-functional teams, representing key stakeholders, to the job of gaining insight and control over contractor and contract administration tasks to continuously improve performance and reduce oversight. The MOA provides a framework for communicating the program goals and objectives to the CAO and measuring the CAO's effectiveness in supporting those goals.

The next chapter will present a continuum of contract administration organizations. The individual contract administration models use differing methods to ensure contract performance. The confidence that the Government has in the capabilities of a particular contractor and the trust in the contractor's values, goals, and objectives will determine the contract administration tasks the Government performs and the methods used to accomplish them.

IV. ALTERNATIVE CONTRACT ADMINISTRATION ORGANIZATIONS

A. INTRODUCTION

In this chapter, the contract administration tasks will be described in the context of the six categories developed by Sherman. [Ref. 12:p. 97] These six categories will be related to the fundamental goals of contract management. From this discussion of functional categories and their underlying rationale, alternative organizational models will be introduced and analyzed to determine if a more effective model of contract administration can be developed. The characteristics, underlying assumptions, advantages and disadvantages for each alternative organizational model will be analyzed.

Successful acquisition depends upon close attention to performance. [Ref. 12:p. 2] The contract administration system and related tasks described in Chapter III represent the traditional approach to managing performance. This system emphasizes the independent interests of the parties to the contract and the conflicts that often arise from these differing goals and motivations. Additionally, Government concerns for promoting competition, small business participation, and other socio-economic policies influence the amount of control and input the Government has in a contractor's business decisions. The Government has a responsibility to the taxpayer for the expenditure of funds and so is interested in the costs incurred by contractors and how they are allocated to defense contracts. The focus on cost is necessary because competitive market forces do not always operate effectively in the acquisition of major weapon systems where there is only

one buyer and few sellers. The contract administration tasks in Chapter III represent the Government's method of dealing with this environment.

Generally, the goal of contract administration is to ensure that the contracted work is understood and that the contractor is making progress that will result in timely completion as established in the contract. Because the work effort is initiated by the contract, as opposed to buying off-the-shelf, the Government specifies or controls many aspects of the work effort. Often, in development projects, many unforeseen difficulties arise that require additional resources or innovative solutions. These issues are referred to as "unknown-unknowns" within program management organizations. These "unknown-unknowns" heighten the need for communication and mutual understanding beyond the initial agreement.

B. CATEGORIES OF CONTRACT ADMINISTRATION

The existence of uncertainty and risk in performance, as well as the complexity of major weapon systems, motivates the Government to measure and assess contract work performance and progress. In some performance areas, the Government acts as an observer of the contractor's actions, giving rise to the monitoring and surveillance tasks. For other areas, the Government requires the contractor to measure, evaluate, and report progress. When this is the case, the Government will be interested in the contractor's internal management processes and capabilities. The result is numerous tasks related to review and audit of the contractor's management systems.

The contract sets forth the general agreement between the two parties on goals and objectives. It cannot lay out the definitive solution to every conceivable problem, rather it lays the foundation for the processes to resolve issues and negotiate differences. Just as marriage vows set forth a general agreement between individuals but lack the specific steps to resolve conflicts over a burnt dinner or missed anniversary, the contract provides only the framework of the relationship; the contract management organizations working together flesh out and refine the relationship by their daily actions and decisions. In a sense, the relationship is not fully defined until the objective of the agreement is achieved. Skillful use of the tasks in each of these categories may well determine whether the relationship ends with irreconcilable differences or with successful attainment of both parties' goals. As discussed in the previous chapter, Sherman breaks down the contract administration tasks into six categories. Table 4.1 shows the distribution of the tasks developed by the researcher from Tables 3.1 and 3.2.

The first category, Monitoring and Surveillance functions, relates to the gathering of information. [Ref. 12:p. 97] Many of these functions are central to the CAO's fulfillment of their mission as the "eyes and ears" of a program manager. This area focuses on three parts of the contractor's operation: management systems (e.g., Cost/Schedule Control Systems Criteria), manufacturing and technical processes, and the operating environment (e.g., Industrial relations). The surveillance of management systems is directed at monitoring compliance with DoD or contractual Cost Performance Measurement requirements. [Ref. 12:p. 98]

MONITORING AND SURVEILLANCE

- Post award conference
- Ensure appropriate restrictive markings
- Administer security requirements
- Monitor contractor Industrial relations
- Monitor compliance with contract provisions
- Ensure notification IAW limitations of cost clause
- Monitor production status/progress
- Identify design and development deficiencies
- Verify contractor production process is producing conforming items
- Conduct inspection of end items
- Observe contractor tests of items

REPORTS AND SERVICES TO PM AND CONTRACTOR

- Oversee timely submission of Contract Data Requirement Lists
- Provide technical and administrative review of Value Engineering Change Proposals
- Assist contractor in obtaining appropriate tax exemptions
- Issue duty free certificates
- Assist with Priorities and Allocations (DPAS)
- Administer advance payment, maintain special bank accounts
- Review contractor proposals
- Gather pricing data for negotiations
- Conduct engineering reviews of contractor proposals
- Observe and report deficiencies in specifications or technical documentation
- Evaluate and make recommendations on contractor engineering or design studies, Engineering Change Proposals, etc.
- Evaluate contractor requests for deviation and waivers
- Submit progress reports on activity, potential or actual delay

REVIEW AND AUDIT OF CONTRACTOR INTERNAL MANAGEMENT SYSTEMS

- Review contractor maintenance, logistics and safety program
- Conduct contractor purchasing system review
- Conduct audit of contractor budgeting, scheduling, and accounting systems
- Verify financial condition of contractor and contract
- Verify work progress for payment to contractor
- Review requests for advance payment
- Conduct review and audit of contractor insurance practice
- Review statements on status of progress payments
- Review contractors revised estimates for cost at completion, work plans, etc.
- Conduct reviews of contractor's data management, configuration management, design and production systems
- Assess contractors Value engineering program
- Review contractors practices for preservation, packaging and packing
- Review contractor's property accounting system

Table 4.1 Categories Of Contract Administration Tasks
Source: Sherman and researcher interviews

FORMAL DECISIONS AND ACTIONS AFFECTING CONTRACTORS

- Review and approve contractor subcontracts
- Release shipments from contractor
- Determine final overhead rates
- Issue notice to disallow costs
- Determine adequacy of contractor Cost Accounting Standards disclosure statement
- Determine contractor compliance with disclosure statement
- Screen, redistribute and dispose of residual property
- Process requests for Government Property
- Authorize non-contractual use of Government Property, collect rental fees

DIRECTIONS, NEGOTIATIONS AND AGREEMENTS

- Make administrative changes to contract (corrections)
- Negotiate Forward Pricing Rate Agreements
- Negotiate Interim Billing Rates
- Negotiate contract price adjustments
- Negotiate final pricing of incentives
- Negotiate advance agreements
- Execute supplemental agreements
- Negotiate settlements of terminations
- Negotiate settlements of handling and moving excess Government property by contractor
- Negotiate adjustments from revised shipping instructions

PROGRAM SENSITIVE CONTRACT ADMINISTRATION FUNCTIONS

- Oversee timely submission of CDRLs
- Review Cost Performance Reports
- Ensure compliance with contract provisions
- Ensure notification IAW Limitations of Cost Clause
- Review proposals
- Process and evaluate changes
- Monitor production status/progress
- Identify design and development deficiencies
- Conduct engineering reviews of contractor proposals
- Evaluate and approve recommendations on contractor engineering and design studies
- Evaluate and approve contractor requests for deviations and waivers
- Review contractors revised estimates of cost at completion, work plans, etc.
- Conduct reviews of contractor data management, configuration management, design and production systems
- Conduct inspection and test of end items
- Observe and report on contractor tests of items
- Process requests for Government property
- Review and approve request for purchase or fabrication of special test equipment

Table 4.1 Categories Of Contract Administration Tasks continued

The second category is Reports and Services. This consists of supporting administration in the form of analyses, evaluations, recommendations and reports. [Ref. 12:p. 97] These services are designed to provide insight and recommendations to a PMO that may not have the resident expertise to fully analyze an issue. Additionally, by reviewing technical direction from Government and feedback from the contractor, the CAO is able to identify and track deficiencies in design or development as well as potential delays. Services provided to the contractor include Defense Priorities and Allocations System ratings to obtain critical resources, tax exemptions, and duty free certificates.

Sherman's third category, Reviews and Audits, is generally conducted on a system-wide basis. Favorable results of these audits often result in less oversight of the contractor by the Government. Unfavorable findings may result in additional oversight controls being implemented to protect the Government's interests. [Ref. 12:pp. 97-98] The DCMC PROCAS initiatives have focused on these areas. The result has been an up-front tailoring of audits to key measurement points for system validation. [Ref. 19]

The next category, Decisions and Actions, often has adverse affects on the contractor. [Ref. 12:p. 97] Examples of this would be: determination of non-compliance with Cost Accounting Standards disclosure statements, or non-allowability of costs. These actions may also redirect the contractor's efforts through changes and modifications. In the exercise of the related tasks, there is a potential for adversarial relations to develop. Claims for price adjustment due to changes as well as challenges on allowability of costs may have to be resolved under the contract disputes clause. This tends to complicate the contract relationship, as an outside party becomes involved in

resolving the issue either through alternate dispute resolution, contract review board hearings, or litigation.

Sherman's fifth category is Directions, Negotiations, and Agreements; it involves the transactional nature of the contract relationship. The focus is on the interaction between the Government and contractor to resolve problems, to redirect effort, or to settle claims. [Ref. 12:p. 97] Often a 'win-lose' attitude taken by the parties makes these interactions divisive. The successful accomplishment of these tasks takes not only the individual skills of those involved, but a full knowledge of the background and context of the issue, including an understanding of the interests and motivations of the other party.

