RESOLUTION OF ORGANIZATIONAL CONFLICT BETWEEN BASE CIVIL ENGINEERING AND BASE CONTRACTING

THESIS

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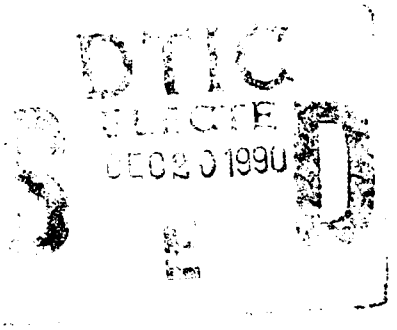

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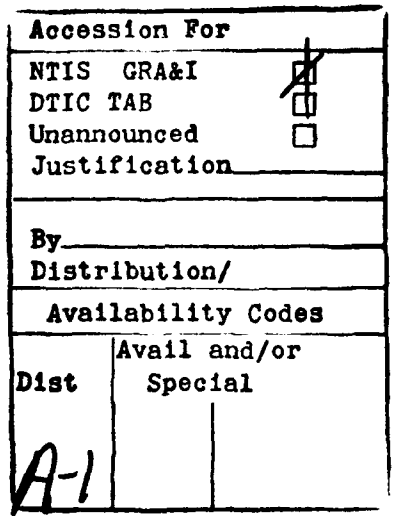

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THESIS

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

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

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Preface

In conducting this research, I have become deeply indebted to my faculty advisor, Mr. Douglas C. Osgood, for his assistance and timely advice. As Associate Professor of Contract Management for AFIT and a former contracting officer, his expertise and efficient review has alleviated any BCE biases I may have inadvertantly introduced to this research. I have also received advice and recommendations from many other helpful faculty members. These include Capt Karl Davis PhD (who introduced the concept of complete research and recommended I confine my research to a particular phase (see Chapter III)), Lt Col James R. Holt Phd (my program advisor), and Dr. Guy Shane (who recommended the case analyses).

I also wish to thank my wife, Wanda Fay, for her hours of transcription and typing assistance as well as for her continuing concern and understanding in those trying months of confinement to the desk.

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Abstract

Extensive previous research has established the existence of dysfunctional conflict between Air Force Base Civil Engineering (BCE) and Base Contracting. This conflict has been proven to be dysfunctional in that it inhibits the effective and efficient management of Air Force construction projects. The conflict develops from three sources; organizational barriers, poor communications, and lack of cross-organizational expertise. The previous research has not extensively examined solutions to this conflict.

This research examined Army Directorate of Engineering and Housing, Navy Public Works Department, and General Services Administration, Public Buildings Services in order to evaluate their project management systems for conflict and identify initiatives to resolve Air Force conflict.

This research identified and evaluated alternatives to the current BCE system. Revisions to the current communications chains were recommended. New training programs and joint AFIT courses were proposed. Three organizational initiatives were addressed: collocation (of the two functions), incorporation (of contracting officers into BCE), and delegation of authority (to civil engineers).

This research recommended testing of the three organizational initiatives. Preliminary analysis of the other federal organizations led the researcher to recommend collocation as the most feasible.

Keywords: Air Force ... Contract administration; ... systems management; Maintenance/repair. (AM)

RESOLUTION OF ORGANIZATIONAL CONFLICT BETWEEN BASE CIVIL ENGINEERING AND BASE CONTRACTING

I. Introduction

Research Goal

This study investigates possible solutions to the resolution of organizational conflict between the Base Civil Engineering and Base (Operational) Contracting in order to improve the construction management and contract administration of base construction projects. The desired outcome of the research was to identify potential solutions, examine their practicality and effectiveness in current organizations, and recommend the best strategy based upon the research.

General Issue

To effectively fulfill its mission of ensuring base operability through operations, maintenance, repair, and construction, Base Civil Engineering (BCE) must rely upon the professional skills of contracting officers to award and administer BCE contracts. Without a contracting force of its own, BCE depends upon the Base Contracting organization for contract support. However, the differences between the two organization's missions, the difference between civil

engineering and contracting backgrounds, and a lack of adequate communication has caused conflict in the management of contracts between BCE and Base Contracting managers. An Engineering Management Study of the Air Force Design and Construction Management Establishment of December 1984 identified the conflict and recommended the investigation of the incorporation of contracting into BCE (22:4-79). A 1986 private study by Hanscomb Associates, a private engineering firm, also noted the conflict and that it caused the government to spend additional time and funds on government contracts (21). In 1987, Mr Robert Farwell researched this conflict and concluded that the conflict was dysfunctional, i.e. it inhibited rather than promoted the effective contract management, thus inhibiting the BCE mission (16).

Specific Problem

The specific problem is that organizational conflict inhibits the construction management and contract administration of BCE construction projects (16:102), (21) and (22:4-74). This mismanagement results in wasted time, poor construction products, and mismanaged negotiations (22:4-74-4-76) and (21).

Research Objective

The previous studies that researched the conflict recommended a new organizational structure with unified goals (16:103). This study researches the possibilities for reconfiguration/reorganization of the two organizations and

recommends the best alternative for the alleviation of the dysfunctional conflict. The possibilities are analyzed and evaluated with respect to the investigative questions outlined in the next section.

Investigative Questions

For each alternative, the following questions are used for evaluation:

1. What is the perceived level of conflict (on the part of the engineers and contracting officers) and is it dysfunctional?
2. To what degree are organizational missions at odds?
3. How effective is cross-training between civil engineers and contracting officers?
4. How effective are communications?
5. To what degree has the Air Force's legal/contracting integrity been preserved?

Justification For Study

Although numerous studies on the dynamics of the conflict between BCE and Base Contracting have been performed and organizational change has been recommended (16:5-18), no studies have yet been performed researching a solution to this conflict. Indeed, the previous studies recommend this investigation as the necessary next-step to achieving a solution (22:4-79,80).

Scope And Limitations

This study investigates the contracting/civil engineering relationship as related to construction contracts. BCE relies upon Base Contracting for a diverse range of support, i.e. supply, service, Architect/Engineer (A/E), and construction contracts. Each type involves a particular expertise and methodology. It is beyond the scope of this research to generalize the recommendations to all types of contracts. Thus, only construction contracts and construction management are addressed.

This research examines existing contracting/civil engineering relationships in other government organizations. It is recognized that many organizations, large and small, have evolved unique methods of contract administration and construction management. It is beyond the scope of this research to examine all possible methods utilized in the private sector. This study analyzes those organizations and methods whose results could be generalized to the Air Force organization.

This research examines construction management and contracting at the base level. It is recognized that, at the Military Construction Program (MCP) level, a more complex relationship exists between Base Civil Engineering customer and base support, Air Force Air Staff (USAF/LEE) programming support, the Corps of Engineers (COE) or Naval Facilities Engineering Command (NAVFAC) construction management and contracting support, and the Air Force Regional

Civil Engineer (AFRCE) office design support. It is beyond the scope of this research to generalize the findings to the MCP level of contract management. Thus, only base level construction contracts and construction management are addressed. [In his 1988 thesis, Brian Sekiguchi examines the MCP level of construction project management and addresses the issue of the relationships between contracting, BCE, and COE. (36)]

Summary

The organization of this research is in a step by step examination of the various aspects of the problem and solutions. The first chapter has introduced the reader to the issues, the problem, and the proposed scope of research. The second chapter reviews the missions and goals of the two Air Force organizations, summarizes the research identifying conflict, and reviews the theory on conflict. The third chapter summarizes the recommended solutions of the previous studies, examines an Air Force innovation in contract management, and reviews organization structural theory as it pertains to the Air Force. This chapter purposes to establish the range of theoretical solutions. The fourth chapter details the methodology of research to be used to analyze the alternatives. The fifth, sixth, and seventh chapters research the alternatives as they pertain to existing organizations (three Case Analyses: the Army, the Navy, and GSA construction contract management). The eighth

chapter summarizes findings, generalizes the results to the Air Force, and recommends alternatives to the resolution of the organizational conflict. Abbreviations and terms unique to the agencies involved in this research are defined in Appendix M.

II. Organizations' Missions And Conflict

Introduction

This chapter examines Base Civil Engineering and Base Contracting to establish their operating missions, goals and relationship. Next, it reviews the series of studies conducted to investigate and verify conflict. Finally, it addresses the topic of conflict itself to establish the operational definition of dysfunctional conflict.

This chapter's discussion of the Base Civil Engineering and Base Contracting missions and conflict is a review of Farwell's research and subsequent studies of the issue. In interests of completeness for this study, some of Farwell's presentation is summarized here. However, for a full review of the conflict background, refer to the 1987 research of Mr Robert Farwell (16).

Base Civil Engineering

As best summarized by Performance Incorporated in their study of 89-1 (11), the operating mission of Base Civil Engineering (BCE) is to acquire, construct, maintain, and operate real property facilities (22:2-153-155). BCE is responsible for the physical well-being of the base. To accomplish the mission, BCE uses either in-house forces or contracted forces. For most construction and repair, BCE must rely upon the Base Contracting to contract the work to civilian firms.

The Project Process. The understanding of the relationships between BCE and Base Contracting in the project process is necessary to evaluate the dynamics of the conflict. The following process is a typical competitive bid, construction contract project process as exemplified in AFR 89-1, Design and Construction Management (11). While specific bases and projects often require variations of this process, this presentation of it is generic to the Air Force as a whole.

The origin of a typical BCE contract is a user's request. Upon validating the requirement, the Base Civil Engineer (also known as the BCE) assigns the requirement to a BCE Project Manager. Initially, the Project Manager (PM) is responsible for the design of the project. Design may be accomplished by in-house designers or through contracted architect/engineer (A/E) services. In event of an A/E contract, the Project Manager prepares a detailed Statement of Work (SOW) which is transmitted to Base Contracting with funds for contract.

As previously mentioned, although the contract management process is similar for A/E services, complexities in the contractor selection, award, and approval processes cause A/E contracts to be too unwieldy to address in this research in a generic fashion. Although results of this research may be applied to the A/E process, this research is confined to the construction contract process.

Upon completion of the design package, it is reviewed for constructability by the BCE Construction Management (CM, also identified as Contract Management). The Project Manager from this branch (also known as the Base Construction Manager (BCM) (13:2) or construction manager (CM)) may or may not be the same PM monitoring and reviewing the design process. The management of those projects in which the same PM manages both design and construction is termed 'Cradle-to-Grave' Management (11:2-4.a.). This method provides continuity "over the project life and will help information flow and quality" (21:VI-8). Non-Cradle-to-Grave projects require close coordination between the design PM and the construction PM.

When funded, the project packages are sent from BCE to Base Contracting for review and solicitation. Upon receipt of bids or proposals, BCE (along with Contracting) reviews the offers for responsiveness and responsibility on the contractor's part. Upon award, the Contracting Officer administers the project through the technical direction of the BCE PM. The BCE PM ensures contract compliance through frequent inspections by Construction Management inspectors. When a design deficiency emerges, requirements change, or a better method is proposed, the Contracting Officer negotiates a modification with the technical assistance of the BCE PM. Upon completion and final inspection of the project, the building passes through a warranty period where the contractor is responsible for construction defects. The

Contracting Officer administers the warranty program with the technical assistance of the BCE PM.

Summary. Ultimately, BCE's (as well as the PM's) responsibility is the base's physical well being. In the project process, its responsibility is to obtain the best product in the least amount of time and for the least cost (14:9-15). Lt Col Sherer of the Office of the Secretary of the Air Force, Directorate of Contracting and Manufacturing Policy, summarized this responsibility best in identifying BCE as a 'product' oriented organization (39). That is, Base Civil Engineering is concerned most with the results of a project and strives for the best results. This responsibility is to be compared to that of Base Contracting.

Base Contracting

> AFR 70-8, Base Contracting Functions, states the Contracting Office is responsible for managing all contracting activities to include the soliciting, reviewing, awarding, and administering the contracting actions [(10:1)]. In essence, personnel from this office deal directly with the contractor as the government representatives in contract actions. These representatives are known as Contracting Officers [(12:2)]. (16:8)

Base Contracting represents the base in any and all contact with contractors. The purpose of this single source of contact is explained in the Federal Acquisition Regulation (FAR) and AFR 70-18. Contracting Officers must ensure requirements of law, executive orders, regulations, etc., ensure compliance with the terms of the contracts, and

safeguard the interests of the United States in its contracts (19:1.602-2) (12:2-3).

Contracting Officers must ensure that contractors receive fair, impartial and equitable treatment (12:2-3) (19:1.602-2). "The Contracting Officer, though an agent of the Government, is legally required to act independently and impartially in resolving disputes" (31:13). Thus, the Contracting Officer is the contractor's first court of appeals, judging between the needs and rights of BCE and the Base and the needs and rights of the contractor.

In order to ensure this impartiality, current Air Force policy is to separate contracting forces from the using organizations. The Air Force Federal Aquisition Regulation Supplement (AFFARS) states that

> the office of the contracting officer shall be placed, in the local organization, at a level which will protect it from intraorganizational pressures which might lead the contracting officer to perform improper acts . . . . (9:1.602-90)

Note that this requirement does not preclude BCE contracting officers; it requires organizational measures to preserve the integrity of the impartial contracting system.

Finally, Contracting has a responsibility to build good will with the community and support local capabilities (12:1). Thus, as best summarized by Lt Col Sherer, Base Contracting is a 'process' oriented organization (39). Base Contracting is primarily concerned with the methods and means used to perform contracting functions.

Conflict Between BCE and Base Contracting

Missions. The two organizations, BCE and Base Contracting, have diverging goals concerning the same project. One strives for successful fulfillment of the requirements; the other strives for the integrity of the process. As noted by Farwell, one strives for the best product in terms of time and cost; the other strives to promote good will, thus sometimes choosing lesser-capable or more expensive contractors (16:10). As well, one (BCE) seeks expertise to negotiate the best deal for the Air Force, the other (Contracting) seeks to judge impartially between two equal parties (BCE and the contractor). Thus, it is evident that through the missions and goals of these two organizations, a source of conflict may be perceived possible to be developed between the two organizations.

Research. Conflict may be anticipated from the configuration of the organizations; however, does conflict indeed exist? The following reports (some summarized by Farwell (16)) establish the conflict.

In 1980, the Comptroller General investigated a housing renovation project at Maelstrom AFB, finding that poor working relationships between BCE and Base Contracting resulted in poor contract management. Among the sources of these poor relationships were poor organization and inadequate communication. (Specifically, the contracting officers were not following the technical advice of BCE) (47:i-iii).

In 1982, Lieutenant William E. Merrill and Captain Linden J. Torchia, USAF, statistically analyzed a judgemental sample of 60 Armed Services Board of Contract Appeals cases in order to determine the sources of contract litigation. (In 1985, Captain Roberto A. Smith, USAF, conducted a similar study with similar findings.) The primary source of contract litigation was defective specifications (comprising over 45% of the claims) (25:108). This problem reflects (among other contractor issues discussed by Merrill and Torchia) the inadequacy of contract document preparation on the part of BCE. Another statistically significant source of litigation proved to be contract changes (whether constructive or negotiated). Merrill and Torchia noted that inexperience on the part of BCE personnel in contractual matters (e.g. documentation) and inexperience on the part of contracting officers on peculiarities of construction contracting was a cause of this problem (25:101,102). Finally, they found a positive correlation between high-cost claims and contracting officer problems, due to poor government management (25:103). Inexperience and adversarial relationships were found to be the causes of this litigation (25:105,106). Thus, this research establishes the costs of contract management problems.

In 1984, Performance Incorporated (a private firm) studied AFR 89-1 to identify problems. It found that Base Contracting is definitely perceived as inhibiting BCE and

that the objectives of the two were divergent; the organizational structure promoted conflict. Finally, deficient communications promoted conflict (Base Contracting did not follow the technical advice of BCE) (22:4-74-4-76).

In a 1985 AFIT study, Captain James R. Mills reported the perceptions of BCEs attending AFIT's Contracting for Engineers Course, CMGT 5.24. His report reinforced the perception that conflict existed and that it inhibited effective working relations. Most notably, poor communications was identified as a primary source (26:12-13).