The complexity of the project and the phase of the acquisition will determine what functions are Program Sensitive, Sherman's final category. They can, however, be broadly described as those functions that provide information and analysis. Typically, tasks dealing with changes, technical evaluation, and funding determined to have the greatest potential impact on cost, schedule and performance will be included in this category. [Ref. 12:p. 98] Whether developed from inside or outside the PMO, they are critical to decisions by the PM regarding direction to the contractor or the allocation of resources to manage program risk.

C. ORGANIZATIONAL MODELS

The traditional contract model described in Chapter III is based upon an assumption of conflicting motivations and objectives for each party entering a contractual relationship. Because of this, the majority of contract administration tasks involve the actions taken by the Government to protect its interests. This section will present four

organizational models along a continuum. Movement along the continuum is based upon who has primary control of contract performance. The need or desire for control is a function of the confidence and trust between the parties and their ability to interact during contract performance. This continuum is depicted in Figure 4.1. The Arsenal Model represents the highest level of Government control of the acquisition process, because the

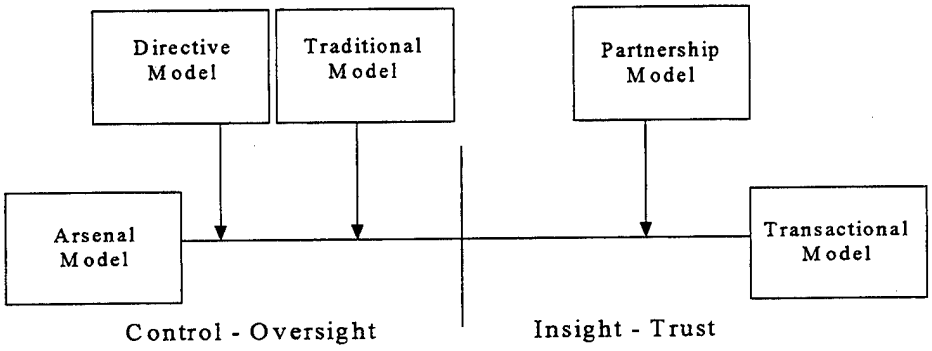

Figure 4.1 Contract Administration Continuum
Source: Developed by Researcher

Government is responsible for all aspects of development and production of the system. The Government exercises somewhat less control in the Directive Model. A commercial contractor performs the work, subject to intense Government inspection and verification of processes and products. The Partnership Model relies upon teamwork and interdependence between the Government and contractor. Government control is exercised through understanding of contractor goals and motivations. The Transactional Model places full control of contract performance on the contractor. The underlying assumption is that the Government's best interests are served by allowing the contractor to exercise his best judgment in contract execution.

Contractors have complained that oversight performed by the Government imposes costs that far outstrip any benefit to the public. One study of the defense industry estimated an average cost premium of 18 percent attributable to Government oversight and regulation. [Ref. 20] Some contractors have stated that the need for approval and verification of management systems and processes adversely affects the contractor's flexibility in addressing program issues and taking advantage of innovation. Each of the four models addresses the issues of cost effectiveness and responsiveness, but in different ways. The underlying assumptions behind these organizations also varies. The characteristics of each model will be presented, followed by an assessment of advantages and disadvantages.

1. Arsenal Model

a. Discussion

An Arsenal Model is defined as the Government exercising total control over the development and production of a weapon system. The development and production of weapon systems using an Arsenal Model would have a major impact on acquisition organizations. The Government in this environment is both buyer and seller. Presumably, both sides share identical values, goals, and objectives. Because the arsenal does not operate on a profit motive, and the data concerning costs are fully available to the buying agency, the level of skepticism and distrust that exists in dealing with commercial enterprises is not a factor.

The relationship will not have all of the contract structure that would exist between two independent organizations. Some level of competition, either between

arsenals or with private firms, would maintain a separation between the buying and selling organizations. This preserves the elements of a contract (offer, acceptance, consideration) and defines the agreement between the organizations.

The Arsenal Model is different from a Government-Owned Contractor-Operated (GOCO) facility. In a GOCO, the facilities and tools are provided by the Government, but a commercial organization (contractor) performs the work to a level defined in the contract. The GOCO contractor is motivated by profit, and exercises management control over the work and the personnel who perform it. This allows for an infusion of technical capability and innovation that is not available in the closed arsenal system.

The requiring Service would develop an organization to define the scope of work, schedule, and resources available. The arsenal would provide the technical and management expertise required to complete the project. The arsenal would also project estimated costs to complete the contract. The verification and inspection of processes, and evaluation of changes normally done by a CAO in the Traditional Model would no longer be required.

Performance measures and assessments would be accomplished by the arsenal. Identification of deficiencies and resolution of program risk and uncertainty would be joint responsibilities. Because the Government is solely responsible for all aspects of the project, either through the requiring activity or the arsenal, a field office to conduct administration tasks would not be required.

b. Contract Administration Tasks

Under an Arsenal Model, many of the functional categories are no longer required or have a significantly reduced number of associated tasks. The Review and Audit functions would no longer be performed. The systems in-place to manage the contract are developed by the Government. Also, Formal Decisions regarding the use or disposition of Government property or compliance with Cost Accounting Standards would not be necessary.

The tasks in the Monitoring and Surveillance category would be the responsibility of the arsenal (e.g., security requirements, restrictive markings). The Arsenal would also perform many of the Report and Service tasks. Although the Service would continue to review change proposals and provide input on trade-off decisions, the arsenal could perform the technical evaluations required. The arsenal could also obtain its own duty-free certificates and tax exemptions.

Negotiation of agreements would encompass most of the tasks from the Traditional Model. Those areas dealing with advance agreements or cost allowability issues would not be required. The negotiations might be less intense than in the other models, since cost data are fully known by both parties and the arsenal does not operate on a profit basis.

c.. Advantages

Government manpower requirements for managing the program would be considerably lower in this model than the Traditional Model. The contract management tasks related to design, development, and production processes could be the responsibility

of the arsenal and might not require oversight. The ability to conduct investigations and audits to detect waste, fraud, or abuse could be performed by the Inspectors General and General Accounting Office. The buying activity would be responsible for the administrative tasks of corrections, administration of payment, and acceptance of the items.

The Government would employ large numbers of technical experts and scientists. This coupled with the tooling and facilities would provide a great deal of flexibility in meeting material requirements. In the event of national emergency, Government facilities could immediately have their work efforts redirected to meet the most critical needs. While this might create a certain amount of waste and inefficiency, it would be much more effective than the process of terminating contracts and negotiating new work with commercial industry.

Because the Government is solely responsible for all aspects of the project, either through the requiring activity or the arsenal, the redundancy of a field office to conduct administration tasks would not be required. This would allow technical experts employed by the Government to focus effort on development of technology and process improvements instead of monitoring and oversight. The Government would also save the costs associated with the support structure (e.g., facilities, equipment, training) of field offices.

Finally, the Government would have full control over the subcontract and supplier relationships, gaining a stronger ability to pursue socio-economic policies. At the

arsenal level, the Government acts as employer, and as such it can determine the hiring goals and promotion processes to achieve the desired level of workforce diversity.

d. Disadvantages

The use of an arsenal system removes all market forces from the process of acquiring weapon systems. The absence of competition eliminates one of the primary motivations for industry and workers to innovate. There are also no outside pressures to drive the arsenal to continually assess their efficiency and to strive to improve their processes. The arsenals, as highly specific Government industries, are isolated from the technologies being developed in commercial business and may lack the knowledge and expertise to adapt new technology to their work. Competition between arsenals might help to mitigate this disadvantage by motivating process improvement and efficiency, however, the cost of the competition might be perceived as wasteful by the general public.

The Government may encounter difficulty in maintaining the breadth and depth of the technical and scientific disciplines required to develop and produce major weapon systems. The time between major new projects may lead to large numbers of underutilized personnel that do not have skills that are transferable to other projects. Although upgrades to current systems and preplanned improvements would maintain a base workload, it might not be sufficient to employ the numbers of technical personnel required for a major development project.

2. Directive Relationship Model

a. Discussion

The Directive Relationship Model is defined as the Government managing contract performance through mandated processes and procedures. This model closely resembles an employer-employee relationship. The Government gives guidance on work performance and then directly supervises its performance. This model would require a very large Government organization to manage acquisition of a weapon system. Although detailed specifications and process descriptions are not necessary for this model, it would not be uncommon to see detailed statements of work. This is accomplished through the inclusion of specifications and standards, written by the Government, regarding the end product and the process used to develop, manage, and produce it. The Government would exercise greater control over configuration management, as well as making design specifications.

The most effective organization for the Government would be a centralized buying agency. This agency would be responsible for all activities in acquiring a weapon system. A large number of technical specialists would be needed to maintain specifications to ensure that they accommodated the best technology available. In the contractor's facility, a significant number of technical representatives would be necessary to monitor compliance with and documentation of processes and procedures. These activities would need to be closely coordinated to efficiently control contractors. The central agency would take over the program management functions as well as the traditionally delegated functions. This structure would ensure a uniformity of program planning and execution.

This would facilitate the use of mandatory procedures and processes by the Government. A central organization having control of all functional and technical experts involved in the acquisition process could more effectively utilize personnel, moving them from project to project as required. Additionally, this structure would provide a vast source of knowledge and experience in resolving program issues.

The PMO would no longer be required in the Directive Relationship Model. Each Service would identify and define their requirements and strategy guidelines for acquiring a system. The central buying agency would then develop and execute the acquisition plan, from solicitation to contract completion. The requiring activities would assume the responsibilities as program sponsor within DoD, as well as with outside agencies.