In 1986, Headquarters Air Force Engineering Services Center sponsored an investigation of the Air Force engineering function to identify areas of improvement. Among other areas, it identified poor working relations between BCE and contracting. It verified that conflict exists and that the conflict costs the Air Force in both time and money (21:C;IV-3, Proposal C-20 E;IV-4, Proposals DEEE-16, E-7). Particularly, it identified poor communications due to organizational separations and lack of cross-organizational expertise in either organization to be the primary sources (21:Proposals C-27, E-7, E-10).

In 1987, Mr Robert Farwell conducted a quantitative analysis of Air Force BCE and Base Contracting to establish whether or not conflict exists. His research concluded that conflict exists, that it inhibits the BCE and Base Contracting missions, and that it is due to three sources. First, organizational structure separates the two both

physically and in goals. Second, poor communications inhibit the execution of the missions. Finally, lack of cross-organizational expertise feeds misunderstanding and thus conflict (16).

Also in 1987, Lt Christian N. Dawkins, USN, investigated construction contract delay in order to ascertain the causes and impacts. Among other findings, he noted that the inexpertise of the owner's (government's) contracting agents in technical matters led to apparent authority for the technical field agents (the engineering personnel). To compound the problem, the inexpertise of the technical field agents in contracting matters led to constructive changes. Thus, lack of cross-organizational expertise leads to mission-inhibiting, or dysfunctional, conflict (8:90). As well, he noted that inadequate communications due to separation of agents leads to delay and thus dysfunctional conflict (8:89). Note, although this study was not specific to BCE and Base Contracting, its findings on sources of conflict may be generalized to the Air Force situation.

In 1989, Lt Dennis E. Wright, USN, investigated notice requirements and constructive change disputes to determine the source(s) of the problems. Among other findings, he noted that lack of construction expertise on the part of contracting officers and contracting expertise on the part of the technical personnel was a source of the resultant claims (48:34-35). This study also does not specifically

address the Air Force BCE and Base Contracting; however its findings on the sources of constructive changes may be compared to the Air Force situation.

In 1990, this researcher interviewed Lt Col Jerry J. Moore of the Office of the Secretary of the Air Force, Directorate of Contracting and Manufacturing Policy. This interview purposed to establish the Air Force's Contracting position on the existence and sources of the conflict. As detailed in Appendix D, Lt Col Moore denied the existence of dysfunctional conflict. Lt Col Moore maintained that effective working relationships between BCE and Base Contracting were possible through attention to the united mission of the organizations, mission support. The sources of conflict were difficulties between individuals through lack of understanding of each other (27). Lt Col Moore's comments are addressed throughout this research.

In the same period, this researcher interviewed Mr Thomas R. Rutherford, Deputy Assistant Secretary of Defense for Construction and Housing. This interview purposed to establish an Air Force position on the existence and sources of the conflict. Mr Rutherford concurred completely with the prior research findings. Specifically, he identified lack of cross-field expertise as a primary source; "they're obviously not qualified to even discuss many things that they take control of" (35). As well, he noted that the separation of the organizations and lack of cross-field expertise "creates a tremendous communication

problem" and that it "there has been a substantial reduction of efficiency and cost effectiveness in the process" (35). Finally, the separation of the organizational goals leads to "a confrontation situation" (35). "You don't have the development of a team partnership to get the job done" (35). Mr Rutherford's dialogue is transcribed in Appendix E for a more detailed description of the Air Force's perception of the conflict.

Due to the references of several sources, including Mr Rutherford, to lack of Total Quality Management (TQM) as a source of conflict and to TQM as a solution, this researcher interviewed Major Hal Rumsey in order to identify the Air Force TQM perception of the issue. Major Rumsey, Assistant Professor of Graduate Engineering Management, at the Air Force Institute of Technology, holds a doctorate in Engineering Management and is considered to be an Air Force authority on Total Quality Management. Maj Rumsey concurred with the findings of perceived dysfunctional conflict. In particular, he noted the organizational structure as a source; each party works "within his functional stovepipe; instead of crossing barriers, they retreat" (34). This perception also identifies the lack of communication as a source. As well, Maj Rumsey noted that neither party possessed competent understanding of the roles of the other. Interestingly, Maj Rumsey noted a significant contributor to the problem: lack of commitment of Air Force management to a solution. The Air Force has expended a large amount of

funds to conduct the previously discussed studies; however, none of the suggested resolutions have been implemented. This reluctance to change prohibits the resolution of the problem. Maj Rumsey's interview is summarized in Appendix F (34).

Sources of Conflict. The following two sections summarize the sources of conflict that this research investigates. These sources are documented in the various studies above.

Organizational Structure and Communications. Base Civil Engineering and Base Contracting are separate, independent Air Force organizations with separate, divergent missions. Typically, each organization is further separated in that BCE works for the Combat Support Group and Base Contracting works for the Deputy Commander for Resource, two other separate, independent organizations under the Wing Commander. Thus, although the project teams interface at the lower levels, all problems must be resolved through at least two echelons of command (22:4-78). As well, typically, the two organizations are further separated physically in separate buildings with complex lines of official communication established for transference of contract information.

Lt Col Moore maintains that these organizational separations do not impede communications as informal communications readily reconcile the difficulties of the formal system (27). However, as evidenced in the studies

above, the management and administration of the construction contract is confined to the formal system and thus the difficulties do inhibit communication and promote conflict. Thus, this research concludes that informal communications do not effectively alleviate the conflict due to poor communications.

Expertise. In the project management process, engineers are preparing construction contract packages while contracting officers are managing the construction contract progress (35). The engineers have not been prepared educationally nor through experience for contract preparation. As well, contracting officers have no education nor experience in the construction process. As Mr Rutherford stated, the engineering group fails to adequately prepare the contract documentation "and invariably the contracts people try to make decisions they are not qualified to make" (35). Thus are constructive changes effected (48:33-34) (8:89,90); thus is costly litigation generated (24); thus is dysfunctional conflict initiated.

Summary. Due to the existence of the above situations (separation of organizations and lack of cross-organizational expertise) and due to the amount of research establishing the problem, this researcher concludes that conflict exists and that it is dysfunctional (i.e. it inhibits the performance of either organization's missions.) However, to make this claim, Lt Col Moore's comments must be

addressed. Thus, throughout this chapter and the next, her comments are addressed and reconciled.

Conflict

To understand the conflict between BCE and Base Contracting, the dynamics of conflict itself must be investigated and understood. Conflict reflects a conceptual state rather than a quantitatively definable state. In the following discussion, an operational definition of conflict is developed, the process is summarized (from the complete review in Farwell (16)), and finally, the implications for managers are addressed.

Definition. When one person or group perceives that another has frustrated or will frustrate personal concerns, conflict is experienced (43:889) (33:141). Through this definition, conflict exists only if perceived. Thus, situations that may be described as conflictive are not, if they are not perceived as such, while congenial situations may be perceived as conflictive and thus conflict would exist. (33:19) To operationalize this definition in the BCE/Base Contracting case, if the personnel of the organizations perceive conflict to exist, then it exists.

Process. In Farwell's research (16), the works of Thomas (43), Raven and Kruglanski, Robbins (33), Donnelly, and Blake and Mouton are cited in describing the processes of conflict. He develops four stages of the development of conflict. These are summarized below.

Stage I is Potential Opposition, or the presence of conditions that create opportunities for conflict to arise. Three generic conditions are developed: inadequate communications, structure for conflict to be supported (such as organizational structure), and personal variables.

Stage II is Cognition and Personalization. At this point, the parties involved become emotionally involved, frustrated, by the conditions of Stage I.

Stage III is Behavior. In this stage, parties are acting counter to other parties' concerns developing the conflict. Here, conflict-controlling actions are denoted: competition, collaboration, avoidance, accommodation, and compromise. A party competes their goals, tries to satisfy all goals, denies the conflict, accommodates conflicting party, and/or compromises their goals with the others'.

Stage IV is Outcomes. The results of the conflict situation(s) are evidenced in this stage. All sources agree: conflict can either be functional or dysfunctional. Conflict is functional if "it results in improved effectiveness" (40:410). Thus if conflict results in the parties cooperating to a better solution, it is constructive or functional. However, conflict is dysfunctional when it reduces the effectiveness of the group (33:151). Thus if conflict results in the parties disputing and avoiding each other, inhibiting the generation of a solution, it is destructive or dysfunctional (16:19-26).

Implications for Managers. Conflict can either be functional or dysfunctional. Thus, the manager must

> recognize the difference between dysfunctional and constructive conflict, to encourage and guide the [latter], and to discourage the [former] or manage it so that it is not unduly disruptive. (40:413)

In terms of the BCE/Base Contracting situation, it has been established that conflict is perceived by both organizations (with the exception of Lt Col Moore), and that the conflict inhibits the project process (inviting constructive change, poor negotiations due to lack of communication, etc.). Thus it may be concluded that conflict exists and that it is dysfunctional.

Chapter Summary

Conflict exists between Base Civil Engineering and Base Contracting. It is dysfunctional in that it inhibits the effective management of the project process. The conflict is organizationally based, with problems stemming from divergent missions, poor communication, and lack of cross-organizational expertise.

This chapter has presented the organizations of Base Civil Engineering and Base Contracting. It reviewed the previous research establishing the existence of the conflict. Finally, the dynamics of conflict itself have been examined.

The next chapter examines proposed solutions to the conflict problem, a previously utilized solution, and the dynamics of organizational structure.

III. Organizational Theory

Introduction

The previous chapter established the existence of dysfunctional conflict and it explained the sources of this conflict. This chapter examines recommended solutions to this conflict from the previous research. It examines a unique organizational configuration undertaken at Moody AFB during a period of intensive construction management. Finally, this chapter explains organizational theory in terms of departmentation and consolidates these recommended and tried solutions within the theory to generate a series of explorable organizational configurations.

Recommendations of Previous Research

The solutions for the conflict ranged from effectively do-nothing (Lt Col Moore) to taking the contract authority from Base Contracting and making the project managers also the contracting officers (Mr Rutherford). This section summarizes the range of the recommendations and the sources.

Continue Separated. Lt Col Moore emphasized the capability of the existing system to function effectively. She stressed the customer service relationship between Base Contracting and BCE. Finally, she asserted that no training is required to improve the system even though she attributed interpersonal problems to lack of understanding. Thus, this solution recommended no change to the existing system.

Communication Revitalization. All previous studies recommended improvements to the communications process between Base Contracting and BCE. These improvements can be arranged under two classifications, informal and formal improvements.

Informal. These recommendations involve utilizing informal relationships between the groups to supplement or replace the cumbersome formal lines of communications. Lt Col Moore stressed the role of informal communications in the management of contracts. Other reports recommended collocation of Contracting Officers within BCE Construction Management offices in order to improve the informal relations (21:Proposal C-1) (36). Collocation would involve the physical displacement of construction contracting officers to BCE CM offices without organizational structure change. Thus, contracting officers would still be 1102's working for the procurement organization, yet would be in direct contact with their engineer counterparts (21:Proposal DEEE-16). Collocation is examined later this chapter in the discussion of its application at Moody AFB.

Formal. These recommendations involve instituting formal meetings to improve organizational interface. Farwell and Mills recommend formal scheduled meetings throughout the contract period (16:103) (26:15). Hanscomb Associates Inc. (Project Image) recommended to send contracting officers and project managers to joint interfacing courses to train them in the formal organizational interface (21:Proposal C-25).

Training. "What people need is adequate education and training, and then simple, clear objectives and then trust" (35). One consistent source of the conflict was the lack of contracting experience of the civil engineers and the lack of engineering experience on the contracting officers' part. Farwell recommended training for both parties in both areas (16:103). Project Image recommended training as the integral component of all solutions (21:Proposals C-1, -25, -26, -29, and -59; DEEE-5, -14, and -15; E-9, -10, -12, -14, and -42).

Restructure Organization. "A new organizational structure with common goals is recommended" (16:103). This solution recommends the incorporation of contracting officers into the BCE Construction Management organization. In this way, the divergence of goals and the barricade to communications is removed. Both functions would be united under one mission and one organization head. Thus the two parties would be united in goals. This recommendation incorporates the advantages of collocation with the advantages of unified command and goals (21:Proposal E-7).

Contract Authority Delegation.

> It doesn't make much sense to hire the best engineering team to do a job, and let them do half the job, then take it away from them and give it to a third party because you don't trust them. (35)

This recommendation involves delegating part or all of the contracting officer's authority to the Project Manager (engineer in charge, EIC). Thus, the engineer managing the

project would have authority to approve submittals and alleviate minor problems onsite with no formal processing (saving time) (8:89). Dawkins and Wright both assert that the PM has been given apparent authority and currently manages minor problems through minor constructive changes (48:34) (8:90). Project Image recommended no cost/no time field change authority for the field representatives (either inspector or PM). This recommendation would authorize the current actions of the field representatives and formalize the current constructive changes. As well, this proposal would expedite the minor change process and reduce delays and claims (21:Proposal C-12). This recommendation is currently authorized under AFFARS 1.603-2(5) with restrictions as to mandatory training and dollar amount (9:1.603-2(5)). The Air Force Strategic Air Command is currently testing implementation of this innovation (32). Note that this proposed solution could be conducted independently of, or in conjunction with, collocation or an organizational restructuring.

Process Management (TQM). Maj Rumsey declined to commit to a solution to the problem. However, he chose to recommend commitment on the part of Air Force management to resolve the problem. The problem must be resolved, thus the Air Force must commit to try to resolve it. He recommended the formulation of Process Action Teams (PATs) empowered to implement team-developed solutions. These teams would be permanently established to improve the problem and would

modify the solution as necessary over time. The teams could recommend any solution along the previously discussed range of recommendations (from nothing to delegated authority). The key innovation of this action is the commitments to change and continued process management made by the Air Force by implementing the PATs (34).

Collocation

This proposed solution involves the collocation of BCE Construction Managers and the Construction Contract Officers in the same office in order to encourage improved communications and foster cross-organizational understanding. As well, this configuration would develop the team concept vital to Matrix Project Management (discussed later this chapter) (21:Proposals C-1, DEEE-16). Thus, without organizational change, some of the sources to conflict could be addressed by collocating the project team members.

January 1984, Moody AFB obtained authority to manage their MCP projects. In order to accommodate the increased construction program load, a separate office for the MCP program was created. In this office, the construction manager and contracting officers were collocated. Although separated physically from either parent organization, the contracting officers reported directly to the Base Contracting organization and the construction managers were bound to BCE. Thus, the organizations' structures remained

unchanged, while the working environment of the two parties was modified (36) (24:16-18).

Both parties noted improved communications, quicker response to problems, and less conflict (36) (24:18). Sekiguchi noted in his 1987 research that the collocation of contracting officers with the construction managers was the key source of these working relationship improvements (36). Thus, the perceived conflicts can be addressed and improved; it is possible to improve the relationships.

Note that this innovation was used in the Military Construction Program (MCP). Although this study is limited to base level construction management, due to the elimination of typical MCP complications (namely COE involvement), the results of the Moody AFB Case can be used to generalize to the base level programs and to hypothesize a solution: collocation.

Organizational Structures

In the examination of the dynamics of project management and the organizations involved, one must understand the dynamics of organizational departmentation. This field of study examines how responsibilities, functions, manpower, and authority are divided within an organization. Three primary departmentations are used to manage programs and/or projects: Function, Product, and Matrix.

Function (Process) Departmentation. This structure groups people "in terms of the major and minor functions

that must be performed if the enterprise is to accomplish the mission" (40:357). "Jobs are grouped by area of expertise or skill" (29:B-3). The method of grouping activities is the most prevalent in the Air Force at base level. All of the base organizations are divisions of major functions: Accounting and Finance, Operations, Engineering and Services, etc. Even within BCE, function departmentation is often used; the design shops are frequently divided into the architectural, mechanical, electrical, and civil sections.

Functional departments "promote economical operations" (40:358). Because the contracting officers are consolidated within one department, they may be used more efficiently: during slack time, one may relieve the burden of another while supervision of the group is simplified. As well, little duplication of effort exists and management is easier (29:B-3). The use of functional departments promotes "cadre of professional colleagues" which aids recruitment, the exchange of new ideas, the dissemination of policies and directives, and the exchange of shared experience (40:359).

The key disadvantage of functional departments is that they inherently inhibit coordination among departments.

> There are two reasons for this. First, people in functional departments tend to focus on issues and goals of professional interest and build "walls" around their departments. . . . Second, because functional departments interact sequentially, growth and diversification of the company escalate the pressure on the structure. (40:360)

First, the cadre of professionals isolate themselves in their process orientation. Secondly, the process becomes so complicated that functional coordination becomes unwieldy. Consider the BCE/Base Contracting situation. Originally, the process called for one organization to hand a technical package to the other for purchase. Each organization contained trained professionals who speak the language of their profession and safeguard their technical authority. As long as the process remains uncomplicated (a simple purchase) it can proceed smoothly. When complicated (by addendums, change orders, claims, etc.) the coordination is inhibited by the functional separation. (Adapted from Smeltzer's explanation, 40:360).

Logistics Management Institute reported other disadvantages to functional departmentation. Greater management involvement due to the lines of communication and chain of command, requires time to resolve problems. Functional organizations are resistant to adaptation. Accountability is harder to trace and managers are less well-rounded (29:B-4).

Product (Market) Departmentation. In order to dedicate resources to specific causes (products or markets), an organization may group its people in terms of the mission or goal (40:360). In product departmentation, members of various functions related to a specific mission (product) are grouped within a department. Examples in the Air Force are the Special Projects Offices (SPOs). SPOs are dedicated

to the development of specific systems and contain the functions necessary for the accomplishment of these goals. SPOs often contain personnel for accounting, contract management, engineering, operations, etc. all in one office.

"The key advantage of departmentation by product is that coordination is simplified" (40:361). All the activities necessary for the accomplishment of the goal are grouped together. Responsibility and accountability is clear as all personnel work for the same manager. "Speed and quality of cross-functional decisions tend to be enhanced because mangers who are both physically and organizationally close make these choices" (40:361). "Greater adaptation to experimentation, new ideas, and change" is experienced as well as "job scopes are broader, resulting in more satisfying work" (29:B-4).

The Product division's disadvantage is the separation of members of the same function. This act suboptimizes manpower usage (i.e. contracting officers can no longer carry each other's slack) and allows for duplication of efforts (29:B-4). As well, it limits exchange of new ideas and experience. It complicates standardization and monitoring of a function (i.e. contracting or engineering)(40:361).

Product departmentation is exemplified in the recommendation to restructure the BCE/Base Contracting organization. In restructuring, coordination and communication would be simplified. Organizational training and collocation would enhance cross-field experience.

Finally, a consolidated mission would unite the two functions toward one goal. However, this recommendation would suboptimize manpower. As Lt Col Moore stated, construction contracting officers often do not work construction contracts full time; they occasionally work on other contracting issues when their work permits. This flexibility would not be possible under the restructuring. As well, recruitment of BCE contracting officers and continued training would be difficult as those individuals would be separated from their cadre of professional peers. Thus, one must recognize the consequences of the solution.

Matrix (Project) Organization. "Matrix design combines two different departmental forms--most commonly function and product--through a dual authority structure" (40:365). When a project is initiated,

> a manager is placed in charge of the project, and a team of specialists from the functional departments is assigned to it. This means a that a temporary organization is created just to accomplish the project. . . . The structure of a project organization is extremely flexible. Individual specialists enter and leave the team as needed. The overall project structure remains intact until its objectives are accomplished. The remaining specialists the return to their permanent departments or are assigned to another project. (40:366-367)

Thus a project team is created. One member is designated the manager of the project and the others are the supporting crew. The team leader is "generally assigned lead responsibility through the duration of the project" (29:B-5). All members officially remain bound to their functional organizations, but their goal is the successful

accomplishment of the project. "Matrix organizational design can capture the advantages of both functional and project concepts while minimizing the negative aspects of the organization" (29:B-5). Matrix project management is effective when members unite their goals and efforts and commit to project accomplishment. However, when members isolate their efforts and their functional goals, matrix management is ineffective.

Often the current project management process is referred to as a Matrix organization. The designer(s), the construction manager, the inspector, and the contracting officer(s) make up the project team. The Air Force Logistics Management Center's Construction Contract Administrator's Technical Handbook discusses the importance of the preparation of the team (5:55). However, the current process is ineffective due to the isolation of the functions of the team. Lt Col Moore called BCE the customer of Base Contracting, not a team member in the process (27). This reflects the isolation mentality of the Air Force Contracting organization. BCE also holds an isolation mentality; Mr Rutherford commented that, when problems arise, BCE often turns the changes and claims over to Base Contracting and offers little support (35). Thus, the current system is not operating as an effective Matrix Project Organization.

The recommended solution that addresses Matrix Organization is collocation. Collocation proposes to break

down the isolation of the functional members and establish the team membership. Project Image noted specifically that collocation would develop the team concept and promote effective project management (21:C-1, C-40, DEEE-16). The advantages of the Matrix project management concept are the advantages of collocation: improved communications, cross-organizational experience, unity of purpose. The disadvantages of Product Departmentation are avoided ensuring the professional ties between the members and their functional organization.

Note also that Process Action Teams reflect a Matrix approach to the problem. The teams would comprise selected members of each functional organization. A team leader (Process Owner) would hold authority and responsibility for the solution(s). The team would unite to resolve the problem and implement the solutions (34).

The major obstacle to the Matrix approach is the military system. The Matrix approach calls for the functional organizations to relinquish authority to the project manager in terms of the project and to unite the team in goals. The military environment precludes Colonels from relinquishing their interests in their functional portion of a project managed by a Captain. Thus, it is yet to be seen whether day-to-day relationships between BCE and Base Contracting can be improved and the project management be bettered through collocation and the Matrix approach.

Chapter Summary

Recommendations for the resolution of conflict between BCE and Base Contracting have been examined. Ranging from do-nothing to organizational restructuring, the solutions possess various advantages and disadvantages. An actual Air Force organizational innovation concerning collocation has been investigated and addressed. In the specific case of the MCP project management during a period of intense construction, collocation was found to improve communications between the project management team members and expedite the project process. The dynamics of organizational departmentation have been examined and the implications concerning the recommended solutions to conflict have been discussed.

The next chapter addresses the methodology used to investigate the feasibility of these solutions. It first addresses the dynamics of research itself in order to identify the stage of this research. It then discusses the case analysis and the interview as forms of research in order to identify strengths and weaknesses of the methods.

IV. Methodology

Overview

The purpose of this study is to evaluate various existing organizational configurations of civil engineering and contracting in order to establish the most effective organizational structure to resolve the organizational conflict. This is accomplished with a combination of methods. Case studies are performed on existing military and civilian government organizations that use 'product', 'function' and 'matrix' organizational configurations. Interviews with representative members of these organizations are conducted to subjectively evaluate the organizations' effectiveness. The research is conducted and evaluated in a qualitative manner. Thus, a discussion of the appropriateness of this method is first item of business for this chapter.

Completed Research

Complete research is a complex process involving many factors or stages leading to new knowledge. Lt Col R. R. Calkins proposed the six step ideal research process. First, the abstract problem is developed and defined. Second, exploratory studies are performed to detail existing knowledge and build concepts about the problem. Third, these concepts are tested for validity. This stage, Calkins suggests, should pervade several research studies examining,

testing, and evaluating the several concepts from stage 2. Fourth, a final, structured concept (the hypothetical solution) is formed from the previous research. Fifth, the hypothesis is field tested for validity. Sixth (if the hypothesis held true) the structured concept should be implemented (6:48-49).

Calkins maintained that research that attempted to establish new knowledge from only one stage of the process was incomplete and wasted research. Given the time and data constrictions in the academic environment, he recommended multiple studies, by several researchers over several years, leading from stage to stage to develop new knowledge (6:52-55). In this manner, complete research may be accomplished with concrete reliability claims.

Farwell established in his 1987 research that the problem exists. This researcher examines existing configurations to build the concepts and recommends a hypothesis. Quantitative testing of this hypothesis and other concepts would be the next step in the complete research process for another researcher.

Exploratory Research

To build the concepts and to recommend a hypothesis for this problem, this study uses qualitative exploratory research methods. Selltiz et al. defined the exploratory study as having the functions of investigating the problem, developing hypotheses, increasing knowledge on the subject,

clarifying concepts, establishing priorities for further research, gathering information about real-life settings, and providing evaluations of the concepts by people working in the field (37:51).

Without prior exploratory research, quantitative studies cannot "be relevant to broader issues than those posed in the experiment" (37:52). Thus, quantitative studies would fail in their ability to generalize and predict unless adequate exploratory research exists to support the hypotheses. For example, it may be possible to prove experimentally that a certain mold (e.g. penicillin) kills certain bacteria (e.g. streptococcus). However, without exploratory research establishing that these bacteria are particularly harmful to man and that various defenses against them must be developed, this is a useless discovery. Indeed, without various concepts to test and compare against these findings, one may not claim that this is the best solution.

Therefore, this study is an exploratory examination of the problem, a qualitative development of concepts and hypotheses, and a subjective evaluation of these concepts from real-life settings to develop a recommended solution. This analysis is accomplished through case studies and unstructured interviews.

The Case Study

This study examines various existing organizational configurations of civil engineering and contracting in case studies. The Army Corps of Engineers (COE) centralizes its contracting responsibilities in the District Engineer (a Product-type structure). Thus, the COE is examined at the district level. As well, the Army Directorate of Engineering and Housing (DEH) level performs some of the operations and maintenance functions that are performed at Air Force BCE. Thus, Army DEH (Function-type structure) is examined. The Naval Civil Engineering Corps is examined, both at the Naval Facilities Engineering Command (NAVFAC) level and at the Naval Public Works level, with respect to its collocation of contracting forces within the organization (a Matrix-type structure). Finally, the General Services Administration (GSA) is examined to compare the effectiveness of its Public Buildings Service's internal contract management to the Air Force. Thus, the researcher proposes to generalize the organizational behavior of these DOD and federal organizations (in conflict control), operating under the same functional constraints as the Air Force, to the Air Force organizational environment (for the purpose of hypothesis generation).

Definition. A case study is "the detailed analysis of a limited number of events or conditions and their interrelationships" in order to gain insights into the "interactive processes" (15:61). The case study enables the

researcher "to become intimately acquainted with the details of the issue under consideration" (41:6). In other words, the case study microscopically analyzes the issue of concern (i.e. the problem) as it pertains to a particular setting.

As noted by Sekiguchi in 1988, the case study is useful for those types of problem "in which research and theory are at their early, formative stages" and where the in-practice experience of the members and context of the situation is critical (36:38). In the case study, the natural setting of the organization may be examined with respect to generating theories concerning the problem. The case study's flexible data collection frees the researcher to explore the "how" and "why" of the processes (4:370).

Limitations. The limitations of the case study are its subjective nature and its confined scope. The case study details the researcher's observations of the existing process and the researcher's subjective evaluations from these observations. Without the capability to repeat the study with measurably consistent results, reliability of the study is limited. In other words, the study may be considered to be only opinion. As well, the case study only focuses its examination upon a limited scope of events. Critics claim that it offers "no opportunity to recognize the general social problems implicit in the whole series" (45:26). In other words, the study's results may be considered to be limited to the studied setting(s). The ability to generalize is limited without testing.

For the purpose of concept building and problem investigation, the case study is a vital tool. It is not the ultimate end of research, but a significant step in the overall process. Its purpose is to provide concepts for testing. Thus, in this study, case analysis is used to identify how similar organizations have dealt with the BCE/Contracting conflict in order to propose solutions to the Air Force conflict problem.

The Unstructured Interview

To support the case studies and their comparison to the Air Force environment, experts in the organizations were interviewed to solicit their evaluations of an Air Force organizational reconfiguration similar to their configuration. The interviews were unstructured so as to solicit open and honest critiques of their organizational configuration and its applicability to the Air Force situation.

The advantages of unstructured interviewing are that the researcher can explore and expand the subject during the interview in order to improve the information gained. This is due to the researcher's control of interview and capability to influence direction of the discussion (15:160). However, the disadvantage of unstructured interviewing is the capability to bias the response of the individual interviewed through the researcher's interview methods (15:166). As the purpose of these interviews is to

provide subjective data for the support of the case studies (as compared to definitive data to be used in quantitative analysis), the adverse effect has been assumed to be minimal. However, to report with maximum objectivity, the interviews providing critical insights are transcribed and summaries are to be found in the appendices. Those interviews whose purposes were to identify factual data (e.g. the courses provided at the Huntsville COE Training Facility) are not transcribed and the sources are simply referenced.

The experts interviewed were chosen by the researcher and Mr Douglas Osgood, the AFIT authority on contract management practices, from those members of the subject organizations with the following qualities:

1. The individual must have detailed knowledge about the workings of civil engineering and contracting in the subject organization.

2. The individual must have experience in working with Air Force BCE and Base Contracting.

3. The individual must have the authority to represent his organization in the interview.

Finally, individuals interviewed were identified and chosen with respect needs of the researcher to obtain further information, to time constraints of the research, and to location of subjects with respect to interview areas.

In order to investigate the current Air Force position concerning conflict between BCE and Base Contracting,

experts on Air Force Contracting and Construction Management were interviewed. Lt Col Jerry Moore was chosen to represent Air Force Contracting and her transcript appears in appendix D. Lt Col Moore is a contracting staff officer of the Office of the Secretary of the Air Force, Directorate of Contracting and Manufacturing Policy. Lt Col Moore has experience and authority to represent Air Force Contracting. Lt Col Sherer, Lt Col Moore's fellow staff officer, was also interviewed briefly. Mr Thomas Rutherford was chosen to represent DOD Construction Management and his transcript appears in appendix E. Mr Rutherford is the Deputy Assistant Secretary of Defense for Construction and Housing. Mr Rutherford has both the experience and the authority to represent DOD Construction Management.

Due to several references in sources concerning the Total Quality Management (TQM) approach to the problem, an Air Force authority on TQM was interviewed. Major Hal Rumsey, Assistant Professor of Graduate Engineering Management at the Air Force Institute of Technology was chosen to represent the Air Force TQM perspective. Maj Rumsey possesses a doctorate in Engineering Management and has conducted TQM seminars throughout the Air Force. As well, he is an Air Force civil engineering officer with experience in the project management system. Thus, Maj Rumsey has both the experience and authority to address the TQM perspective of the problem.

In order to collect representative views from each organization without embarking upon a survey, this study contains interviews with five Army COE/DEH officials, one Naval Facilities Engineering Command (NAVFAC) official, and two headquarter's officials of GSA. Their transcripts/ credentials may be found in the appendices and/or the bibliography.

Results and Recommendations

From these studies and interviews a complete subjective analysis of each solution is established. The researcher (Chapter VIII) generalizes the results of each analysis to the Air Force situation and evaluates the appropriateness of each configuration in the Air Force environment. An Air Force organizational configuration is recommended with proposed chains of command/authority. At this point, this research is completed and the solution proposed. Further research (hypothesis testing) is recommended in accordance with the Calkins discussion in order to propose the next step necessary to ensure "completed research" (6) of this Air Force problem.

V. Case Analysis No. I:

Army DEH and Corps of Engineers

Introduction

In order to identify and evaluate alternatives to the Air Force construction contract management system, this chapter examines the Army system. The Army base-level construction, renovation, maintenance and repair work is developed and programmed by the installation BCE-type organization, DEH (Directorate of Engineering and Housing). Similar to the Air Force situation, DEH cannot contract any work, but must rely upon either the Corps of Engineers (COE) (typically for large procurements and MCP projects) or the base procurement organization. Thus, this chapter examines both DEH and the COE to evaluate the effectiveness of the contract management system.