The contractor would maintain responsibility for identifying deficiencies or trade-off issues. Analyses, recommendations, and decisions regarding trade-offs would be accomplished by the Government. Implementation of changes or trade-off decisions would also be specified by the Government. The contractor would be responsible for following the Government-determined processes; implementation would then be verified by the Government.

b. Contract Administration Tasks

The performance of all six of the categories of contract administration would continue to be required. The methods used in the areas of Monitoring and Surveillance, Reports and Services, and Review and Audit would change substantially. In the first area, inspection of items could grow to a 100% inspection to eliminate all defects.

The verification of a contractor's processes might include stipulating the process to be used and verifying its implementation. The level of evaluation of reports and proposals generated by the contractor would also increase. Because the Government, not the contractor, maintains configuration control and process control, the technical assessment burden is borne solely by the Government. Reviews of contractor's financial condition and internal accounting and budgeting systems would increase in scope and frequency, to ensure that the Government's interests are protected.

The tasks performed in rendering formal decisions and negotiating with the contractor would be like those performed in the Traditional Model. The Government would have a greater volume of reports, evaluations, and audits upon which to make decisions or to develop positions for negotiation.

Program Sensitive functions would include all areas dealing with technical evaluations, control of configuration, and data management. Under the directive approach, the Government assumes a great deal of technical and management risk. This, in turn, could lead to additional controls and decisions that seek to avoid risk.

c. Advantages

In this model, the Government fully controls factors of supportability, as well as interoperability. These factors include such things as configuration management, logistics supportability, and current system compatibility. This ensures, through the Government's control, that the appropriate infrastructure exists to support the weapon system that is being acquired.

A directive relationship also allows the Government to create and maintain a highly skilled workforce to use in developing and maintaining specifications and standards found in the contract. The development of specifications and verification of their implementation by the contractor make it necessary to have large technical staffs, both in contractor's facilities, as well as large matrix organizations, supporting program managers.

In this model, the Government can also closely scrutinize and control risk elements inherent in systems development and integration. Because of the Government's high level of control, the technical staff will have already analyzed specifications and processes. Possible risks will have been identified and methods to manage, or avoid, the risks will be developed.

Another advantage for the Government in this model is the reduced risk of waste, fraud, and abuse. Because the Government's staff is closely involved in all aspects of the production, there are fewer opportunities for contractor employees to take advantage of the situation. The Government also controls the contractor's methods for allocating and controlling costs, including a continuous audit and review, making it virtually impossible for the contractor to enter fraudulent or erroneous data.

Because the Government has developed so many of the specifications and developed management plans for the risks, they are not tied to one specific contractor. The technical staff of the Government can be used to work with a contractor of their choice to implement their processes and designs, eliminating the need for a contractor with experience in producing similar items. This would be most effectively used in times of

national emergency, when production must be increased, as well as in times of contractor/Government relationship problems.

Finally, the Government specifies accounting rules and systems for the contractor's use in determining his costs. After implementing these systems, they are subject to periodic audits and inspections. The use of Government approved processes and the continual oversight of their use by the contractor increases the Government's confidence that cost data are accurate and complete.

d. Disadvantages

The Directive Relationship Model also has some disadvantages. The Government requirements for management systems and specific processes make it cost prohibitive for many firms to enter the defense sector. For a commercial sector contractor to expand into the market would, in effect, require the use of two sets of business systems. Conversely, defense sector businesses will find it difficult to compete for commercial contracts because of the high costs they incur complying with Government system's criteria and reviews.

There will be a substantial increase in administrative costs to perform Government contracts. Contractors will incur costs in implementing and documenting the systems. The Government will conduct periodic audits and reviews of the contractor's documentation, incurring manpower costs for staffs of both the Government and contractor. Any deficiencies or deviations from approved processes will require correction and follow-up audits.

Another significant disadvantage is the lack of encouragement for innovation. The tight controls placed on the contractor under this approach remove the incentives to innovate and improve processes. Additionally, the barriers between commercial and defense industries make it difficult to adapt management and technological innovations.

Finally, this model conflicts with the current acquisition philosophy. The current view is that private industry has proven methods of developing and integrating systems. This system, with its focus on control of contractor effort, reduces the contractor's ability to adapt to technological change and management innovations.

3. Partnership Model

a. Discussion

The Partnership Model is defined as the Government and the contractor working together to satisfy common and individual goals. The model has a complementary, interdependent structure. Each party relies on the specific skills and experience of the other for successful accomplishment of the contract goal. The Partnership Model is based upon a belief that the values, goals, and objectives of the parties to the contract do not have to be in conflict. The motivations for each party may be different, but are seen as complimentary or congruent. Further, for those goals and objectives that may appear to be in conflict, it is believed that a course of action can be arrived at that will mutually satisfy the parties.

Arriving at mutually beneficial solutions for achieving individual goals, as well as for achieving the objective of the contract, requires in-depth knowledge and

understanding of the other party's position and motives. Ideally, this requirement is satisfied by collocating the Government and contractor. The use of shared databases and software management systems ensures complete knowledge by both parties.

b. Contract Administration Tasks

The organizations required to successfully implement a partnering approach to contract performance would be different from the Traditional Model. The functions of surveillance, audit and review are replaced by concurrent development of work plans, processes and performance measures within the team structure. The immediate access to information and communication throughout the partnership allows management decisions to be made based upon a clear understanding of issues, instead of verified compliance with imposed policies and processes.

The Government organization entering into a partnership would have to include all necessary functional specialists under a unified authority structure. All functions of contract management that remained a Government responsibility would be accomplished by this single organization instead of the PMO-CAO structure that exists in the Traditional Model. Because the members of each IPT must be given the authority to act on behalf of their organization, the Government representatives all need to be accountable to a single authority.

The contractor in an IPT environment would be responsible for developing the technical approach to contract performance as well as managing program costs. IPTs involved in development, production, and management processes should be led by contractor personnel, because the ultimate responsibility for performance rests with the

contractor. Government IPT members must be able to communicate the position of the PM on issues involving trade-offs. Agreements made by the Government team member are not subjected to review and approval at higher levels. Decisions made are only revisited if changes in the situation or new information make it necessary.

The Partnership Model performs contract administration tasks using vastly different methods than the other models presented. Many of the tasks from several of the of the categories are performed concurrently in an IPT. In some cases, the purpose of the task is fulfilled without a specific link to an action.

The tasks accomplished in Monitoring and Surveillance of verification and inspection are reduced by jointly developed policies, processes, and procedures. The goal of the remaining tasks is not to ensure the other party's performance, but to identify what actions need to be taken or resources allocated by the Government to improve performance. Some Government services provided to the contractor would continue to be the Government's responsibility (e.g., obtaining duty-free certificates). Proposals, studies, and reports submitted by the contractor are developed, reviewed, and approved by the appropriate teams concurrently.

Internal management systems would be adapted through the Government-contractor teams. Ultimate decisions on budgeting, scheduling, and accounting systems would be the contractor's responsibility. Teams would identify the critical data points requiring measurement and the data evaluation criteria. Review, audit, and verification would then become a joint task between the Government and contractor.

The authority to make decisions would reside in the teams. Formal ratification by authorized Government officials would be required. Decisions about the adequacy or compliance of a contractor's system would no longer be required. Determination of compliance with Cost Accounting Standards, for example, would be replaced by team agreement that internally developed standards and processes were adequate to control the program and protect the interests of both parties.

The tasks in the Directions, Negotiations, and Agreements category would still be accomplished. Some, however, would be collapsed into the team proposal-review process. For example, engineering change proposals, and their cost impact, would be evaluated and agreement made in the appropriate IPT. Other non-contract specific negotiations would continue to be performed in the traditional manner.

The Program Sensitive area would potentially encompass all of the tasks being performed by teams. Because the partnership focuses on the responsibility that each party to the contract has in resolving issues, the PM needs to be aware of all internal and external environmental factors that could affect the program.

c. Advantages

A precondition to successful IPT implementation is open communication and shared access to all available data. This "real time" knowledge by both the Government and contractor make the decision making cycle shorter. The time an individual team spends resolving an issue will be longer, because the team members will have access to far more information than under other models. The concurrent resolution of problems will involve a wider variety of input. Once the decision is made at the team

level, the process is much quicker. Because the decision process is parallel instead of sequential, the review and approval required at higher levels is streamlined.

Bringing together the two parties face-to-face through collocation and frequent meetings will lead to a better understanding of each party's underlying motives and priorities. This deeper level of interaction and shared information builds trust between the parties, reducing the need to verify actions.

Trust and teamwork are enhanced because the teams come together to develop standards for policies, procedures, and processes. This differs from the Transactional Model where no standards are implemented, and from the Directive Model where standardization is imposed by the Government. Standards internally developed by the personnel involved in the work increases the likelihood that they will be followed, reducing the need for oversight activities. Additionally, the teams that develop the procedures and processes are the same teams that will identify program problems and will be better able to determine if a particular set of circumstances warrant a deviation from the standard, or if the standard should be reviewed.

Using teams and promoting communication early and throughout the organization reduces the likelihood of failures due to poor planning or misunderstandings. In the event of a program failure, the IPT approach increases the chance that the issues will be resolved without resorting to litigation. The Government and contractor will have opened the lines of communication and established a relationship that lends itself to other forms of problem resolution such as arbitration and mediation.

d. Disadvantages

Implementing a partnership through IPTs requires a high initial investment of resources. The costs of training, collocation, and time spent in developing team work may cause many managers to abandon this approach. The costs are prohibitive if the project is of short duration. In some instances, the cultural and philosophical changes required to successfully team may be difficult to achieve, requiring more expenditure of time and money.