Directorate of Engineering and Housing (DEH)

> At Army installations, the Directorates of Engineering and Housing (DEHs) are responsible for effective and efficient management of FM [facilities management] resources. (29:1-1)

Facilities Management is the term used to describe the management decisions involved with construction, maintenance, and repair of high-quality and economical facilities (29:1-1). Thus DEHs plan, program, budget, manage, and control the programs to maintain and repair the

installation's facilities. This mission is similar to the BCE mission (refer to that mission described in Chapter II).

DEH Contracting Authority. A similar organization to Air Force BCE, Army DEH must rely upon other organizations for contracting authority (and often construction management efforts). When a design needs to be performed, DEH tasks the Corps of Engineers to contract and manage an A/E effort. When a project receives funding, DEH turns the project over to either the installation Directorate of Contracting (DOC) or to the Army Corps of Engineers (17:Appendix H). Thus the examination of both alternatives is appropriate to evaluate the process.

Installation Procurement Organization. If DEH tasks the DOC with the contract, DEH relinquishes control of the management of the project (but not the responsibility for it). DOC then manages the procurement in the same way that Air Force Base Contracting does. This arrangement is similar to the Air Force situation (17:Appendix H).

DEH experiences similar "frustrations" with this process to those of the Air Force BCE (29:5-9). Installation contracting personnel are not familiar with DEH requirements and problems. DEH personnel are inexperienced with construction contract management (17:Appendix H). Coordination and communications are difficult. Thus, this alternative offers the same conflict that Air Force BCE experiences. However, this alternative is historically less

complicated and more timely than the COE alternative (17: Appendix H) and so is used for most routine procurements.

Corps of Engineers (COE). Large 'minor construction' (see Appendix M for discussion of this category of construction) and renovation/repair projects are often delegated to the COE for procurement and construction management (17:Appendix H). In this alternative, DEH again relinquishes all control of the project (including inspection and construction management). However, DEH gains the expertise of an organization whose main mission involves the management of construction contracts.

The COE organization houses both construction managers and contract administers in a product departmentation for the mission of procuring and managing construction contracts. Contracting authority is delegated to the District Engineer, a civil engineer who is the head of the COE district (a geographically defined area of responsibility). The District Engineer (and the Deputy District Engineer) is the contracting officer for all contracts in the district. On specific projects, limited contracting authority (i.e. small change order and communications authority) is delegated to the Area Engineers (heads of sub-divisions of the district), some of which may be delegated to the Resident Engineers of individual installations. In each level of organization, contract administration staffs of contracts specialists (both contracting professionals (1102s) and engineers trained in

contract administration) support the heads by documenting actions, administering the contracts, and preparing the contract files. Also in each level of organization, construction management personnel monitor and manage the technical aspects of the projects and support the heads in the technical aspects of the contracting actions.

Thus the COE is a product departmentalized organization. The organization is unified under one goal, the successful completion of the contract. The COE is completely staffed with all personnel necessary for the complete management of the projects, including contracting officers (who are engineers), contract administrators, construction managers, inspectors, etc.

How effective is the COE in managing construction contracts? Mr Allen Hurlocker of Headquarters, Army Corps of Engineers (Appendix G) reported that the Army COE system is highly effective. "It's much more efficient to have your technical expertise and your contracting expertise in one individual at that field level" (23:Appendix G). Thus the problem with the lack of cross-organizational expertise is alleviated. If construction problems arise,

> with the radios, all [the inspector] has to do is call the area engineer, or the resident engineer, or someone with contracting authority to come down and take a look at this. (23:Appendix G)

Thus communications are effective as official organizational barriers are removed. As well, Mr Hurlocker noted that the project management is unified in many aspects and that

contract administration is effectively performed in conjunction with construction management (23:Appendix G).

With engineers as contracting officers and with the impartial contracting officers being the managers of the Army COE, a product-oriented organization, one might suspect the integrity of the impartial contract management process. However, the Corps of Engineers recognizes the integrity of the contracting officer as an impartial judge to the contract. When the Deputy District Engineer acts as a contracting officer, he/she acts independently of the technical requirements of his/her boss, the District Engineer (23:Appendix G). Being involved with the technical requirements does not necessarily corrupt a contracting officer's impartiality; "just doing the work in a timely manner is not inconsistent with being an impartial contracting officer" (23:Appendix G). Thus, in the experience of the COE, in the unification of the construction management functions with the contracting functions, the integrity of the contract and the impartiality of the contracting officer remains intact.

The advantages of utilizing the COE for DEH projects are related to the complete construction contract management structure. For large projects, it is more efficient and timely to rely upon the greater expertise and unified management in the COE. "The district is generally more thorough than an installation DOC with the Engineering and Services Branch-type people" (17:Appendix H). The COE

construction management process is highly standardized and effective. However, coordination between the users (customers), DEH, and the COE are laborious and time-consuming. DEH and the customers often perceive that they have lost control of the projects. As well, the COE charges a percentage fee ("from 7 1/2 to 14%" (17)) for the management of projects. Thus this alternative is less timely and cost-efficient for smaller, routine procurements.

Army Innovations To Alleviate Conflict

In order to better coordinate efforts between contract specialists and construction managers on both the DEH and COE level, the Army has instituted various initiatives. These actions range from cross-training to organizational collocation. Also note that the product orientation of the COE represents an innovation in the view of the Air Force and could be considered as a conflict-reducing configuration on the part of the Army as well. The initiatives are discussed in groups that parallel the classifications of conflict sources previously discussed.

Cross-Training. The COE Training Facility of Huntsville, AL has a series of training courses for both contracting specialists and construction managers. Contract management courses acquaint construction managers and engineers in the laws, regulations, policies, and procedures involved contracting the construction packages they produce and manage. Various courses are offered, from introductory

courses for beginning engineers to the CE Commander's Course (which awards warrants to the new District Engineers). Jeff Seward of the Huntsville Training Facility reported that approximately 1500 DEH personnel will attend these courses in fiscal year 1991, which is 12 to 15% of the school's total projected 1991 attendance (38). As well, video based seminars on construction contracting basics are being circulated throughout the Army DEHs and are available to both technical and contracting personnel.

Construction contract management courses are open to construction contracting officers and administrators in order to acquaint them with the field of their contracts. Mr Seward reported that although the courses commonly have DOC attendees, attendance by DOC personnel is not numerous (38). The course committees, responsible for preparing the material, consist of both civil engineering construction managers and contracting specialists in order to ensure an exchange of ideas in both specialties. This cross-specialty training effectively serves to prepare the technical personnel to manage contracts and prepare the contract specialists to manage construction contract issues (23:Appendix G).

Collocation. "The perception at bases is that DEH and DOC are irrevocably severed" (44). In order to improve communications between DEH and DOC, some installations have collocated contracting officers within the DEH organization. Major Eugene Cranor, a former DEH, currently of the Huntsville Training Facility, reported the success of the

collocation at Ft Steward. The collocation provided ready access to contracting officers for specific contracts; it allowed a full-time contracting officer to become used to the DEH system; it allowed priorities of DEH (pertaining between projects) to be the priorities of the contracting officers (7).

The disadvantages reported were that the collocated contracting officers were remote to DOC. Thus, they were remote from their raters (7). They were also remote from their standard contracting management information system (44). As well, the separation of manpower could create work load difficulty. Major Cranor reported that, although a large installation should have enough work to keep a collocated contracting officer busy, consideration still must be given to the process of work load balancing (7).

Product Orientation and Delegation of Authority. The Army Corps of Engineers is configured in an effective Product Departmentation with contracting authority delegated to civil engineers (the technical personnel). This arrangement serves to unify the organization's mission, provide timely and effective communications, ensure technical and contractual expertise, all of which ensure effective project management (23:Appendix G).

However, the COE manages a substantial amount of military construction projects including the entire Army Military Construction Program and a major portion of the Air Force Military Construction Program. The COE also oversees

various concerns in land-use (e.g. the nation's navigable waterways). The magnitude of the organization's responsibilities dwarfs that of the installation-level maintenance and repair organization. Thus, the COE is capable of maintaining the substantial contracting staffs and technical staffs required to operate in a Product Departmentation. The COE configuration example is limited in its ability to generalize to the base-level situation where section staffs are considerably less.

Air Force Lessons From the Army

Conflict. The Air Force BCE's Functionally oriented equivalent in the Army, DEH, concurs with the findings of conflict. Poor communications, lack of cross-expertise, and organizational barriers are all identified as sources. In the Product orientation, as observed in the COE, this conflict is not perceived.

Cross-Training. The extensive construction contract management courses offered by the COE significantly contributes to improved relations, as noted in both DEH and COE (17) (23) (38). Lt Col Moore noted the Air Force's cross-training program consists of poorly attended BCE contract management courses (27:Appendix D). However, the AFIT Contract Preparation and Management Course began joint training in FY '86 and currently trains 148 personnel per year with approximately 20% contracting officers and 80% BCE personnel (30). The Air Force should note the importance of

cross-training and extend the range of courses. As well, attendance should be made mandatory for both construction contracting officers and all BCE PMs.

Collocation. The collocation of contracting officers and PMs has occurred at the installation level for routine base O&M projects. This find supports Sekiguchi's findings at the MCP project management level. This configuration has improved relations; communications and goals have been clarified and facilitated. Thus, the Air Force should note this success and consider collocation on a trial basis at large installations (with work load balancing measures).

Product Orientation and Authority Delegation. The configuration of the COE is successful in eliminating conflict, uniting organizational goals, facilitating communications, and providing cross-training. However, the size and scope of the organizational responsibilities prevent generalization of this solution to the installation-level. Thus, the Air Force should note the success of the organizational arrangement and investigate its utility in the Air Force situation. However, this case analysis does not provide reliable support for a recommendation for immediate organizational restructuring.

The Air Force may note that use of the Army COE for large Air Force renovation/minor construction/repair projects is possible. Just as the COE performs construction management for DEH, they will manage the Air Force projects (for a fee). This alternative may be feasible when costs of

inadequate management, additional manpower, and/or inexpertise are expected to exceed the COE cost of management. The Air Force may consider using the COE in future projects.

Chapter Summary

This chapter analyzed the Army construction contract management system in order to evaluate solutions for the Air Force system. Army DEH experiences similar conflict to that of BCE due to similar problems (organizational structure, communications, and lack of cross-training). The Army has successfully addressed this conflict through cross-training, collocation, and use of the COE's Product oriented capabilities. The Air Force may learn from these arrangements by improving Air Force cross-training, investigating Air Force collocation, and use of the COE for large procurements.

The next chapter investigates the Navy construction contract management system.

VI. Case Analysis No. II:
Navy Public Works and NAVFAC

Introduction

This chapter examines the Navy construction contract management system, at base level, and compares the Navy's methods to the proposed Air Force innovations in order to evaluate and recommend a solution. The Navy installation-level facility construction, renovation, maintenance and repair work is developed and programmed by the base's Public Works Department (PWD). This function is similar to the Army DEH and the Air Force BCE. The Navy's MCP work is managed by the Naval Facilities Engineering Command (NAVFAC or NAVFACENGCOM). This function is similar to the Army COE which manages the Air Force BCE's and Army's MCP work. However, although the Naval PWD is an installation organization responsible to the installation commander, contracting authority and management comes from NAVFAC, as well as all operating and controlling policies and regulations. These Matrix relationships are unique within DOD and worthy of analysis.

In order to analyze these relationships, this chapter first examines the PWD, with all its responsibilities and ties of control. Next, NAVFAC is be examined in order to evaluate the chain of command, control, and authority. The relationships between the two are examined to establish the

conflict-resolution alternatives represented within the Navy. Finally, these alternatives are evaluated and parallels to the Air Force are be drawn.

Public Works Department (PWD)

> PWDs are service organizations which provide a broad range of technical support and professional services to fleet and shore commands. Functions which PWDs perform:
>
> (1) Facilities planning and programming
> (2) Real Estate management
> (3) Facility design and construction
> (4) Facilities maintenance, repair, minor construction, alteration, demolition, and equipment installation
> (5) Utilities system operation and maintenance
> (6) Facility disposal
> (7) Transportation fleet management, operations, and maintenance
> (8) Weight Handling Equipment maintenance management and certification
> (9) Family Housing Administration
>
> The sole purpose of a public works organization is to provide quality products and services in a cost efficient and responsive fashion to those commands supported. (46:1.3.4)

Similar to Base Civil Engineering and Army Directorate of Engineering and Housing, the Naval Public Works Department manages the installation's facilities. The Public Works Officer (PWO) is a Civil Engineering Corps officer

> responsible to the Commanding Officer [of the installation] for the PWD organization, operations, administration, and supervision. This includes planning, design, construction, maintenance, and repair of shore facilities; safety specifications; and environmental matters. (46:3.1)

Thus the PWD is the "first organizational subdivision within a field activity", i.e. the installation (46:2.1); the PWO is responsible for the operations of the PWD to the installation commander. This parallels the Air Force situation.

Note that the Public Works Officer (PWO) is a Civil Engineering Corps (CEC) officer (the corps of professional civil engineers within the Navy; a career field identification). CEC officers manage all echelons of engineering support, e.g. NAVFAC, Engineering Field Divisions, Staff Civil Engineers, etc. Thus, the PWO holds professional ties (and responsibilities) to the higher echelons of engineering. In truth, the Public Works Department, although a subdivision of the installation, holds responsibilities to and authorities from NAVFAC and the Engineering Field Divisions (EFDs). (This relationship paralleis to some extent the BCE's relationship with the Air Force Engineering and Services Center at Tyndall AFB.) These agencies are discussed in greater depth later; this discussion addresses those responsibilities and authorities.

Organization. Although an installation organization responsible to the installation commander, the Navy PWD typically divides its workforce according to NAVFAC guidance (such as NAVFAC P-318, Organization and Functions for Public Works Departments). As shown in Appendix J, the PWD typically contains administrative, housing, shops, engineering/facilities management, and facilities support contracts divisions.

Guidance. The PWD operates according to guidance established by NAVFAC. This guidance standardizes the work management systems, housing management, equipment management, engineering performance standards, facilities

support contract administration, etc. Thus, although the PWD works for the installation, it operates according to NAVFAC. Note, however, that NAVFAC's current policy of decentralization of authority and responsibility to the lowest levels permits the PWO flexibility in interpreting the guidance and working within the requirements (29:4-5).

Performance Evaluations. In order to conduct evaluations of the PWD's efforts, the installations enlist the aid of the Engineering Field Divisions (divisions of NAVFAC). The EFDs conduct Facilities Evaluation and Assistance Team visits which evaluate the PWD's performance and provide technical and management support (46:1.4.1).

Contract Authority. When construction contracts are funded, PWD must apply to NAVFAC for contract authority.

> Authority and responsibility for contract support . . . is held by NAVFACENGCOM. Contract authority is delegated to qualified persons in the EFDs and contract field offices. The head of these contract offices, commonly called the Officer in Charge of Construction/ Officer in Charge (OICC/OIC) may, in many cases, be the PWO who is responsible to the EFD Commanding Officer when acting in this capacity. (26:1.4.1.3)

Thus, when managing construction contracts, the PWD either relies upon the EFD for contract support, or has been given contracting officer authority from the EFD for the procurement.

> It is NAVFACENGCOM policy that, when practical and subject to the concurrence of EFD Commanders and activity commanding officers [installation commanders], field acquisition authority and organization be consolidated under the appropriate Public Works Officer. (26:3.2.5)

Thus contract management and administration is dealt with either at the next-upper echelon by highly-specialized technical construction contracts personnel, or at the PWD level by the technical field personnel. Note, the authority delegated to the PWO (in this capacity, called the Resident Officer in Charge of Construction or ROICC) can consist of full procurement authority (solicitation, award, modification, payment, etc.) or partial administration authority (monitoring progress, technical reviews and approvals, advising OIC/OICC, etc.) (46:3.2.5.1).

In order to effectively administer the contracts, the Facilities Support Contract Division (within the PWD) performs the day-to-day interface with the contractor. These duties include: performance work statements, quality assurance plans, estimates and requesting wage determinations, recommendations on payments, work authorizations, inspections, submittal approvals, contract files maintenance, liaison between contractor and users, etc. (46:3.2.5.2). Thus, the day-to-day contract operations are handled within the PWO by personnel experienced solely in construction contract management.

When acting as contracting officer or administrator, the PWO (or ROICC) does not report to the installation commander. He does not represent a subdivision of the base, but a subdivision of NAVFAC. Thus, he and his contract administration team have two bosses, their operational commander (the installation commander) and their contracting

commander (the EFD Commanding Officer). This is a Matrix relationship in that functional separations are maintained while the various specialties comprise the project teams.

Note, PWD performs contract management only for those contracts within its authority and capability. All larger projects are sent to the EFDs of NAVFAC for contract management. Thus, a discussion of NAVFAC and contract authorities is appropriate.

Naval Facilities Engineering Command (NAVFAC)

Operated by CEC officers, NAVFAC holds responsibility for construction contract management practices throughout the Navy. "The Command provides the Naval Shore Establishment with public works guidance, develops management systems, and provides contract support for facilities related functions" (46:1.3.5). NAVFAC manages all MCP projects and those facilities support projects required by PWDs.

Organization. The Engineering Field Divisions of NAVFAC contain both technical and contracts specialists for the management of construction contracts. These groups (the project management group and the contract administration group) are parallel subdivisions of the EFD and report to the Commanding Officer of the EFD. Both groups are responsible to the Commanding Officer for the projects. This reflects a Product organization.

Communications. During the construction contract management, communications within the EFD flow horizontally;

official communications up through the chain of command are not required (2:Appendix I).

The members of each group involved in the project comprise the project management team. Russell C. Thackston describes the relationships within a Navy contract management team involved in negotiations. Each member must be united toward the project goal; each member must be dedicated to the methods of obtaining that goal. Thackston highlights collaboration and communications as the key elements in the team (42:42-43).

Mr James V. Bartlett of Headquarters NAVFAC describes the communications between groups (see Appendix I).

> The project manager . . . could talk directly to the contracts specialists or write a memo over contracts specialists. . . . he wants to form a team between the contract specialists and say the design engineer, the EIC (engineer in charge . . .) so he forms that team and writes lots of memorandums among himself for that. (2:Appendix I).

Experience. Until approximately 1986, NAVFAC contracting officers were engineers within the project management organization. Currently, NAVFAC has separated these groups and has dedicated contracts specialists positions to 1102s. In this effort to specialize the contracts personnel in contracting, NAVFAC has dedicated most contracting officer training in the acquisition regulations and contract law to the 1102s. In turn, the engineers have had less training in contract management due to this changeover effort (2:Appendix I).

Due to the organizational structure and team situation, the engineers "have, over time, assimilated a pretty good knowledge of the FAR, because they work on these procurements all the time" (2). As well, the contracting officers absorb the specifics of the construction business.

Evaluation of the Navy System (for Conflict)

Mr Bartlett reports little conflict between the contracts and technical personnel.

> I think in almost every case we have a good working relationship between the contract specialist, the contract folks, and the engineer folks. . . . every engineer should go out and kiss a 1102 just to make sure they are married up and they work well together. (2:Appendix I)

Thus, the organizational configurations of the Navy generate little conflict. Communications are facilitated; organizational divergences are eliminated. Although official cross-training is not established, cross-experience is readily developed through continuous contact. Thus the sources of this conflict are alleviated. What are the problems with the Navy system?

As with Matrix and Product Departmentations, the separation of a corps of professionals from another main group of these professionals leads to a duplication of effort and problems with workload balancing. This is true in the Navy. "PWDs generally have minimal staffs and lower graded positions performing the same type of work that is done at larger activities" (18:5). Thus depth of experience in the fields of expertise is lower than the larger

activities. As well, with the maintenance of the current workloads with budgetary constrictions, the PWDs capabilities are significantly lessened (18:5).

In order to balance the workloads for the PWDs, they have NAVFAC procure all contracts larger than their capability. NAVFAC's staff is sufficiently large and broad to capably handle the workload. However, like the Army COE, this option introduces time and coordination problems. Mr Bartlett acknowledges these problems and defends the current process.

> Construction is in fact different, a different procurement than buying bullets and toilet paper and a different procurement than buying airplanes and submarines and missiles. Construction is just different; we have a different boilerplate; we have a different case law about terminations, about weather related delays, about change orders, latent defects, [etc.]. . . . If somebody just took their procurement and went to the base and did it, certainly that would be a more convenient system for the smaller procurements. . . . I'm not sure in the long run it would be. You wouldn't get the same kind of competition, the even handedness in dealing with the contractor you're used to dealing with. . . . (2:Appendix I)

Thus, this system satisfies the Navy as the best option for managing construction contracts. They trade workload efficiency and some timeliness for the positive effects of less dysfunctional conflict (which includes better timeliness through less delay).

Air Force Lessons from the Navy

Conflict. The Navy system does not produce dysfunctional conflict between contracting officers and BCE PMs. (As the Navy perceived no conflict, it did not exist;

RE: discussion in Chapter II.) Thus, the Navy must have alleviated the sources of conflict. The Air Force should examine these methods in order to evaluate and incorporate any appropriate methods into the system.

Cross-Training. Due to the current changeover in the Navy to 1102 contracting officers, their cross-training is not much greater than the Air Force's (2). However, the Naval Facilities Contracts Training Center provides courses specific to engineers acting in contracting roles (OICs and ROICCs) which ensures contracting training throughout a professional CEC officer's career (28:Cover letter, 5). As well, the specialization of the contracting officers in construction contracts alone, as well as their organizational proximity to the technical personnel, have provided the development of cross-experience between the fields. The contracting officers develop knowledge concerning construction peculiarities and the technical personnel pick up contracting knowledge. This has helped both parties appreciate the responsibilities and actions of the other.

The collocation of contracting officers within the technical organization generates this experience exchange. In order to develop this exchange, the Air Force must examine the suitability of the Navy configuration.

Organization. The PWD is a Matrix Departmentation. Within the PWD are personnel who are responsible to the installation commander for their effectiveness as technical specialists. Also, some PWD personnel are responsible to

the EFD for their effectiveness as contracts specialists. This relationship parallels the proposed Air Force collocation alternative. Although the PWD personnel have two functional organizational ties, their unity in one team for one purpose (facilities management) has alleviated conflict. Note that, although the PWO is both an engineer and a contracting officer, the PWD Contract Support Division contains collocated technical and contracts personnel (not engineers managing contracts).

The Air Force must recognize the effectiveness of this organizational arrangement and examine its usefulness to the Air Force situation. NAVFAC represents a Product Departmentation. This organization (like the Army COE) is too large for comparison to the Air Force situation as responsibilities of NAVFAC (which include MCP) are broad enough to allow the establishment of specialized staff in one organization. The Air Force does not share this breadth of duties. Thus, this research cannot generalize the NAVFAC situation.

Communications. Both in NAVFAC and in the PWDs, communications are simplified. Informal communications (and communications only as formal as memorandums) freely flow horizontally. Thus, information and experience flow between the PMs and the contracts specialists without involving the chain of command (2). The Navy has partially ensured this by eliminating the need for official communications in the day-to-day operations. As well, the collocation of the two parties fosters the informal relationships.

The Air Force must recognize the effectiveness of these initiatives. Foremost, collocation has fostered better communications. At the minimum, the Air Force should examine the breakdown of official communications channels and institute reliance on informal channels for day-to-day routine communications.

Product Departmentation Vice Collocation. As previously discussed, the incorporation of the contracts specialists within the installation PWD while maintaining separate functional ties enables the Navy to alleviate conflict. How would the Air Force institute a similar initiative in order to alleviate conflict? Would BCE incorporate the contracting officers in a Product Departmentation or would BCE collocate while maintaining the Base Contracting ties of authority?

Product Departmentation. If BCE incorporated the contracts specialists into BCE, the primary obstacle would be workload management (as seen in the Navy). The Navy deals with work overload by using the contracting parent organization, NAVFAC, to carry the overload. If BCE severed the ties with the Base Contracting organization, the additional workload would either overload the BCE contracting officers or be delegated to Base Contracting through the current system. With this second option, conflict would be reintroduced and even greatened due to the reduction of operational experience in Base Contracting.

Collocation. If BCE maintains the ties with Base Contracting, the additional workload could be managed by the BCE contracting officers while using Base Contracting support to reduce the administrative duties of each project. Thus, the Matrix approach could reflect a more team oriented approach while encouraging the development of construction contracting specialists.

The Air Force should examine both options in order to determine the best, most economical arrangement. However, this researcher recommends the Matrix approach from the examination of the Navy system.

Delegation of Authority to Engineers. Contracting authority and/or administrative responsibilities are delegated to the Public Works Officer, an engineer with previous technical experience. Within the PWD, the day-to-day operations are managed by the contracts specialists (1102s with little technical training) with the technical direction of the construction managers (engineers). Thus, to some degree, the Navy delegates the contract authorities to technical experts.

The Air Force should evaluate this arrangement. If collocation of contracting officers and project managers in one office is judged appropriate, the Air Force may consider delegating contracting authority to the head of the construction management office in order to unite the technical expertise and the contracts authority. This arrangement would create a tenuous relationship; the manager

would be responsible to two organizations for two areas of effort. However, this relationship exists successfully at the Naval PWD, and should prove effective if the Air Force can institute it.

Chapter Summary

This chapter has examined the Naval PWD and NAVFAC in order to evaluate their construction contract management systems and recommend viable solutions to Air Force problems. The Naval PWD manages construction projects through a Matrix organizational configuration. The Public Works Officer is responsible to the installation commander for the technical aspects of the project. The PWO is responsible to the EFD of NAVFAC for the contracts portion of the project. The responsibilities of construction and contract management are collocated within one organization but reported to two parent functional organizations.

The Navy reports little conflict through this relationship. Workload management represents the primary difficulty of this configuration. The Air Force must examine this arrangement and evaluate its appropriateness for BCE.

The next chapter examines the General Services Administration in order to evaluate a non-DOD organization's construction management system and determine new approaches to the resolution of conflict.

VII. Case Analysis No. III:

General Services Administration, Public Buildings Services

Introduction

In order to determine if other alternatives exist within the federal contract management restrictions, the General Services Administration (GSA), a non-DOD federal organization, is examined to evaluate its methods. A federal organization that specializes in procurements, GSA designs, constructs, maintains, and repairs every federal building not specifically associated with any self-sufficient government agency (like DOD which manages its own facilities). The Public Buildings Services (PBS) is the GSA division responsible for federal facility management. Holding both contracting and technical specialties within the organization, PBS exemplifies a Product Departmentation. Thus, this chapter examines GSA/PBS, its contracting history, and its current system.

General Services Administration

> The General Services Administration is the federal government's central supply agency. . . . The purpose of GSA is to assign, regulate, or perform the functions pertaining to (1) procurement, supply, and maintenance of real and personal property and non-personal services . . . (2) promotion of utilization of excess property; (3) disposal of domestic surplus property; and (4) sound records management. (20:19)

Thus, GSA manages nearly all federal procurements, including supplies, services, and facilities. As such, GSA employs a

great number of contracting officers and administrators. The reader can therefore conclude that GSA has a great deal of corporate experience in the contract management field. This research proposes to employ this experience to apply successful GSA initiatives to the Air Force situation. Facilities management is performed by the Public Buildings Services (PBS), a division of GSA.

Public Buildings Services

> The PBS is responsible for the design, construction, management, maintenance, operation, alteration, extension, remodeling, preservation, repair, improvement, protection, and control of buildings (both federally owned and leased) in which government activities are housed. (20:23)

PBS manages not only design, construction, maintenance and repair, but also real estate (purchasing, leasing, and selling), operations (utilities and facility operators), and security (including guards and systems) (3:Appendix L). Thus, PBS performs a similar mission compared to BCE in that the total responsibility of the facilities resides in that organization. However, PBS controls the contracting function of each of these responsibilities.

Organization. In the 1970s, PBS operated the contracting functions and the technical functions within the technical program offices. The project engineers were the contracting officers. As the construction industry boomed and federal regulations became more complicated, specialties occurred which led to contracts specialists. These specialists were still engineers (3:Appendix L) (1:Appendix K). In

the mid-1970s, several minor fraud cases (concerning building managers colluding with contractors) instigated an organizational restructuring in 1979 to separate the procurement function from the program offices (construction, real estate, maintenance, security, etc.) (3). Thus, today's PBS organization was formed.

For construction contracts, two organizations exist within PBS, the Directorate of Contracts (which manages all PBS contracts) and the design and construction group (3). The design and construction group develops the requirements and prepares the contract packages while the Directorate of Contracts solicits, negotiates, awards, monitors, modifies, and closes the contracts. The Directorate of Contracts performs the functions that Base Contracting performs for Air Force BCE. However, both organizations exist within the GSA facilities management organization, PBS. They are united under one organizational head. Thus, although the specific separation represents a Functional Departmentation within PBS, the unification of the functions under PBS represents a Product Departmentation.

Communications. Formal communications between the two organizations are maintained. The offices use government forms and official chains of command to maintain a "well documented audit trail" (3:Appendix L). This requirement serves to protect the government's interests by ensuring a fully documented project management process. Thus decisions, agreements, responsibilities and delegation of

authorities (funds, procurement, or otherwise) are documented for future use if the process is questioned by a contractor through a claim. Mr Wade Belcher, Director of Headquarters GSA/PBS Contracting Policy Division, noted two instances where the contracting officer's desk blotter was admitted into evidence in support of the government's case. Thus, formal communications serve a vital documentation purpose (3:Appendix L).

Informal communications between the GSA PM and the GSA contracting officer are also used. Mr Bernie Adamec, Director of Headquarters GSA/PBS Project Management Division, noted that the process requires informal contacts:

> When I get finished writing this letter, my job isn't finished until that letter is signed, sealed, and sent out, and then a follow up to see if I get a response. So if I need help from the office of contracts, when I put together a technical scope of work, just putting it in an envelop and putting on an office symbol doesn't get the job done. I can do that, but I can also prepare it with a phone call to those people, or a visit . . . . (1:Appendix K)

Thus, informal communications are necessary to keep all parties abreast of the management team's plans and actions. Through informal contact, the parties break down the functional barriers and build the team processes.

Finally, communications are effective due to the similar backgrounds of the contracting officers and technical personnel. When the two functions separated in 1979, the contracting officers were selected from among the engineers and architects of the technical offices. Thus, some current GSA contracting officers have technical

backgrounds. This aspect aids the process in that the contracting officers are familiar with the aspects of the contracts. ". . . but knowing something about that can help. I feel that we can hold meaningful discussions challenging each other . . ." (3). As well, the technical experience of the contracting officers aids in the maintaining contractual control of the technical contracts. With the experience, the contracting officers are less susceptible to technical pressure by the program offices (i.e. less susceptible to pressures by a group that holds greater knowledge about a field). Thus, the experience aids the communications between the groups. As well, it benefits the relationship between the government and the contractor by preparing the contracting officer for specialized requirements of the contracts (discussed next section).

Cross-Training. The primary exchange of experience arose from the separation of 1979 in which engineers and architects became GSA/PBS's contracting officers. As stated earlier, contracting officers with technical experience aids the communications process between the two functions. As well, the technical experience prepares the contracting officers for the technical conditions of the contracts.

> "I'm familiar enough with some of the buzzwords and the jargon where if someone says "I need a VAV system," I know that that's Variable Air Volume. . . . At least I understand what this may do in terms of what are the potential change orders needed, especially when we go in and start testing . . . . (3:Appendix L)

Thus, the technical experience aids the contract management by maintaining expertise on the part of all project team members.

Cross-training was actively pursued earlier in GSA when they experienced greater budgets. This training program took newly hired personnel and, over a two or three year period, gave them experience in all aspects of the PBS organization, including assignments to the Design and Construction and Contracts groups. Graduates of this program praise its effectiveness in enabling them to understand the roles and responsibilities of all parties in the process (3:Appendix L).

Currently, some offices of contracts are independently pursuing a similar program under their own budget. Although this program effectively produces well-rounded contract managers, the current fiscal constraints have limited its usage. GSA/PBS is currently petitioning GSA's Office of Personnel Management to redevelop such a program (3).

Evaluation of the GSA/PBS System (for Conflict)

Cross-Experience. Initially upon separation of the functions, the contracts personnel had technical experience. This situation decayed after a period of time.