To permanently change the organization's focus toward operating in teams requires tremendous effort by upper and mid-level management. Studies suggest that some organizations take three to five years to fully embody the necessary cultural and philosophical changes. [Ref. 22:p. 23] These changes require not only changing the perception of the other party, but also creating a willingness to delegate authority into the lower levels of the organization. This is especially difficult in the military setting due to the hierarchical chain of command.

Over time in the organization, functional specialists may not be able to keep up with advancements in their functional area. If a member is continuously assigned to teams, exposure to a wide variety of tasks and innovations may not take place. Also, because the team becomes the "home" of the assigned technical and functional experts, they will be isolated from their colleagues, missing out on the opportunity to share knowledge and experience.

In an IPT organized workplace, the opportunity for unethical practices, corruption, or conflicts of interest may be higher because of the close working

relationships developed between Government and contractor personnel. Even if actual cases of such behavior are no more common than under other organizational arrangements, it will be more difficult to avoid the perception of impropriety. If both the Government and contractor promote, within their organizations, a 'win-win' philosophy based upon teamwork and high moral standards, this risk can be effectively mitigated. A continuous emphasis on team oriented success through training, policy statements, and personal involvement of upper-level management are the keys to creating an ethical workforce, under this or any other organizational arrangement.

4. Transactional Model

a. Discussion

The Transactional Model is defined as a discontinuous relationship that brings the Government and contractor together for the exchange of a product and payment. In its pure form, this model brings the Government and contractor together before award of the contract to ensure understanding and agreement on the scope of the work as well as a schedule for completion and delivery. A fixed-price or method of determining the amount to be paid for the work is also agreed upon. After both sides sign up to the contract, they go their separate ways until delivery. The parties refer to the contract for guidance and issue resolution. The relationship is purely transactional in nature.

The Government organization required to manage acquisition in this environment is much simpler than the Traditional Model. Prior to award of the contract, a fairly large staff would be needed. This staff would consist of technical experts and

functional representatives from finance, legal, and contracting. They would be responsible for working with the users to define the requirement and prepare a solicitation. Their final task would be to conduct an assessment of each offer received and judge the technical merits and realism of both the management plan and associated costs. After award, the program management requirements would be minimal and most of the staff would be reassigned to other work. The remaining role of the program office would be to receive the deliverable items, process requests for payment, or approve changes.

b. Contract Administration Tasks

No contract administration organization, as it exists in the Traditional Model, would be needed. The presence of Government personnel in the contractor's facility would not be required or desired. Because the Government would rely solely on the contractor to monitor his overall business environment and contract performance, no reviews or audits of business systems is necessary. Reports traditionally made to a buying command by the resident CAO identifying deficiencies in specifications or technical documentation, potential or actual delays, and submission of Contract Data Requirements Lists (CDRLs) would become the contractor's responsibility. The evaluation and review of proposals, engineering and design studies, and requests for waivers or deviations to contract requirements would be handled by the PM. Reviews conducted by Government employees familiar with a contractor's facilities, capabilities, and personnel would not be performed.

The contractor would have maximum freedom in developing and implementing his work plan. The only internal management systems required would be

those determined necessary by the contractor. The contractor would be free to pursue any subcontract or supplier relationship deemed most suitable, whether competitive or non-competitive. The contractor would be solely responsible for tracking work progress, conducting testing and accounting for Government property. The contractor would also be responsible for monitoring his firm's internal and external operating environment and advising the Government of any changes that would adversely affect contract performance. For example, the firm's general financial health and current financial status of the contract (incurred costs, ahead or behind schedule) would be known only by the contractor. The sole responsibility for identifying the problem, and for solving it, remains with the contractor. Also, the Government would rely solely on the contractor's input for any labor disputes or collective bargaining agreements that may impact performance.

The lack of interaction between the Government and contractor in this model would greatly reduce the number of functions to be performed during contract performance. The need for Review and Audit tasks would disappear completely, as would Monitoring and Surveillance functions. The only remaining function from the latter would be dealing with limitation of cost clause notification. This task would change from ensuring notification by the contractor to receiving notification from the contractor.

The Report and Services tasks performed by the Government for the contractor would still need to be provided. Issuing duty-free certificates and assisting with Priorities and Allocations ratings would require Government action. Formal decisions would be limited to acceptance of items and the redistribution or disposal of residual Government property.

Program Sensitive tasks would include receiving CDRLs and notices regarding the expenditure of funds. The Program would also continue to review contractor change proposals. The tasks in the category of Directions, Negotiations, and Agreements would be performed as in the Traditional Model.

c. Advantages

There are four major advantages to the Transactional Model. Two of the advantages directly affect the cost of acquisition. The other two are general benefits to the parties. In addition, they have cost advantages but also more broadly enhance contract performance.

First, the Government will save money through reduced manpower requirements throughout the acquisition cycle. The pre-award manpower requirements would remain, but virtually the entire staff could be reassigned at award. The remaining program office staff would make routine actions, such as correcting administrative errors, processing payment requests, and accepting the end items. Negotiation of changes or major program performance issues could be supported on an as required basis from a matrix support organization. This support would be on an as required basis, and except for the most complex issues, would probably consist of part-time support. A flexible MOA would be required with appropriate metrics to ensure responsiveness to program needs. The functional area managers would be responsible for developing the policies and procedures used in supporting a program as well as the training and administrative support of matrix personnel. In those cases where long term or full-time support is needed, the PM would provide input for personnel evaluations.

Another cost related advantage is the reduced manpower and documentation costs incurred by the contractor. The current system of audits and reviews forces many defense contractors to set up entire office structures to maintain and document Government approved business systems. Audits sometimes last for months, draining resources and diverting management attention from the actual work being accomplished. The Government would benefit from reduced contractor costs, assuming the savings are at least partially passed along to customers.

A survey of successful program managers[1] indicated that two main factors in success were PM and contractor flexibility and recognition that all development programs are different. [Ref. 20] The ability to conduct trade-offs is facilitated by reducing the number of policy and process constraints that affect a decision by the PM. Disengagement would allow a greater degree of flexibility to the contractor in resolving critical program issues. The ability for a contractor to change a process to address issues resulting from unforeseen events without subjecting the change to Government audit, approval and review, makes it possible to rapidly adapt to technological change or management risk.

Finally, competition for major weapon system contracts would drive contractor's to push the limits of technology and specialize in specific areas of integration. This consolidation of expertise would occur from the pre-award evaluation phase. Because the Government would lack the ability to monitor progress or assist in resolving

[1] Successful program managers were those military and contractor PMs whose programs had been successful in fulfilling mission requirements or delivery on time or ahead of schedule within cost targets.

trade-offs and "unknown-unknowns", the evaluation and award phases would be much more rigorous. The ability to fix a less than optimal pre-award planning during post-award administration would not be available. Contractor's past performance, integration experience, and their technical personnel will have a more significant influence on the selection process.

d. Disadvantages

The Government could find it difficult to coordinate and ensure the interoperablity and supportability of the weapon system. This is particularly important since the Services rely heavily on a "system of systems" approach to force structure. The lack of input on trade-off decisions and reliance on the contractor's technical expertise and judgment may produce a system that performs correctly but does not adequately conform to the existing supply, maintenance, and support capabilities of the Service. The added value of reviews conducted by Government employees familiar with a contractor's facilities, capabilities and personnel would be lost without the in-plant presence.

During design and development, the Government has little input into decisions made to resolve problems associated with "unknown-unknowns". This may lead to less than optimal trade-offs being made based upon the contractor's judgment without the benefit of Government guidance. If the problems begin to adversely affect cost and schedule, the Government may not have adequate information and analysis of the problem to make a decision on whether to allocate additional resources to the program or to terminate it.

Configuration of the item is the sole responsibility of the contractor. The Government's lack of knowledge concerning configuration may adversely affect interoperability and spares provisioning during the system life-cycle.

The inability to observe contractor tests of items will make it difficult for the Government to identify potential design deficiencies. This will reduce the ability of the Government to allocate additional resources to more fully develop the technology. Actual performance cannot be estimated prior to delivery of the item.

The Government will have lost the opportunity to pursue public policy goals. The ability to promote small business participation in defense work and competition in general is lost beyond the prime contractor level. The Government would no longer monitor the relationships established with subcontractors and suppliers, trusting the contractor to make the best business decisions in these areas.

Some traditional cost control incentives will be difficult to use without an in-plant presence to monitor and evaluate contractor efforts. The lack of information regarding a contractor's cost structure and allocation could reduce the Government's ability to motivate the contractor to greater efficiency. This may also increase the likelihood that contractors will improperly or fraudulently allocate costs to the Government.

D. SUMMARY

This chapter has described the six categories of contract administration tasks developed by Sherman: Monitoring and Surveillance; Reports and Services; Reviews and Audits of Contractor Internal Systems; Formal Decisions and Actions; Directions,

Negotiations, and Agreements; and Program Sensitive Functions. The underlying beliefs and circumstances which exist that motivate the Government to perform these tasks were discussed. Four organizational models (Arsenal, Directive, Partnership, and Transactional), were developed to illustrate how the acquisition environment and beliefs about the values, goals and objectives of a contractor shape the methods used to accomplish contract administration tasks. The models presented represent points on a continuum from nationalization of industry to complete disengagement. Along the continuum, the focus of management shifts from the ability to monitor and control the other party (oversight), to gaining mutual understanding to promote successful attainment of each party's individual aims (insight).

In the next chapter, the U. S. Marine Corps' Direct Reporting Program Manager Advanced Amphibious Assault Vehicle (DRPM AAAV) program will be examined. The organizational structure developed by the DRPM AAAV to manage the Program Definition and Risk Reduction (PDRR) phase of the acquisition will be described. An analysis of the decisions about program office structure and management will be made in light of the PM's goals and objectives as well as his beliefs about the contractor's goals and objectives.

V. DIRECT REPORTING PROGRAM MANAGER ADVANCED AMPHIBIOUS ASSAULT VEHICLE

A. INTRODUCTION

This chapter will analyze the structure and organizational agreements created by the DRPM AAAV for performance of the PDRR phase contract with General Dynamics Amphibious Systems. A brief background of the AAAV program will be presented. The decisions regarding the structuring of the PMO and the agreements between Marine Corps Systems Command (MARCORSYSCOM) and DCMC Manassas will be described. An evaluation of the management decisions made by DRPM AAAV in comparison with the models developed previously will conclude the chapter.

B. HISTORY OF THE ADVANCED AMPHIBIOUS ASSAULT VEHICLE

During the late 1980s, the Navy and Marine Corps began developing new operational concepts for the employment of Naval Expeditionary Forces. These concepts, developed in response to the collapse of the Soviet Union, the increase in regional conflict and the use of military forces for operations other than war, were published in Department of the Navy's "...From the Sea." [Ref. 23] Part of the overall concept for employing Naval forces addressed projecting power ashore using the sea, air and land as a continuous maneuver space. The current Marine Corps Assault Amphibian Vehicle (AAV) is inadequate to execute the high speed maneuver envisioned in "...From the Sea." [Ref. 23] The Marine Corps identified the need for a new assault amphibian that was capable of over-the-horizon operations and attaining a water speed of 25 knots. [Ref. 24] During

the Concept Exploration phase, 13 alternatives were evaluated to meet the operational requirements. The Advanced Assault Amphibian Vehicle was determined to be the most effective means of meeting the requirements for speed, maneuverability and survivability. Two contractors, United Defense Limited Partnership and General Dynamics Land Systems, competed for award of the PDRR contract.[Ref. 25] The PDRR prime contract was awarded to General Dynamics Land Systems in June 1996.

The Government had included, in the Request For Proposals, the intent to use IPPD concepts and IPTs to plan and execute the program effort. Further, the Government required each offeror's proposal to include the establishment of a facility where the contractor and PMO could be collocated. To facilitate collocation with the Government PMO, General Dynamics formed a new division, General Dynamics Amphibious Systems, to perform the contract. They are currently collocated with the PMO in a facility in Woodbridge, Virginia.[Ref. 26]

C. ORGANIZATION OF PROGRAM OFFICE

This section will describe the organizational structure of the PMO and the operating agreements with DCMC Manassas and MARCORSYSCOM. The rationale for use by key decision makers in developing these agreements will also be presented.

1. Program Management Office Structure

DRPM AAAV developed a large, highly projectized staff. The program office is structured around seven areas of responsibility: AAAV personnel variant, AAAV communications variant, engineering, logistics, operations, business and finance, and contract management.[Ref. 27] The total organic staff totals 74 billets. Currently, 46

personnel are on the staff.[Ref. 3] The PCO and legal counsel are provided to DRPM AAAV from the MARCORSYSCOM support matrix. They are physically located in the PMO. The main reasons for taking this structural approach are: availability of matrix support, desire for strong central control of program functions, and the complexity of the subsystems and technology integration effort. [Ref. 26]

Some of the engineering and logistics effort of the PMO is being performed by contractors operating under Contracted Advisory and Assistance Services (CAAS). These contracts will be phased out as personnel are hired to fill the remaining 28 vacancies in the PMO. DRPM AAAV may continue to contract out some services. [Ref. 3]

All of the program work is accomplished through IPTs. There are 23 IPTs, divided into four levels. The levels correspond roughly to the Work Breakdown Structure. The "A" level deals with major program and budget issues and consists of the Government and contractor PMs and level "B" team heads. Level "B" teams are responsible for system integration and production. They maintain control over trade-off issues. (e.g., determine which subsystem will be allocated additional weight.) Level "C" teams monitor and control discrete performance parameters of the vehicle, such as firepower or mobility. The level "C" items are then delegated down to the individual work package level, level "D". Some ad hoc IPTs have been formed to deal with tasks such as writing the risk management plan and developing the simulator development schedule. All IPTs are contractor-led with Government participation. Where appropriate, subcontractors and Government support contractors are also IPT members. One Government-only IPT is made up of the seven division heads. The PMO staff have

attended several IPT training sessions. The PST personnel, however, were unavailable for that training.[Ref. 27]

2. Organizational Agreements

DRPM AAAV functions under two major operating agreements for personnel and other resource support necessary to manage the program. The first agreement is between MARCORSYSCOM and the Assistant Secretary of the Navy for Research Development and Acquisition (ASN(RDA))[Ref. 28]. ASN(RDA) is the required approval authority for this agreement because DRPM AAAV is under his operational control. The second agreement is between DRPM AAAV and DCMC Manassas. Currently, an informal agreement has been established to implement formation of a PST[Ref. 18]. Final agreement and approval of an MOA is expected in January 1997.[Ref. 29]

a. Marine Corps Systems Command Operating Agreement

The Commander MARCORSYSCOM is the Head of the Contracting Activity. As such, he retains responsibility for ensuring compliance with applicable regulations and procedures. This function is fulfilled in their agreement to assist in development of acquisition planning, including assignment of a PCO and legal counsel. The eventual strategy for the AAAV program is to transition control to MARCORSYSCOM when:

- Initial operational capability and production maturity and stability have been achieved.
- Design maturity and stability has been achieved(no Pre-Planned Product Improvement P^3I or block upgrades involving developmental risk)
- Program maturity and stability have been achieved (No outstanding Defense Acquisition Board/Marine Corps Program Decision Memorandums) [Ref. 28].

The decision to transfer program responsibility to MARCORSYSCOM will be made by the Milestone Decision Authority, the Under Secretary of Defense for Acquisition and Technology. To facilitate the eventual transfer of program responsibility, MARCORSYSCOM will continue to provide support and guidance for engineering policy, as well as standards and specifications to ensure compatibility with existing systems.

The Deputy for Financial Management at the SYSCOM will develop the policies and procedures for financial management. He will also act as the administering and budget submission office for the program funds. DRPM AAAV retains reprogramming authority, within established guidelines. MARCORSYSCOM has review and administrative responsibility for accounting procedures, higher level reprogramming of funds, and compliance with anti-deficiency controls. [Ref. 28]

An Advanced Amphibious Assault Coordination Group (AAACG) was formed as part of the MOA. The group convenes on an as needed basis, to resolve issues concerning functional support and provide an information exchange on policy implementation and procedures. [Ref. 28] Any issues that cannot be resolved by the AAACG are forwarded to the appropriate Department of the Navy or Marine Corps official. No metrics for evaluating the MOA were established.

b. Defense Contract Management Command Operating Agreement

DRPM AAAV and DCMC began planning for a PST in November of 1995, seven months before award of the PDRR contract. The PMO began planning for

the use of DCMC support after receiving correspondence from the DCMC headquarters outlining their services available for use by a PM. DCMC Manassas was designated as the field office responsible for providing resources and negotiating an MOA [Ref. 18].

An initial meeting was conducted between the PMO division heads and a Program Integrator from DCMC Manassas. This meeting was to educate the PM on the range of services available from DCMC and to begin identifying areas of required support [Ref. 18]. The PMO staff identified the need for a software quality assurance representative, an industrial engineer, a mechanical engineer, an ACO, and support for the program's integrated logistics support effort. During this meeting, the PM stressed that all PST members would be fully integrated into the office and participate in IPTs. Because of uncertainty about the timing and level of support needed in some functional areas, a phased approach was used in developing the PST staffing [Ref. 18].

The first phase of staffing the PST occurred in September/October 1996. The ACO, software specialist, mechanical engineer and general engineer were brought on board. The general engineer has been assigned on a temporary basis for logistics support. During phase two, a permanent replacement will be assigned. Phase two will be completed in December 1996 with the assignment of a procurement clerk, PI, and the permanent general engineer. The last phase is currently scheduled for February 1997 when another mechanical engineer will join the PST. [Ref. 29] The assignment of personnel has been slower than expected because DCMC Manassas has had to hire many of the support personnel or have them transferred from other DCMC field offices.

DRPM AAAV requested that they be actively involved in the selection of PST members. DCMC headquarters disapproved the request, believing that allowing the PM even limited input in hiring would detract from the "independence" of DCMC personnel. [Ref. 18] Informally the division heads from DRPM AAAV reviewed resumes to provide an assessment of an individual's suitability. DCMC also expressed concern about the participation of PST members on IPTs. The position taken by DCMC is that PST personnel should only participate to the extent that they provide explanation of contract requirements or identify issues for process improvement. [Ref. 30] PSTs should not be involved presenting the PM or Marine Corps input on trade-off decisions or other program control issues. Their involvement in this area would make them active participants in those areas where they are chartered to provide independent assessments [Ref. 11].

D. ANALYSIS

The office structure and operating agreements developed by DRPM AAAV appear to maintain a traditional organizational structure, but superimpose some of the characteristics of the Partnership Model onto this structure. Integrating the PST into the program office and collocating with the contractor shifted many of the functions traditionally assigned to the CAO to the IPTs. This means that the PMO and the contractor have expanded responsibilities, especially in the area of monitoring work status as well as surveillance and evaluation of contractor management processes. The management and control of the program using the IPPD concepts has also changed the methods used to satisfy task requirements. The resulting PMO-CAO-Contractor team

structure represents an evolutionary step from the traditional model described in Chapter III toward the Partnership Model developed in Chapter IV. Figure 5.1 depicts the AAAV PMO on the continuum in relation to the other models.