> As time went on and you got a turnover in personnel and you got a contracts person who is not an architect, who is not an engineer, you have a further division of people. You have a further division of understanding and with that a lack of understanding and a lack of sympathy. (1:Appendix K)

The advantageous situation of cross-experience began to deteriorate as non-technically oriented contract specialists were hired. Thus conflict was introduced. GSA/PBS has begun to alleviate this conflict by changing the evaluation criteria for new personnel. Now, the technical background of new contracts personnel will improve.

Another problem in GSA/PBS concerns the technical experience of the technical personnel.

> The program offices cannot maintain a high enough level of technical knowledge because we can't hire engineers or facility management types when they can get a lot more money outside the government. And those that are hired . . . [it takes] time to learn, that's a luxury because you have to come right in and get your feet wet. (3:Appendix L)

Thus, as experienced in the Navy PWD and Army DEH, the constraints of the budget for number and payroll of technical personnel limits the level of technical expertise. From the experiences of the researcher, the Air Force also experiences this problem. Although this problem can affect the level of cross-expertise, this research does not propose to address it. It represents another research effort.

Air Force Lessons from GSA

Note that GSA/PBS manages a different volume and type of work than does BCE. Thus, although similarities can be drawn, this difference affects this research's ability to generalize to the Air Force situation.

Communications. At GSA, the PBS system of formal communications exemplifies the benefits of complete

documentation. Lt Col Moore also stressed the importance of involving the chain of command in the communications process. Thus, the Air Force should continue to require formal communications primarily to build the contract documentation.

GSA/PBS also exemplifies the importance of informal communications. The informal relationship between the parties compounded by the shared backgrounds aids the contract management process. The Air Force recognizes the importance of informal communications (Lt Col Moore), however, research indicates that lack of informal communications initiates conflict. Thus the Air Force should act to break down the barriers to informal communications. The cross-experience of the personnel may prove to be a major factor in accomplishing this objective.

Cross-Training. One major aspect of the GSA/PBS system is the use of engineers and architects as contracting officers. This cross-experience has proven to alleviate conflict. As the engineers and architects become members of the contracts organization, this initiative is not the delegation of authority to the technical personnel, but the use of technical personnel for contracts specialists. Although becoming a contracts specialists effectively closes the technical career for the person (Mr Belcher eventually even withdrew membership from his technical professional organization), it opens the contracts career and organizational breadth for the person. Thus the Air Force

may wish to consider using engineers as contracts specialists. This initiative would require significant enhancements of the contracts specialists pay scales.

GSA/PBS demonstrates the effectiveness of proper training of new personnel. Through broad organizational training, the organization prepares the personnel for the management of the entire process. This initiative improves understanding between fields of expertise and thus improves relationships. The Air Force has a similar limited program called the Palace Acquire Program. An Air Force civilian is initiated as a GS-7 into the BCE or Base Contracting. These civilians spend the next two to three years working in all portions of their organization, slowly increasing in rank to GS-11. Thus, new engineers and contracting officers are formed. However, this program is limited to the central organization (BCE personnel remain in BCE, etc.). Cross-training across organizations is not promoted. As well, the program is limited to a few personnel. Most new Air Force civilian personnel and all military begin their careers without training. Therefore the Air Force should investigate the possibility of using this program for all new personnel. As well, the Air Force should incorporate cross-organizational training in the program.

Collocation. The GSA/PBS arrangement does not reflect a collocated situation. Although project teams are formed and cross-experience encourages informal communications, GSA/PBS reflect a physically and functionally separated

arrangement. The Air Force should note that this arrangement is considered effective. Thus, the Air Force may consider the aspects of GSA/PBS over collocation.

Product Departmentation. GSA/PBS represents a Product Departmentation. The contracts and technical personnel both reside within the same organization. This arrangement is considered effective. Formal communications are maintained yet are not considered untimely. Separation of contract and technical responsibilities into two persons prevents improper acts, yet shared organizational goals and expertise aids the two parties to function together. From the GSA/PBS situation, the Air Force should consider the incorporation of Base Contracting either into BCE or under the Base Commander. Thus, the Air Force may be able to unite the goals and aid the communications, thus alleviating conflict.

Delegation of Authority. Although technical personnel are GSA/PBS's contracting officers, the contracting authority is not delegated to the program offices. GSA withdrew that delegation after (1) contract management became too specialized for the PM and (2) a few minor fraud cases occurred involving contracting officer collusion. As well, Mr Belcher indicated that experienced PMs realize the magnitude of the duties involved with the authority and thus appreciate the separated duties. The PMs do not desire the authority (3:Appendix L). The Air Force should observe this magnitude of responsibilities for both positions and accept that PMs aren't capable of being both technically and

legally competent in all aspects. The separation of functions is necessary. This separation, however, does not restrict partial authority delegation. GSA/PBS neither uses nor limits this initiative.

Chapter Summary

GSA/PBS represents a Product Departmentation with Functional subdivisions. The functions are united under one organization. The contracts specialists have technical backgrounds which improves communications and understanding of roles and contracts. PBS maintains formal communications for documentation purposes but informal communications are used extensively to enhance the process. The PBS process is considered to be effective by the PBS personnel. (Thus, if no conflict is perceived, conflict does not exist.) The Air Force should use the corporate contracting experience to evaluate initiatives to alleviate Air Force conflict.

The next chapter summarizes the alternatives for alleviating conflict and applies the research questions to the proposed solutions. A recommendation from this research is then proposed. Finally, this research closes by recommending further research to test the recommendations.

VIII. Conclusions and Recommendations

Introduction

This chapter reviews the proposed solutions to the dysfunctional conflict with respect to the major sources, as developed in Chapters II and III. This chapter uses the conclusions of the case analyses (Chapters V, VI, and VII) to evaluate these alternatives with respect to the proposed investigative questions of Chapter I. The researcher then proposes the best alternative from this evaluation and recommends an implementation. Finally, this research concludes by recommending further research concerning the alternatives, the recommendations, and other initiatives.

Evaluation of Proposed Solutions to Conflict

Communications. All sources recommended improved communications between Base Civil Engineering (BCE) and Base Contracting. Farwell and Mills recommended improved formal communications in order to improve flow of contract information. Moore, Rutherford, and independent consultant firms recommended improved informal lines of communications in order to improve relations. The case analyses provided insights to both recommendations.

Formal Communications. The GSA/PBS case analysis demonstrated the importance of effective, formal communications. Documentation of contractual actions protects the government contract integrity. Although both

the Army COE and the Navy PWD place contracting authority in the hands of the technical specialist, both services recognize the importance of well administered and well documented contract files. Thus, formal communications must be encouraged and maintained.

This research concludes that, in order to improve formal communications, many of Farwell's and Mill's recommendations must be used. The specific steps in construction contract management should be more formalized, with regular, mandatory management team meetings to review the contract progress. As well, the widespread and varying operating instructions should be consolidated and clarified to provide clear, simple guidance for contract action documentation. The Air Force should investigate the improved use of operating instructions, forms, and formal reviews to improve this process.

Informal Communications. The Navy PWD case analysis demonstrated the effectiveness of informal communications in managing contracts. The project management team could continuously discuss the contract issues, informally make decisions, and facilitate formal communications. Mr Adamec of GSA/PBS advocated the use of informal communications to supplement formal communications in contract management. Army DEH is attempting to improve informal communications (among other things) through collocation.

The Air Force should examine and revise (if necessary) the operating instructions, regulations, and policies to

clarify the appropriateness of informal communications to supplement formal contract management (e.g. the use of memorandums rather than official letters whenever possible). To breakdown the functional barriers, the Air Force must encourage the formation of informal relations within the project team. However, to safeguard the contract integrity the Air Force must clearly identify the extent of informal communications and caution project teams to document all appropriate actions.

Cross-Training. Three types of cross-training are possible, formal education programs, informal experience exchange, and use of functional experts in the other function. Hanscomb Associates, Inc. recommended formal contract training programs for engineers. Mr Rutherford recommended that the contracting officers be trained in technical areas. These recommendations represent the formal education programs. However, Hanscomb Associated, Inc. also recommended combined construction contract management training programs and collocation to provide for the exchange of experience between these functions. As well, PBS has successfully used and continues to hire engineers as contracting officers. The case analyses provided insights into these recommendations.

Formal Programs. As observed in the Navy and GSA, budget constraints often limit the level of formal training possible. However, GSA and the Army both demonstrate dedication to the formal development of cross-experience.

The training courses of the Army COE Huntsville Training Facility provide training at all levels for DEH technical personnel. These courses are also open to contracting personnel, although achieving little contracting attendance. The PBS old and proposed training programs represent a dedication to the professional development of new personnel. Due to the assignments to the cross-organizations, this program provides for the development of cross-experience.

Despite budget constraints, the Air Force should investigate expanding the formal cross-training courses provided at AFIT, Wright Patterson AFB. Attendance to the Contract Preparation and Management course should be made mandatory for all construction contract specialists, newly-assigned design personnel, construction project managers, and all chiefs of BCE Construction Management. The Air Force should develop a technically oriented Introduction to Construction course for contract specialists. The Palace Acquire trainee program should be expanded to all civilians and include a brief assignment to the opposite organization. A similar program should be initiated for military assessions. Thus, the Air Force would reduce misunderstanding of the functional roles. As well, the Air Force would improve understanding of each party in their own roles, reducing opportunity for improper contract actions (e.g., constructive change or poor negotiations).

Exchange of Experience. As observed in the case analyses, improved communications, the training programs,

and collocation foster an exchange of experience. Air Force initiatives concerning improved communications and training programs are discussed above. Collocation is discussed below under organizational initiatives.

Engineers as Contracting Officers. PBS uses engineers as contracting officers. Thus the impartial administrators of the contracts hold technical experience and are capable of making competent decisions concerning the contracts. Mr Belcher reported that PBS contracting officers are better able to discuss contract management actions with their technical team members due to their technical experience.

Thus, the Air Force should consider hiring engineers as construction contracting officers. However, to do this, the Air Force will have to significantly revise its pay scale for contracting officers in order to attract engineers. As well, as previously mentioned, to remove a technical expert from the field of expertise may end the technical career. Thus, the contracting field must be made open for advancement to the engineers to attract the engineers.

Organizational Initiatives. Organizational initiatives propose to breakdown the structure causing the divergence of goals and objectives. Three major initiatives were proposed: collocation (Matrix Departmentation), incorporation of the contracting officers (Product Departmentation), and delegation of contracting authority.

Collocation. Army DEH experienced improved relations and more efficient operations through the collocation of various contracting officers within DEH. Project priorities were better managed, project teams communicated better, and management actions were accomplished in a more timely manner due to the collocation. Navy PWD operates through a Matrix relationship. The contracting forces (responsible to NAVFAC) work side by side with the technical personnel (responsible to the installation). Informal, horizontal communications, formation of project teams, decentralization of authority, and development of construction contract management expertise are aspects of the PWD collocation situation that ensure the efficient management of the projects.

The Air Force should consider collocating a force of construction contracting officers within BCE CM. These contracting officers would report directly to their procurement chief and actively participate in the Base Contracting organization activities. Thus, the functional ties to the professional corps of procurement specialists are maintained. However, the contracting officers would be directed by the chief of BCE Construction Management and work alongside of the construction PMs. Thus, the project teams would be formed and the mission of the teams would be clarified for all members. Workload management must be addressed. This research recommends that, in event of work overload, Base Contracting would be tasked to provide

additional support to their construction contracting officers to level the workload.

The fifth investigative question of Chapter I involved contract integrity. If contracting officers were collocated in BCE CM, would they be subject to "intraorganizational" pressures (according to AFFARS 1.602-90) which might lead them to perform improper acts? An examination of the case studies should provide insight. GSA/PBS does not represent a Matrix situation so is not appropriate to this analysis. Army DEH is currently attempting collocation with success. As of yet, no intraorganizational pressures are reported. However, the history of collocation is too short for analysis. The Navy PWD represents a highly involved Matrix situation. Their contract specialists (although responsible to NAVFAC) are personnel who are evaluated by the installation commander. The ROICC is also the PWO who is directly responsible to the installation commander for his technical actions. However, the Navy reports little or no intra-organizational pressures affecting contract management. The responsibilities are clearly delineated and organizational commanders are aware of the limits of their authority (2). Thus, the Air Force can conclude that collocation will not jeopardize contract integrity.

Incorporation of Contracting Officers. Army COE and Navy NAVFAC experience high efficiency using inhouse contracting forces. The forces develop expertise in the construction contract fields, communications are formally

reduced to interoffice exchange, and functional goals are united in these organizations. However, the missions of COE and NAVFAC are significantly broader and greater than the Air Force BCE's to allow complete generalization.

GSA/PBS experiences efficient interfunctional relations using the inhouse contracting organization. Similar to the Army and Navy, the use of construction contracting officers responsible to the PBS head alleviates all three sources of conflict. While, many missions of PBS are different from Air Force BCE, most missions (design, minor construction, O&M, maintenance and repair, etc.) parallel the BCE missions. Thus, the PBS situation may be generalized to the Air Force situation.

Does PBS experience intraorganizational pressures that jeopardize contract integrity? Originally, when the contracting and technical functions were united in the program offices, contract integrity experienced minor problems. These were not due to intraorganizational pressures but government representative fraud. To alleviate this problem, PBS chose to separate the functions and formalize the process. With separate interior functional offices, organizational pressures are not experienced. Thus, the Air Force must consider the lessons learned by PBS conclude that contract integrity can be avoided by maintaining some separation of specialties.

The Air Force should consider incorporating the contracting officers either into the existing BCE

Construction Management, into a separate BCE Contract Management organization or into a Combat Support Group contracting organization (that could manage other procurements than just construction). The problem to be addressed is how close can the two functions be brought together without jeopardizing the contract integrity. The goal is to unite the two functions as closely as possible. Thus, the Air Force must investigate the organizational configurations and test the effectiveness of their administrations.

Delegation of Authority. Army COE and Navy NAVFAC use engineers as contracting officers. Delegation of limited contracting authority to PWOs, COE PMs, and PWD PMs has improved timeliness by reducing untimely coordination. As well, the decisions concerning technical issues are made by technical experts. Thus, delegation of limited authority improves contract management.

In order to delegate the authority within the Air Force, the engineers who receive the authority would have to be extensively trained in DOD contracting policies (as per AFFARS:1.603-2(b)(5)). As well, in order to prevent intraorganizational pressures, the contracting authority must be clearly separated from the organizational chain of command.

As previously mentioned, it is not feasible or possible to train personnel to be experts in two different fields. An engineer that trains to be a limited contracting officer

becomes less technically oriented. As well, to devote his/her time to the contract administration necessary to document the actions would prevent the engineer from devoting technical efforts to the project. In the end, the engineer would eventually cease to be an engineer and soon become a technically oriented contracting officer.

Thus, this research does not recommend that the Air Force investigate delegation of extensive authority to BCE PMs. If the Air Force chooses to investigate collocation or incorporation of contracting officers, then the Air Force should also investigate the delegation of limited authority to the BCE chief of Construction Management. This manager could benefit from the technical experience and the contracting training and better manage the united functions through this cross-experience. As well, the manager can effectively resolve office-level disputes between the PM and contracting officer without involving the Base Contracting and BCE chain of command.

Recommendations

This researcher concludes that all initiatives concerning communications should be implemented in the Air Force. The formal communications should be revised to provide for clear, timely operations, frequent and efficient exchange of information, and clear documentation of contractual actions. Informal communications should be

promoted and nurtured, both by regulations and through organizational actions (e.g., collocation, social events, etc.).

This research recommends formal training of each function concerning the cross-functions. As well, informal exchange of experiences should be promoted, both through formal co-training and through organizational socialization (e.g., collocation, informal communications, etc.).

The organizational recommendations are less obvious. Engineers cannot become contracting officers without ceasing to be professional engineers. Thus, this recommendation was not found to be feasible. As well, incorporation of contracting officers into BCE requires organizational changes and fluctuations that may or may not be effective depending upon the separation of functions. This research concludes that collocation of contracting officers offers the benefits of incorporation and avoids the organizational upheaval and testing involved with incorporation.