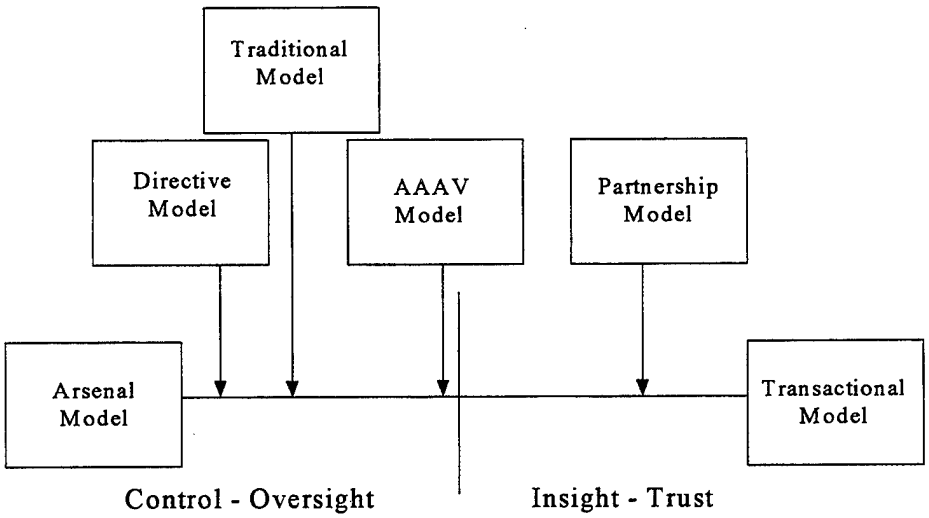

Figure 5.1 Contract Administration Continuum with AAAV Model
Source: Developed by Researcher

An important factor in the ability to move toward the Partnership Model was the willingness of the contractor to participate. General Dynamics was eager to expand their business into armored vehicles. At one time, they had produced a large number of these systems but had lost new systems developments to other contractors and had many of their older systems phased out of the Services' inventories. Another factor was that moving to a collocated site would enable them to move to a lower cost area, reducing their labor and overhead costs. These benefits for the company made them willing to accept the uncertainties associated with a closer, and potentially more intrusive, relationship with the Government through collocation, and shared databases.

1. Program Office Structure

The program office structure developed by the PM was driven by several factors. The use of IPPD and IPTs to manage the program will require a large staff to provide participants to each of the 23 program IPTs. These IPTs meet on a daily or weekly basis, requiring a large time investment from the participants. The reliance on IPTs requires that all Government members have a clear understanding of the issues involved, the limits of their authority to make decisions, and a chain of command to raise issues that cannot be resolved at their level. Successful IPTs rely on the commitment of top management to the team approach to problem resolution and empowerment of participants. By maintaining a projectized PMO, the DRPM AAAV chose a structure that simplified the lines of communication and authority.

The size and complexity of the integration effort required to develop the AAAV also contributed to the PMO structure. The AAAV is the only Acquisition Category I (ACAT I) program in the Marine Corps. Although much of the technology in the subsystems is non-developmental, the integration of these subsystems contains a moderate level of risk. The MARCORSYSCOM does not have the depth and breadth of technical expertise to provide full matrix support to DRPM AAAV and to support those programs for which it has operational responsibility. [Ref. 3]

Although the pure program structure avoids the need to coordinate with functional managers in a matrix and facilitates communication and the delegation of authority necessary for IPT to work, it has some severe disadvantages. First, the PM has had to expend a great deal of time and management effort to hire and train the personnel.

Currently, one-third of the billets in the office need to be filled. The individuals that eventually fill these vacancies will not have received the team training and will have to begin participating on teams that have already developed a unique group dynamic. The transition from support contractors to PMO personnel may disrupt the continuity of effort, potentially slowing some areas of work. A plan for recurring team training, working on real issues, will be necessary to mitigate this disadvantage. To address this problem, the contractor is required to sponsor recurring team training. The effectiveness of this approach has yet to be determined. Second, the potential for expending resources on underutilized personnel should be a major concern. Matching the current workload to the skills of the personnel currently available is difficult. The result is that some functional areas have hired all personnel required for the duration of the program phase, but do not yet have their full workload. Conversely, some areas have more current work than personnel available. This workload imbalance is currently being filled by CAAS contractors. The literature on program management organizations identifies this as the key weakness to pure program management. Continued use of CAAS would allow a level of flexibility that performing all the work in-house will not provide.

2. Operating Agreement with Marine Corps Systems Command

In the areas of policy development and standardized procedures, the MARCORSYSCOM must continue to provide support to ensure a smooth transition of responsibility for the AAAV once it reaches full operational capability. Providing the PCO and legal counsel to the PMO preserves the ability of these key personnel to provide candid, unbiased opinions on program planning and execution because they continue to be

evaluated by the functional managers in the matrix. Collocating the PCO and lawyer with the PMO does, however, make it more difficult for them to take advantage of the expertise available from others in their functional areas.

Collocation also isolates the PCO and counsel from the functional managers to whom they report. This produces an environment where they may not feel free to provide unbiased advice. The MOA with MARCORSYSCOM does not address evaluation criteria or performance measures for the support personnel and services they provide. This could exacerbate the feelings of isolation and lack of functional manager's support when unpopular decisions are made.

The establishment of the AAACG is a positive step in providing a forum to resolve support issues and continuously exchange program information. The lack of any performance evaluation measures reduces the effectiveness of this arrangement. Currently no measure of responsiveness of the financial or engineering support activities in performing their functions exists. Because of the absence of performance metrics, there appears to be no shared vision of success or teamwork. As a result, the implementation of policies and procedures for managing and funding the AAAV program may lack the flexibility needed for success. The lack of teamwork will also make the eventual transition of the program more difficult.

3. Operating Agreement with Defense Contract Management Command

In the ideal form of the Partnership Model developed in Chapter IV, a separate CAO organization would not exist. DCMC represents a tremendous source of technical expertise, especially in the area of measuring work performance. DRPM AAAV believed

that, in the area of software engineering, DCMC had the best available personnel to measure performance, anticipate problems, and provide sound input on development processes. In the case of DRPM AAAV, the objective is to negotiate an MOA that provides for a seamless relationship between the organizations. The need of DCMC to remain "independent" for its role in providing assessments to DoD is a major barrier to this goal. These issues have not yet been fully addressed due to the time required to staff the PST.

The formation of the PST by DCMC Manassas has taken longer to develop and staff than was originally expected. This has led to some skepticism regarding their potential value to the PMO. A major contributing factor to the delay in staffing was the shortage of available personnel in DCMC. The downsizing of defense and the restructuring of the industrial base has made it difficult for DCMC to have the right people in the right place at the right time, as contractors consolidate and relocate operations to less expensive regions. DCMC's marketing efforts may have produced unrealistically high expectations by the PM of the availability of support under these conditions.

DCMC personnel missed early opportunities to participate in team training and initial team meetings because of the time required to assemble the PST. This will make it more difficult for them to adapt to the teaming environment. It may take a substantial amount of time for them to attain the same level of program specific knowledge, undermining their decision-making capability and credibility within the team.

The PI position should have been the first position filled. This would have opened communications regarding the integration of functional area team members. Also as

delays in filling positions occurred, the PI would have been there to reinforce DCMC's commitment to program success. Having the PI arrive near the end of team integration will also make it more difficult for him to coordinate efforts of individual team members and effectively establish an operating agreement. Another area that has not yet been sufficiently addressed is the membership of the PI on IPTs. As the leader and coordinator of PST effort and the focal point for program assessments sent to DCMC, the PI needs to be a participant in the management level decision process.

The method used to develop the PST could have been improved. The initial planning meeting was performed before DCMC Manassas had fully reviewed the PDRR Request For Proposal. Further, the approach of having the PMO staff identify resources by job title (e.g., mechanical engineer) focused attention on billet vacancies instead of customer needs. The identification of billets, and a commitment by DCMC to fill them, has been made without a clear idea of what tasks need to be accomplished. Each PST member assigned is now responsible for coordinating with the appropriate PMO division head to define the work requirements and performance measures. A great deal of time and expense will have been wasted if the division head determines, through consultation with the PST member, that their expectations cannot be met.

E. SUMMARY

This chapter has described the background for the AAAV program and the current organizational structure of the PMO. Additionally, the background and methods used to develop operating agreements with MARCORSYSCOM and DCMC Manassas were discussed. Finally, an analysis of the management decisions and development process was

made to identify strengths and weaknesses. The next chapter will present the conclusions and recommendations developed from this study. Follow-on areas of research will also be outlined.

VI. CONCLUSIONS AND RECOMMENDATIONS

A. INTRODUCTION

This study has developed a continuum of organizations and relationships that may be used to manage contract performance. The organizations developed and methods used are based upon several factors. The complexity of the weapon system being developed, the duration of the contract performance period, and the willingness and ability of the contractor to team with the Government will influence the methods used to monitor and control performance. The contractor must be evaluated not only on the compatibility of his culture to a teaming environment, but on his management capability and willingness to share data as well. The reform initiatives currently being pursued by DoD encourage the Services to move toward the teaming arrangements. This will cause a redefinition of the tasks required to monitor and control performance and should also shift that responsibility from the CAO to the PMO and contractor. Some contract administration functions will continue to be most effectively accomplished by a separate organization (e.g., negotiation of overhead rates). The need to maintain a separate contract administration organization will require operating agreements between the Government organizations regarding the Government-contractor team. The challenge will be to construct an agreement that leads to seamless execution of Government contract administration tasks.