This research recommends the collocation of contracting officers within BCE Construction Management. The operating policies should be revised to clarify project management team memberships and areas of responsibilities. Project management leadership should lie with one individual throughout the construction period; this individual should be the Project Manager. Formal chains of command would be maintained in order to provide for the professional management of the contracting officers by Base Contracting. As well, Base Contracting would be responsible for

management of the BCE contracting load (i.e., providing workload management). This recommendation incorporates the alleviation of poor informal communications, lack of cross-training, and organizational divergence in goals.

Recommendations for Further Research

According to Calkins, in the complete research process, the testing of proposed concepts is the next step following the exploratory development of the concepts. This research developed the concepts detailed throughout this chapter. The next step in compete research would be to quantitatively test the proposed concepts.

Proposed communications renovations should be developed. Next, Farwell's measurement tools (the survey) must be used to define initial conflict measurements. The researcher must then initiate the proposed renovations and measure the effects upon the process.

In the same manner, the Palace Acquire (PA) program could be tested in order to evaluate its effectiveness in alleviating conflict. Non-trained new civilians should be evaluated to determine a baseline conflict measurement. PA trainees should then be tested in order to evaluate the effectiveness of formal training on the process. Finally, to determine the effect of cross-training, the program could be altered to include a short assignment to the cross-functions. Thus, measurements would quantify the effects of cross-training.

Collocation could be tested. In the same manner, Farwell's survey instrument could be used to measure conflict before and after the experiment.

The Air Force could evaluate the effectiveness of incorporation of contracting officers into BCE by altering the measurement tool in an Product Departmentation experiment. Measurements of conflict and contract integrity must be taken before and after the organizational restructuring. Thus, the Air Force could determine the risk costs, and benefits of Product Departmentation.

Finally, research must be performed concerning other BCE contracted operations. Supply and service contracts also are managed by Base Contracting. If these areas also experience dysfunctional conflict, then the BCE project management solution could possibly be incorporated to alleviate problems in these areas as well.

Conclusion

This research developed and evaluated alternatives to the resolution of conflict between Base Civil Engineering and Base Contracting. The conflict had been firmly established through Air Force studies, independent studies, and interviews of DOD staff personnel. Through the analysis of the construction contract management of three federal agencies, the Army, the Navy, and GSA, these solutions were evaluated. Through these analyses, this research concluded the worth of each alternative to the Air Force, recommended

the most favorable solutions, and suggested areas of further research. Through use of this research and the previous studies, the Air Force can commit to the elimination of dysfunctional conflict between BCE and Base Contracting.

Appendix A: Discussion of the Interview Trancripts

The following appendixes of transcripts of interviews report the verbatim conversations of the individuals interviewed. However, to minimize the reader's investigative efforts and time, as well as to highlight the pertinent material, the conversations have been edited to remove digressions (i.e. discussions about the weather, etc.); stutters, stammers, "uh"'s, etc.; the interviewer's supportive grunts; and introductory comments non-unique to each interview (which are covered below).

In compliance to Air Force research policy, each subject interviewed was informed that any comments that were intended to remain confidential would remain so and not be mentioned in this study. As well, those interviewed were also informed than their comments could remain anonymous. None interviewed chose to exercise these options.

Finally, attached are the introductory sheets (Appendices B and C) for the interviews which introduced the interviewer, the subject of the interview, and areas of discussion for the interview. These sheets were provided to the subjects prior to the interviews to aid in the organization of thoughts. No other bias was introduced at the beginning of the interview. If during discussion, a bias might have been introduced by the interviewer, this is so noted in the transcripts with an editorial comment: **[NOTE: comment]**.

Appendix B: Informal Interview Questions (AF)

This appendix provides a copy of the introductory information provided to Air Force subjects prior to the interviews.

INFORMAL INTERVIEW QUESTIONS

INTRODUCTION:

I'm an Air Force Institute of Technology student researching the working relationships between Air Force Base Civil Engineering and Air Force Base Contracting.

It has been established through a number of studies that, in general, conflict exists between Base C.E. and Base Contracting and that the conflict is dysfunctional. [That is, it serves to inhibit rather than promote each organization's efforts in the accomplishment of the mission.]

Three sources of this conflict have been identified:

1. Organizational structure and goals.
2. Inadequate Cross-organizational Training.
3. Inadequate Communication.

QUESTIONS:

1. Are you aware of these findings and do you concur?

2. What solutions to this problem have been tried and how effective were they?

3. What solution(s) is(are) in the works for BCE & BCO?

IN ADDITION:

1. Could you tell me about the STAR Report, its findings, and your organization's assessment of these findings?

Appendix C: Informal Interview Questions (Cases)

This appendix provides a copy of the introductory information provided to the Army, Navy, and GSA subjects prior to the interviews.

INFORMAL INTERVIEW QUESTIONS

INTRODUCTION:

I'm an Air Force officer researching the working relationships between various governmental requirements organizations and various government contracting organizations. I will be drawing parallels between these relationships to the relationship between the Air Force's Civil Engineering organization and the Air Force's Contracting Organization.

Thus, I will be asking you various questions as to how you perceive that organization operates, how effective the current relationships are, and what your experience with the Air Force system may suggest.

1. Have you any experience with the Air Force's construction contracting process?

2. Please explain your organizational structure. More specifically, when a requirement has been identified and designed for, how does your organization contract for the requirement?

   a. Identify plainly whether the contracting function is separate from the requirements function, or formally connected under any organizational structure.

   b. Identify plainly whether the two functions share the same responsibilities or separate responsibilities. [That is: contract integrity, design integrity, construction integrity, etc.]

   c. Identify plainly how the organizations communicate to manage the contract.

3. Please explain your impressions of the effectiveness of the current contract management process. More specifically, compared to an organization with more/less formal communications, more/less separation of responsibilities & functions, how well does your organization perform.

Appendix D: Transcript of Informal Interview with Lt Col Jerry J. Moore

LT COL JERRY J. MOORE
CONTRACTING STAFF OFFICER
OPERATIONAL CONTRACTING DIVISION
DIRECTORATE OF CONTRACTING AND MANUFACTURING POLICY
OSAF/AQCO
PENTAGON, DC 20330-1000

NOTE: Due to a tape-recorder malfunction, this interview was not perfectly recorded. Thus, the researcher has transcribed from memory the salient material from the interview and submitted the transcript to Lt Col Moore for review, revisions, and additions. Thus, although the following does not represent exact quotes, it does represent Lt Col Moore's positions.

Question: Concerning the previous studies identifying conflict between BCE & Base Contracting, are you aware of these findings and do you concur?

Lt Col Moore: The studies reviewed by Lt Col Moore, in particular the STAR Report, do not substantiate the claims that dysfunctional conflict exists. The studies are based upon opinions and feelings of the individuals interviewed. As well, these studies do not substantiate the claims that the current organization is a source of conflict.

Most likely, and from personal experience believed to be true, the problem is not an organizational problem but rather personal conflicts between individuals.

On the organizational level, both organizations seek the same goal, mission support. Base Civil Engineering is a customer to Contracting in its efforts to fulfil that goal. As long as Base Contracting maintains its understanding of the goal and works customer relations with Base Civil Engineering, conflict should not become dysfunctional.

Question: These studies mentioned that inadequate cross-organizational training and inadequate communications could feed perceived conflict. Is there such a problem?

Inadequate communications is a problem mostly between individuals in the organizations. The current organizational structure does not inhibit communications as informal communications are readily developed and used. Formal communications, when required, do not hinder the

organizational goals, rather they serve to support them by keeping the chain of command involved.

Inadequate cross-training is not a factor. Contracting Officers do not need to know engineering to do their jobs and Civil Engineers do not need to know contracting. AFIT already has a Contracting for Civil Engineers Course, but it is generally not supported by the Civil Engineers.

Not in response to a question, but in response to a turn of conversation to collocation of BCE and some CO's (i.e. the experiment at Moody AFB) Lt Col Moore had this to say about collocation:

In general, the current system cannot afford the luxury of the extra manpower required to support a collocated BCO & BCE group. No BCO group can keep their construction Contracting Officers and Contracting Administrators working on construction full time. There is not enough work.

IN SUMMARY: Lt Col Moore felt that no inherent organizational dysfunctional conflict exists. Current perceived conflicts are personality difficulties between specific individuals. To resolve these difficulties, individuals must concentrate on their real mission (to support the base mission), must concentrate on the customer relationship between the organizations, must work the formal and informal communications channels between the organizations, and rely upon the other individual's expertise in areas outside of their own expertise.

On 23 July 1990, Lt Col Moore reviewed the interview transcript and supplied the following additions.

The previous research contains no specific information as to the problems reported.

The personal conflict between individuals arises from a lack of understanding by both parties as to each others' roles and missions. Conflict should not become dysfunctional as long as Base Contracting works customer relations with BCE and BCE understands the roles and motives of contracting. If the BCO and BCE are working together for the same goal, mission support, problem resolution should be simple. It is when one or the other attempts to do the other's job that conflict arises.

[Concerning Collocation:] There are specific instances, however, where collocation for the duration of special projects is the most effective and efficient way to manage. BCOs and BCEs must work together to determine the best approach for such special projects.

Appendix E: Transcript of Informal Interview with Mr. Thomas R. Rutherford

MR. THOMAS R. RUTHERFORD, P.E.
ASSISTANT DIRECTOR OF CONSTRUCTION AND HOUSING
OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
OASD (P&L) I/C&H
ROOM 3C-762
PENTAGON
WASHINGTON DC 20310-8000

Mr. Rutherford was provided a copy of the second informal interview outline in order to prepare him for the discussion. He read this during the interviewer's introductory comments and proceeded as follows.

Mr. Rutherford: I'm surprised at the perception of these comments, in terms of how accurate they are in defining the problem.

INTERVIEWER: Well in the real truth, and I know from the discussion with the contracting office up stairs that they don't necessary agree with all the truth of these problems. But there have been so many studies that in my research I can't hope to cover them all. The problem is well defined and well established. The point of departure is what do we do about it?

[NOTE: At this point, the interviewer has introduced a minor bias into the interview. Although Mr Rutherford has indicated that he concurs with the findings of conflict and the sources, the interviewer has also somewhat lead him into accepting these particular sources as correct. Since he has already indicated concurrence from the start, this researcher does not consider this bias to invalidate the interview. However, the bias should still be noted.]

Mr. Rutherford: I think the problem, Tom, is, the problem is that the solution did not consider TQM. You see when the problem was identified, it was identified that, well, the engineering group was screwing up on the contracts. And instead of coming in and providing the training and the support that the engineering or construction groups needed to do a better job on the contract documentation, they immediately started slicing the work into different slices. So they injected a whole new group of people called procurement people. And anyone who has run a business, or has run an operation knows that the more different people you involve in the process, the more complex it is, the less

chance of success it has. And so the contracts people, when I first got in the business in 1962 time frame, the contracts people were more in support. They truly supported you; they didn't direct you. They controlled the boiler plate of the document. They controlled the FAR clauses; they controlled the US law clauses. So there was a certain amount of documentation that they required that you put in your contract. But then if you did that, they left it up to you to tie that to the specifications, to tie that to the plans and they left it to you to execute it within reason. Now once a claim got so high, of course, they would get involved. But I can remember a many, many of contracts that I managed over the years; I was in essence the contracting officer and the engineer because I would negotiated the settlement and everything and then just bring it to the contracts people for the final documentation. It was more of a check and balance than it was a controlling thing.

What we have now, though, we have a very astute engineering group put together to solve a problem. And it's a very complex problem, that is the problem of designing a building. When you take that complete package and you pass it to another group, called the contracting group, who then advertise and award the contract. There are many interpretations required. First of all your dealing with a procurement that has 1 to 1,000 sheets of drawings. Each sheet of drawing may have 1 to 15 engineering disciplines on it. You have all the coordinations between the disciplines. You have interpretations being made continuously by different people, "what does this mean, what does that mean?" To hand that to an uninitiated, untrained, unprepared group of people to do it, creates a tremendous communication problem back and forth between the contracts and engineering people. And invariably the contracts people try to make decisions they are not qualified to make. And so then they have misunderstandings and they have disputes and claims and arguments and fights.

And in any contract we all know that the contract document is only there to keep an honest man honest, to remove temptation. It's not going to help you much with a crook; I mean, if you've got a crook you have a problem. I don't care how good of a contract you have. Because he's going to be picking at everything you do, staring at everything and he is going to try to cause a problem. But if you've got a person, an honest contractor, who's anxious to build his reputation, to go on and get more work from you, then really what he wants is to work with you in interpreting what's there and to give you the very most he can. Because he wants the next job with you.

Now when you take that and turn it and make it a controversial situation, a confrontation situation, everything's a confrontation. Everything is your rights and

my rights. And that's what tends to happen. You have an uninitiated group who takes a fresh project. They've not lived with the project; they don't know the project. They don't know what the interpretations can be; they don't know how to make those judgements. Then you're forced into an adversarial position because in here is this intermediary, who's actually in charge, working the engineer against the construction contractor. You don't have the development of a team partnership to get the job done; you keep the parties distinct and separate. And so it's very difficult to work out problems. Because it would cause everything's a matter of black and white, negotiation your rights and my rights. And you know even dealing with your children, your dealing with your wife and your friends, if it comes down to your rights and my rights, and neither side is willing to give a little, it's damn hard to get along.

Because everybody makes mistakes. And if you take every mistake you make and multiply it, you're dramatizing, you pay for it. It's gets to be very cumbersome, very expensive and so forth. Now the legal people don't even want to hear you even talk about negotiations, informal negotiations, informal solving of problems, because that takes them out of the picture. And they won't then have a claim, have it written up, have the documentation. As soon as you start putting things in writing, everything is documented, everything is priced out, then it begins to escalate. And many things that are handled in a very formal, official, legal process could be handled informally between the engineer who designed the project and the construction contractor. And I used to handle many things, years ago, with no change order. I just remind the contractor that I had been aware of his good work, and I hadn't enforced every test to the letter of the law. And then he would be aware of the fact that he shouldn't be nit picking on some little fine point of the design detail. Because it was all balancing out and the job was getting done; it was a quality job. When he would think about me requiring him to dig up three miles of water line and run a 250 pound pressure test on each joint, he'd get sick. Then he wouldn't argue with me about the fact that a detail on a structure detail, or something that maybe wasn't as clear as he wanted it. It's obvious the intent, my intent, was clear, so he quit picking on the fine points and said, "well I'll get that done."

Now if you get into a legal situation then you have to do every single thing, exactly like it's stated. [It's] very expensive, very time consuming and there is just no room for judgement. And when you do have a judgement it's going to go on the side of the contractor. Because the legal people by nature are going to bend over backward to give the contractor everything they think he has coming to

him. And so the government invariably suffers. And the time required to do that, it takes time to process those papers; it's takes time to develop those papers, it costs money. And if engineering was still in charge of the contract, he could solve problems like unforeseen soil conditions. He could solve problems like a very detailed design and that needed to be interpreted. He could solve problems about the utilities weren't where they were supposed to be, they where 10 feet further way, or whatever. He could solve problems like where the HVAC system seemed to conflict with the structure frame. He could say "well, why don't you route it this way or something. And make a little on site change, and get on it and work." But as soon as you take the designer, the engineer/architect out of the job and set him on the side, and say "well, we will come and get you if we need you, we are going to run the contract. Then you make a very classic error; you separate your forces. That's how Napoleon lost the battle to Waterloo. He had one of his armies out tracking this other army, and when he needed his army for reserve they weren't there, and he lost.

Well it doesn't make much sense to hire the best engineering team in the world to do a job, and let them do half the job, then take it away from them and give it to a third party because you don't trust them. See, you have to have trust; you have to trust people; you have to give people authority. I think TQM shows that the more authority and the more trust that you place in individual people, the more they produce. It motivates me; it gives me a sense of responsibility. With the contractual situation we have now in the DOD creates conflicts between engineering and contracting in construction. And contracting takes a dominant role where they tell everybody else what to do. They're obviously not qualified to even discuss many things that they take control of. And so, it puts the engineering people in a destabilized position and to a demoralized position. It takes away a lot of pride in the work. It takes away a sense of personal responsibility. They say "well okay, they got it, they got it." And they go on and do something else. When it gets worse, worse and worse they say, "well when it gets bad enough I guess they will come and see us." And that's what happens, when it gets bad enough, then they bring in the engineering team to come in and solve the problem.