B. CONCLUSIONS

1. Conclusion #1

There is no consensus among acquisition professionals regarding contract administration tasks. The tasks developed by the researcher in Chapter III were compiled

from various publications and interviews. The individuals interviewed often had differing views on what tasks were necessary The most striking difference was in the perception of required tasks between PMs and contracting personnel..

2. Conclusion #2

The overlap of organizational responsibility in performing contract administration make it difficult to clearly define contract administration tasks. The overarching responsibilities of the organizations performing contract management functions determine the methods used to accomplish tasks. This often leads to miscommunication between Government organizations in monitoring and controlling contractor efforts.

3. Conclusion #3

A spectrum of contract administration organizations exists. As discussed in Chapter IV, the assumptions made about a contractor's values, goals, and objectives affect the organizational relationships developed by the Government to manage and control contract performance. The current trend in DoD, under acquisition reform, is toward forming partnerships with industry. This will require a movement along the organizational spectrum to those models relying on trust and teamwork.

4. Conclusion #4

The AAAV Program Office structure represents an evolutionary step toward the Partnership Model. The AAAV PMO, as discussed in Chapter V, has taken steps to develop a partnership with General Dynamics Amphibious Systems through collocation and IPT training. The team approach is further advanced by including CAO personnel in Program IPTs.

5. Conclusion #5

The DCMC Program Integrator is not included in the AAAV Program Management IPT. As discussed in Chapter II, the PI is the focal point for interaction between the PMO and DCMC. Excluding the PI from the top level IPT deprives the PM of valuable insight into the resources available from DCMC to assist in resolving program issues.

6. Conclusion #6

There are currently no metrics for evaluating PST members' performance on IPTs. As discussed in Chapter III, metrics used by DCMC and their customers have involved evaluation of specific technical/functional tasks. While technical proficiency is still important, the IPPD concepts used by DRPM AAAV place a premium on using technical skill to further team goals.

7. Conclusion #7

The MOAs developed between DRPM AAAV and MARCORSYSCOM should contain metrics. The current arrangement outlined in Chapter V highlights the perceived lack of support from MARCORSYSCOM because there are no effective performance measures. A lack of metrics also increases the feeling of isolation for MARCORSYSCOM support personnel collocated with the PMO.

8. Conclusion #8

Including the PST personnel on IPTs will make it difficult to maintain their role in providing "independent" assessments. Dispersion of PST members throughout the PMO and close working relations with AAAV staff will diminish their perception of

independence. Working on IPTs focused on program trade-offs may cause PST evaluations to be biased.

9. Conclusion #9

DCMC involvement in support of the AAAV program did not occur early in the planning phases. Opportunities to influence the solicitation and negotiation of the contract were lost. This lack of early involvement and coordination contributed to the delay in forming the PST. PST members were unavailable for early Government-only team training, adding to the difficulty in developing relationships.

10. Conclusion #10

The current structure of 23 IPTs is a large drain on program resources. Many of the PMO staff spend several hours per day in team meetings. This could lead to a rapid decline in functional expertise and opportunities to share information informally. The large number of teams may also present difficulty in coordination of effort by the PM.

C. RECOMMENDATIONS

1. Recommendation #1

A Process Action Team should be chartered to develop a consensus on necessary contract administration tasks. This team could build upon the work of the Contract Administration Reform Process Action Team that reviewed specific areas and recommended changes to current practices. The new team should be chartered to identify and define those tasks that must be performed to ensure successful contract performance. Additionally, criteria for determining the appropriate delegation of responsibility for each

task could be developed. These criteria should be developed to encourage movement toward the Partnership Model of contract administration.

2. Recommendation #2

The Government should continue to pursue policy reforms and technological innovations that encourage the forming of partnering relationships with industry. These relationships would benefit the Government in developing large, complex systems over long periods of time. Data transfer technology, such as video-teleconferencing and the internet, would allow teaming to occur without the expense of collocating Government-contractor teams. Policy reforms should focus on encouraging more contractor innovation and flexibility in resolving program issues. This would reduce costs as well as acquisition cycle time.

3. Recommendation #3

The Program Integrator should be included in the Government's Program Management IPT. The PI is the focal point for all reports from the functional specialists on the IPT. Additionally, the PI is responsible for the program assessments provided by DCMC for DoD. The value of these assessments and the opportunity to address specific issues before they have a negative impact on the assessments will not be fully realized if the PI is not included in the highest level IPTs. Because of the PI's unique position to communicate with PST personnel on the 'C' and 'D' level IPTs, he can provide valuable insight to the Government and contractor PMs on how well information is flowing between the different tier IPTs. A full understanding of the context of higher level

decisions will ensure more accurate assessments, clearer communication between IPTs, and a more proactive approach to resolving program issues.

4. Recommendation #4

The metrics developed in the MOA between DRPM AAAV and DCMC Manassas should focus primarily on participation in IPTs. The PM lacks the ability to control PST personnel because he exercises little influence over performance evaluations, training, and awards over PST personnel. The coordination of metrics with DCMC would ensure that PST personnel were recognized and rewarded for pursuing the PM's goals through teamwork and innovative use of their technical expertise in resolving issues. Although the technical proficiency of each PST member would continue to be important, it would be subordinated to their ability to seek innovative solutions to issues,

To address concerns regarding the integrity of "independent" assessments, the MOA should clearly establish the PM's role. All assessments should be reviewed by the PM or his representative prior to forwarding to DCMC. The PM's concurrence or non-concurrence with the substance of the report should be noted. The PM should not have influence over the drafting of the report or its submission. Metrics in the MOA should avoid any evaluation input on personnel that would affect the objectivity of the report.

5. Recommendation #5

The milestone decision authority, upon designating a new major acquisition program, should require early coordination between the PM and DCMC. The early involvement of DCMC at all management levels is necessary. Early coordination will allow input on pre-award decisions that affect contract administration. Often a long lead

time may be necessary for the appropriate DCMC office to identify the resources required and ensure their timely availability. The AAAV program was not able to put together the Government team before establishing IPTs with the contractor. This situation has led to a catch-up period while new members gain background knowledge about the program and learn to work in their teams. The AAAV program might have avoided these problems with earlier DCMC involvement.

6. Recommendation #6

DRPM AAAV and DCMC should agree to frequent review of the MOA to develop a seamless relationship between organizations. The main issues in creating the MOA are: control of PST personnel, delegation of authority to PST personnel, and DCMC's function of independent assessment. DCMC's position on maintaining control and limiting participation of PST members in programmatic decisions to preserve their independence appear to conflict with DRPM AAAV's need for full participation of the PST's technical experts. The agreement that will satisfy both parties needs will evolve over time. A recurring process of review will aid in formalizing the agreement as it evolves.

7. Recommendation #7

DRPM AAAV and the contractor should review the IPT structure to determine ways to reduce the number of IPTs required. Fewer IPTs would increase the quality of participation by their members. Because of fewer meetings required, functional area experts would have more time to spend exchanging information with other experts in their field. They could then bring this information to their meetings. Also, as lower level IPTs

are eliminated, this allows the higher level IPTs to better coordinate the work of those remaining.

8. Recommendation #8

DRPM AAAV will need a continuous deliberate effort to create a teamwork culture with the contractor. As noted in the study, cultural change is difficult to achieve in the short term, but is vital to the success of IPTs. The new organizational arrangement between Government entities may lead to feelings of fear and isolation on the part of team members. Clear policy statements and visible reinforcement of team values will restore the confidence of those matrix support and PST members of the team. The more difficult change will be in overcoming the long term distrust that has developed between Government and industry. Time and clear policy, with appropriate rewards for team performance, will break down barriers to communication and trust.

D. ANSWERS TO RESEARCH QUESTIONS

This section will discuss the primary and subsidiary research questions posed for this study in Chapter I. Although the incomplete nature of the agreement between DCMC and DRPM AAAV limits the assessments that can be made in some areas, most of the questions can be answered fully.

1. Primary Research Question

Can a general model for implementing a Defense Contract Management Command structure into a program management office be developed from an analysis of the management decisions made in developing the Advanced Assault Amphibian Vehicle Program Management Office?

Although each program is unique, some key criteria for assessing the desirability and effectiveness of PMO-CAO integration can be identified. A single organization for program control and contract administration may not be practical. Some of the functions performed by a CAO that apply to many contracts cannot efficiently be addressed in a program's IPT structure. These tasks (e.g., negotiating overhead rates) would need to be developed outside the program structure. Full integration of a DCMC structure would also eliminate their ability to provide an "independent" assessment of the program since, in the IPT organization, they would no longer be independent.

The functional expertise and knowledge of contractors and systems give DCMC tremendous potential to support PMs in an IPT environment. The CAO personnel experienced in cross-functional teams for PROCAS implementation should be especially adaptable to participation in program IPTs.

2. Subsidiary Questions

a. Subsidiary Question #1

What were DRPM AAAV's principal objectives in developing the Program Management Office team, and to what extent were they achieved?

The principal objectives of the PM in developing the AAAV PMO were to plan, execute, and control the contract performance through the use of IPTs. The PM planned to request support from DCMC in software engineering and administration of the contract. The PM believed that it would be impractical to have the PCO perform the functions normally accomplished by an ACO. The PM was also convinced that DCMC possessed the best available personnel for assessing performance and measuring quality of

software development. Additional requirements were determined based upon the initial PST planning meeting. The phased approach to staffing the PST and resulting delay in negotiating an MOA, make it impossible to predict whether or not the PM's objectives for obtaining the required support will be achieved.

b. Subsidiary Question #2

How were Integrated Product Team concepts incorporated into the development of the integrated Program Office team?

The plan for the Government's role in contract performance was to interact with the contractor through IPTs. To begin successful implementation of teams, DRPM AAAV arranged for several training seminars for the PMO staff. The contractor is required, as part of the PDRR contract, to establish a training program for all IPTs. The teaming concepts used by DCMC in their PROCAS concept should enable PST personnel to adapt to the program IPT environment.

The requirement for the PMO to collocate with the contractor was a key to incorporating teaming concepts. The PM feels that collocation is the major step necessary to change the Government's view of the contractor's values, goals, and objectives. The close interpersonal working relationships will breakdown negative stereotypes and facilitate the creation of a team culture.

The requirements for shared databases and regularly scheduled team meetings are another main factor in creating an IPT environment. Enhanced communication regarding the complex technical issues and integration risk will be possible through the sharing of "real-time" information among all team members.

c. Subsidiary Question #3

What obstacles had to be addressed and overcome in developing the Program Office team?

The two major obstacles to developing the PMO team were the time delay between the identification of resource requirements and actually forming the PST and the negotiation of roles for PST members to preserve their "independent" assessment function.

The delay in organizing the PST was the result of the personnel staffing procedures at DCMC. The first source of functional specialists was from DCMC offices which were experiencing declining workloads. This delayed work assignments while personnel willing to relocate were reassigned and others were hired. This problem could have been alleviated somewhat by earlier involvement of DCMC in program planning. The independence of PST personnel was addressed during initial discussions with DCMC Manassas. Because negotiation of a MOA is still ongoing, this issue has not been fully addressed.

d. Subsidiary Question #4

What unique participation of DCMC resources were necessary in developing this Program Office team structure and what advantages and disadvantages did this have?

The close working relationship between PMO staff and PST involvement on IPTs have several unique aspects. Usually the coordination of action and communication between PMO and CAO personnel would be accomplished during plant

visits or by phone and letter. The ability to meet face-to-face on a daily basis will enhance understanding. The PST personnel on IPTs often are the Government's only representatives. The authority they have to act for the PM, a key element of IPT participation, has not yet been fully defined. The final MOA will include a clear delineation of the PST members' responsibility. Their ability to act must be balanced against their role of providing program assessments.

The main advantage of the PST's participation in IPTs and collocation with the PMO functional staff is the depth of knowledge in applying technical expertise to the development and evaluation of contractor systems and processes. Their participation on IPTs increases the Government's confidence that critical processes and methods of evaluating data are adequate to program needs. PST personnel will also be available within the functional specialties to provide a greater breadth and depth of experience to the PMO staff.

A key disadvantage is that the PST personnel may potentially be isolated from the innovations and changes in conducting contract administration tasks developed in other DCMC field offices. In the worst case, the feeling of isolation from DCMC may affect their ability to provide unbiased program assessments.

e. Subsidiary Question #5

What unique organizational agreements were necessary to aid development?

A key to developing the agreement between DCMC Manassas and DRPM AAAV was the DCMC Commanders commitment to fully support the Department of the

Navy's policy regarding collocation of PMO staff in contractor facilities. Top level agreement by both DCMC and the Department of the Navy that the potential benefits of collocation and cooperation far exceed the potential for conflict between the PMO and DCMC. This agreement will allow the PMO and local field office to develop a flexible MOA that will evolve with the program.

Because of the phased approach used to staff the PST, some DCMC personnel will have been involved in IPTs for several months. This arrangement provides the opportunity for each specialist on the PST to gain an understanding of the PM's expectations. The resulting agreement should, therefore, be designed to provide more detailed criteria for evaluation of support and clearly defined roles.

f. Subsidiary Question #6

What decisions and resources will be required to sustain the Program Office team in the long term?

The sustainment of a successful team effort in the future will depend upon three key areas: continuous training of teams, identification and removal of barriers to coordinated actions between DRPM AAAV and DCMC Manassas, and early involvement by all parties in identifying changing resource requirements as the program moves through each acquisition phase. The contractor is required to provide recurring IPT training; the PM will need to ensure that new staff members are provided with initial training. Continuous evaluation of the efforts produced by the team will be necessary to determine the need for remedial training. The "independent" role of DCMC personnel will require a balance between their ability to represent the PM in IPTs and their ability to provide an

unbiased program assessment to DoD. Finding innovative ways to coordinate these diverse missions will require a detailed MOA and periodic reviews of the agreement to make necessary adjustments. The follow-on phases of the AAAV program will require most of the actual work to be performed at a separate site from the current facility. Early identification of the location of the new facility and the types of specialists required will be necessary to provide adequate lead time for hiring personnel and conducting training in IPPD concepts.

g. Subsidiary Question #7

How will understanding the development of the AAAV PMO be used in organizing future weapon system program offices?

The DCMC can provide a great deal of experience and technical expertise to assist PMs in monitoring and controlling programs. The personnel that can be assigned, in the form of a PST, often have experience in working in a team environment with contractors through PROCAS. To take full advantage of DCMC capabilities, early coordination and planning are essential. DCMC's mission of world wide contract administration support often requires a great deal of time to identify and allocate resources for optimal program support. Further, the PM needs to understand DCMC's "independent" role and promote an environment within the Government team that encourages confronting and resolving negative program issues.

E. AREAS OF FURTHER RESEARCH

During this study, the researcher found several areas that warrant further research:

- There is a wide variety of perception by practitioners in the contracting field regarding contract administration tasks and assignment of responsibility. The contracting profession would benefit from the development of a contract administration taxonomy.

- Independence of the organizations involved in contract administration can be a barrier to their integration into program IPTs. A key research question is: Can Overarching and Working level IPTs described by DoD fulfill the oversight and control objectives requiring independent assessment?

- Many acquisition reforms have been motivated by a desire to reduce the cost of procurement by reducing cycle time and reducing the levels of oversight and regulation imposed on contractors. A study to determine if the use of IPPD and IPTs has produced a measurable reduction in the cost premium associated with Government contracts could be conducted.

APPENDIX

Integrated Product and Process Development (IPPD) TENETS:

IPPD is an expansion of concurrent engineering utilizing a systematic approach to the integrated, concurrent development of a product and its associated manufacturing and sustainment processes to satisfy customer needs.

IPPD Defined: A management process that integrates all activities from product concept through production/field support, using a multi-functional team, to simultaneously optimize the product and its manufacturing and sustainment processes to meet cost and performance objectives. Its key tenets are as follows:

1. Customer Focus -- The primary objective of IPPD is to satisfy the customer's needs better, faster and at less cost. The customer's needs should determine the nature of the product and its associated processes.

2. Concurrent Development of Products and Processes -- Processes should be developed concurrently with the products which they support. It is critical that the processes used to manage, develop, manufacture, verify, test, deploy, operate, support, train people, and eventually dispose of the product be considered during product development. Product and process design and performance should be kept in balance.

3. Early and Continuous Life Cycle Planning -- Planning for a product and its processes should begin early in the science & technology phase (especially advanced development) and extend throughout a product's life cycle. Early life cycle planning, which includes customers, functions and suppliers, lays a solid foundation for the various phases of a product and its processes. Key program events should be defined so that resources can be applied and the impact of resource constraints can be better understood and managed.

4. Maximize Flexibility for Optimization and Use of Contractor Unique Approaches -- Requests for Proposals (RFP's) and contracts should provide maximum flexibility for optimization and use of contractor unique processes and commercial specifications, standards and practices.

5. Encourage Robust Design and Improved Process Capability -- Encourage use of advanced design and manufacturing techniques that promote achieving quality through design, products with little sensitivity to variations in the manufacturing process (robust design) and focus on process capability and continuous process improvement. Utilize such tools as "Six-Sigma" process control and lean/agile manufacturing concepts to advantage.

6. Event-Driven Scheduling -- A scheduling framework should be established which relates program events to their associated accomplishments and accomplishment criteria. An event is considered complete only when the accomplishments associated with the event have been completed as measured by the accomplishment criteria. This event-driven scheduling reduces risk by ensuring that product and process maturity are incrementally demonstrated prior to beginning follow-on activities.

7. Multidisciplinary Teamwork -- Multidisciplinary teamwork is essential to the integrated and concurrent development of a product and its processes. The right people at the right place at the right time are required to make timely decisions. Team decisions should be based on the combined input of the entire team (e.g. engineering, manufacturing, test, logistics, financial management, contracting personnel) to include customers and suppliers. Each team member needs to understand their role and support the roles of the other members, as well as understand the constraints under which other team members operate. Communication within teams and between teams should be open with team success emphasized and rewarded.

8. Empowerment -- Decisions should be driven to the lowest possible level commensurate with risk. Resources should be allocated at levels consistent with authority, responsibility, and the ability of the people. The team should be given the authority, responsibility, and resources to manage their product and its risk commensurate with the team's capabilities. The team should accept responsibility and be held accountable for the results of their effort.

9. Seamless Management Tools -- A framework should be established which relates products and processes at all levels to demonstrate dependency and interrelationships. A single management system should be established that relates requirements, planning, resource allocation, execution and program tracking over the product's life cycle. This integrated approach helps ensure teams have all available information thereby enhancing team decision making at all levels. Capabilities should be proved to share technical and business information throughout the product life cycle through the use of acquisition and support databases and software tools for accessing, exchanging, and viewing information.

10. Proactive Identification and Management of Risk -- Critical cost, schedule and technical parameters related to system characteristics should be identified from risk analyses and user requirements. Technical and business performance measurement plans, with appropriate metrics, should be developed and compared to best-in-class industry benchmarks to provide continuing verification of the degree of anticipated and actual achievement of technical and business parameters.

Source: SECDEF Memo May 10, 1995

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