And I've seen that get progressively worse, for about, for about the last 10 to 15 years, it's got progressively worse. In NAVFAC where I worked previous to coming to DOD and then at NAVFAC field activities where I worked, I thought it was terrible when I first came to NAVFAC headquarters in 1967 that it took three months to award a architect engineering contract; well now it takes almost a year. I know the contracts are no better; the quality is no

better. Now the file is thicker, it's got more paper in it. So all we have done is double and triple contractual staffs. We have doubled and tripled the size of the contract file, but the quality of the buildings are no better. It takes longer to build them. so the overall consequence is it's much more expensive to do business now than it was 15 years ago just because of the inefficient, ineffective contractual process we are faced with.

I think if you find the same answer, you'll find the words I've given you repeated throughout the industry where ever you go you'll hear the same thing. So what I'm saying is give back to the engineer in charge, the architect in charge, the authority to run the job. Provide the contract people as support, as counselor to that person. And then hold that person accountable obviously for all his mistakes.

You're told in the federal government, periodically there's a big wave comes through, that you must learn to take risks; you must be a risk taker. Well then what we are doing here is entirely opposite of that. You don't give anyone a chance to take risks, you put this third party in there whose job is to be a referee and to identify who's wrong and make that person pay for it. To some extent it came from Congress trying to deal with a $600.00 hammer and all that stuff, and applying more and more legislation and more and more rules. What I've learned in dealing with people is that the more rules I give them, the less they get done. What people need is adequate education and training, and then simple, clear objectives, and then trust. You have to give them the education they need, the training they need, then you have to give them almost total authority. Obviously you come by and have certain spot checks to take away the temptation of doing something wrong. But that can be done very easily with proper audits; you should still have audits. But not often, but they should be done at the right point and time, so that people know they are going to happen.

I've been in the business with DOD since 1962 and I've been on many architect/engineer selections and I've never seen a case where I was pressured to a degree to award out an architect/engineer job to anybody. I was always given full say and full freedom and right to vote, a member of 3, 4, or 5 man team. And the process is always so open that I never saw one case to where I thought I had participated in a project where some particular A/E got the job because of some admiral or some general. They might have been friends, but they didn't get the job because of that. And that's because there is a high board of professionalism. Everybody that sits on those boards are required to be professionally registered engineers, the person is generally the EIC on the job. And the captain, or the colonel, or the admiral, or the one star general that signs the contract, they wouldn't

dare to put pressure on somebody to award that to a particular firm because it's a matter of record. Everything is open and clear. So all you have to do is have the courage to speak up and if you speak up, any pressure is going to fade away immediately.

So all this protection that Congress did to protect the American people, it didn't work in the construction area, it wasn't necessary. It might have been necessary in the procurement of weapons area and in some areas maybe there were some problems. But in the construction industry, you see, we've been doing this kind of work for about 300 years. It's a very orderly process; it's a very open process; it's a very clean process. And as far as DOD goes I think you're going to find the construction planning, engineering design and construction process, is as fraud free, as fair and honest as anything you'd ever want to find. Now you might have found a few cases where inspectors got trapped up into brides, or somebody giving them liquor, or something for Christmas, or something like that. But that's nickel and dime stuff. That's nothing when your talking about the main decisions that the engineers and the architects make, the selection of contractors, the awarding the contracts, they're almost all award lump sum low bid to low bidder.

I'm not pushing that; I'm not recommending that either. I think we would be better off to go to a selected bidders list where you have people who are qualified, that you know are qualified to do the job. Then give it to the low bidder out of that group. But then you get back to how you select the bidders list.

I think you talk to anybody who's been a professional engineer or architect in the planning engineering design and construction process over the last several years in the federal government and you will find them saying that there has been a substantial reduction of efficiency and cost effectiveness in the process. That has been, to a large extent, brought on by insertion of the contract, procurement type people in the process to the extent that they have contorted it, convoluted it, to the point of where it tends to go in circles; it tends to be less directed, less purposeful. And the objective now is more build your file and have a detailed record of all your actions, not get the job done on time and lowest reasonable cost, with the best possible product for the government. It's to be able to stand a audit; that is your objective now, to be able to stand a audit. And that's what they do, they build that file, and build that file continuously. It's like, I'm the manager for value engineering for the government, that's like spending $5,000 trying to save 50 cents. Spend a lot of money for a lot of records that you never use, and records are expensive. The paper itself isn't much, but the manhours that goes into it is extremely expensive.

And that's generally what I'd like to say about it, except I'll be glad to answer any particular questions. I do think all of engineers and architects should be given procurement training. And I think we might even come to the point of giving senior architects and engineers award authority to go ahead and award their own contracts. I think they ought to be highly competent counsel available to them daily, hourly if necessary, to answer questions and to go to the field with them. But I think we should remove the procurement type people from the process and put them back into support roles and not into a line role. They're actually line people now, I mean they are right in charge. They ought to be in a support, or staff position.

We ought to be building more and more model fill-in-the-blank contracts. I'm in engineering business so I have various specifications data bases. When I was in Navy I was in charge of a 350 guide spec. data base. We have 350 guide specs and therefore you had that model to work with. And when you started to procure something you could select from that data base the ones you wanted and fill in the blanks and edit them. We ought to have contracts like that. So that us engineers and architects who want to buy something, procure something, would simply take the one closest to what we want and edit it to buy our particular product. And then I have no problem with taking it then to some contracts officer for him to spend an hour, to quickly review it and approve it, but not six weeks or sixteen days. And if he don't do it in so many days it goes through anyway. Things now get all, we're so concern with documentation and don't make a mistake, that we have spend enough money and lost time in escalation cost to pay for lots of mistakes. So what have we gained, we haven't gained anything. We've lost money on the overall spectrum, we have demoralized our engineering and architectural construction staffs. And anytime you have premeditatively created conflict in your organization, you're not TQM.

INTERVIEWER: [Leading into a question concerning collocation] The way that I'm handling my research is I'm taking a look at how the Army and the Navy, as well as GSA, do their contracting and do their construction. And just to see how other organizations are trying to handle this complication of the contracting rules and regulations that are continually seeming to build on top of us.

Mr. Rutherford: My experience of the Navy while I was there is they put the contracts people in charge.

INTERVIEWER: What they have done, what they are doing now, at least from what I perceive from my interviews, is that they have a contracts section within the NAVFAC

organization, it's separate from the requirements, but it's still within NAVFAC itself. And all the way down to the base level . . .

Mr. Rutherford interrupts: . . . But they are a very dominant force . . .

INTERVIEWER: Right, they are in charge of contracts. But they are still subservient to the NAVFAC mission. Which is get the thing done and get it out there.

[NOTE: Here, the interviewer is drawn into an exchange of views rather than eliciting Mr Rutherford's view. Thus, the bias is increased. Fortunately, Mr Rutherford's rather willful nature withstands the discussion and he continues with his views unchanged. The bias is yet small.]

Mr. Rutherford: Yes, but my experience with that situation is that, believe it or not, they intimidate the admiral. He very rarely overrules them. They have great power. They have power to the extent that the engineering people are very reluctant to ever challenge them. In fact, he has indorsed the fact that they are equals to the engineers and once it's passed to them that they are in charge. You do have the potential for him overruling them; you have the potential for this one person giving them guidance. And he does to some extent. But it all depends on the character and personality of the admiral in charge. If he's a very strong, forceful person and knows the business in the sense of procurement, he may make them back off a little. But if he's more administratively oriented, or maybe he's public relations, then he'll just let it run like it runs. And if it runs like it runs, they are going to run it. All I'm saying is you don't gain anything by that except a thicker file. You don't get more work done, you don't get higher quality work done. You just have a more perfect contract file when you finish the job.

INTERVIEWER: On the other side of the spectrum there's the Army, well the Army really has two sides of the spectrum. At base level they conduct their business the same way the Air Force does. A separate procurement organization, or they have to go up to the Army Corps of Engineers and go through the same deal the Air Force has to go through. On the other side, the Corps of Engineers has their own contracting officers who are engineers and they have a support staff that's contracting administration that supports the engineers in their role. As well as GSA has separated contracting from the requirements section, but the contracting officers are engineers. So that when they work with the engineers, they are very conversant in the engineering type of requirements and they understand what

the requirements are. They may be going in the other direction toward to getting 1102's in there. But they are still going to try to maintain that engineering integrity in the contracting officer organization.

Mr. Rutherford interrupts: Did you say the Army did not use 1102's?

INTERVIEWER: They use 1102's, but they are in a support role, the actual contracting officers are the resident engineers, the area engineers, and the district engineers.

Mr. Rutherford interrupts: That's good, I admire that.

INTERVIEWER: Well that's because it's a tradition that's held on for a long time. They think they got a little flak for that, from the 1102 side.

Mr. Rutherford interrupts: Oh, I'm sure they have.

INTERVIEWER: What I was going to ask you is what would be your solution, or what do you perceive as the direction to go? We are still going to definitely have to have 1102's somewhere in the organization to support. But where would they go? Would they come over to CE, or would they stay over in contracting?

Mr. Rutherford: My recommendation would be that the contracting group be in charge of the form of the contract, be of charge of which type of document to use on which type procurement, providing counsel to the line official, the engineer, and to sign with the engineer the final contract. But that the engineer would advertise and award and administer the contract. I would do it, for example, when I was in NAVFAC, I was head of the engineering criteria division. I signed every guide spec that went out at for NAVFACENGCOM. I didn't know all those specifications, but I assured was that all the other people had signed it. All the checks and balances were there. But the technical people were in charge all the time. I see the contract guy having that role, that the plans are all there, the specs are all there, all the engineers have signed it and the EIC certifies certain things. But leave the full technical responsibility to the EIC. The contracting officer would be the person to finally close the loop in the sense of assuring that all these signatures were on there and the EIC, the guy in charge of the job, would certify that so that all that had been done. And then to be involved in every change order above a certain amount, which would be picked, to be pushing all the time to get standardized contract documents. To be providing education all the time

to the engineers. But the actual awarding and administrating the contracts would be up to the engineering people, who would also be, I guess, warranted and be contracting officers.

INTERVIEWER: Would the contracting staff that would check and balance and all that that you've mentioned be 1102's . . .

Mr. Rutherford interrupts: Be a much smaller staff . . .

INTERVIEWER: Would they be still a part of base procurement organization? Is that what you're suggesting?

Mr. Rutherford: No, I would think they should be a part of the NAVFAC organization, a part of the Air Force civil engineering organization and a part of the Army Corps of Engineering organization. They shouldn't be a separate organization. Now obviously they are going to be audited at sometime by somebody else, because we all are. But when you start separating people who have different objectives, you don't get the job done. You get objectives completing with each other. And well that's what we have now, we are completing objectives. We have the objective of the engineer, the architect, the constructor to have a professional high quality job done on time for the customer, that's one objective. Now the contracting officer would tell you he has the same objective, but he really doesn't. His objective is to have a auditable file. Because he is audit driven, so they are completing objectives. Now obviously the contracting officer is going to slow you down. He is going to slow you down dramatically. And you have to have the mentality that your willing to make a certain number of mistakes. You don't want to have a zero deflects mentality in contracting. If you do, you don't do anything. Well someone would say "now that's contradictory, yes I thought you wanted zero deflects in everything."

INTERVIEWER interrupts: TQM

Mr. Rutherford: Well, you have to accept the fact that when your dealing with products that are judgmental, then you have to be careful with how you grade them, how you make the judgements and how you make the final score. What I mean with that is, that if you do the job on time within budget and the customer is thrilled, then the fact that you had 10, 15, or 30 change orders doesn't make a shit. So you did have TQM, you did have total quality. You have to be careful to major on the major and minor on the minor and the contracts people by the nature of their education and training are going to major on a minor. What else can I say?

INTERVIEWER: That's some of the perceptions that have been really established. I have to agree with some, with all of them.

[NOTE: Here the interviewer is drawn into introducing strong bias. Although Mr Rutherford has established his position strongly, the interviewer has offered support and agreement. All further discussion should be viewed with realization that Mr Rutherford may be extending his position in order to say what the interviewer wants to hear.]

Mr. Rutherford: I think that's the key you have to measure the total package. Measure 'did the job meet the scope of work', 'did you get it done on time', 'did you get in done within cost', 'is the customer excited and happy about it?' Now if all of those are true, then what difference does it make if you had 30 or 40 change orders. That's what the change orders are for, to change the job to meet the customers' need. Now if you want to come back from the auditor's prospective and say "change orders are bad; you have all these change orders; boy, you really screwed up; you didn't take the time to do up front planning." Well you and I know you can plan forever and never accomplish a thing. Plans should be kept flexible at all times, should be kept at broad gauge. As soon as you start doing detailed planning, if your not very careful you'll start going in circles, nothing gets done. And in fact many times plans are continuously changed to meet whatever the demands are. And you have a broad macro plan that doesn't change; your main objectives are still the same. But you find alternative ways as you go along. And the contracts people tend to want to freeze you to a specific way and you stay that way no matter what it costs. Whereas the engineers are willing to change a little bit to get things done. A contract guy feels uncomfortable, that's not auditable; it will look bad later, so he resists that. The engineer says "bullshit, I want to get the job done, I don't care about that stuff." You have to have the check and balance and so the real check and balance is, number one, did you get the job done on time, did you do it within the money, was the customer excited about it? Now obviously you don't want to steal a bunch of money in the process. So you have to have some way of checking that, but it's almost impossible for an engineer to steal money anyway, even if he wanted to. Everything is so open and so documented. Okay, and you have great detail, you have got a set of plans that explain everything in great detail, you have got a set of specs that go into great detail, there is all of these signatures on paper that's in the file that you approved all these products and equipment, so it's very easy to catch you if you're crooked. And nobody that has any sense is going to be crooked and then

not educated people, there no money involved anyhow. It's all nickel and dime as far as you can get out of it.

INTERVIEWER: There has been a statement made that in average base type level type work, that there would not, that we could bring contract officers to do the work, but we couldn't keep them busy all the time. There just not enough of work in base engineering to keep contract officers busy all the time.

Mr. Rutherford: That all depends on what your mentalities, if your mentality is to do everything with in house forces, with shop forces and you have a great big P&E shop and you have a big stationed force, that might be true. But your going to see that go away. We're in more and more pressure to contract out everything. And so your going to have a base operating contract, a so call boss contractor, for all bases before it's over with. And so you will have to have contracting officers there. I think there ought to always be a mix. There ought to be a mix between contracting and station forces. I think you probably should not give so much contract that you can't fill the gap when the contractor fails. Because you have to maintain your operation. It's very hard to manage something that you can't personally do yourself.

Managers can tell you all they want to about how a manager can manage anything, and I would say that is true after he reaches a certain age and he has been bitten enough times to where he's damn careful with what he say's and what he does. But when he's young and growing up in life, he's going to think he knows a lot more than he knows and he is going to screw up a lot of things because he is a manager. So there's a many MBA that's wasted a ton of money. Because they thought they were smart. If you're smart enough to listen and put the right people in charge and if you're a very good judge of character you can manage most things. But even then if you don't have some personal knowledge of what the products are you can be beaten by dirty, crooked people. And so as a general principal I'll say that it is generally dangerous to say anybody can make anything if he's a manager; any manager can manager anything. You need to have some basic understanding of the product and the processes that your in charge of. You can't just be a personnel specialist, or a financial specialist, or whatever. Now if your sent to the very top of an organization, if you're the top executive then so much go on appearance and your perhaps personal charisma can mean almost everything. But even then you have to make the final decision. So I would say even then long term success is going to depend upon knowing the business. And so the concept of somebody going to business school, management school, MBA school, they take Peter

Drucker, they take Crosby, they take (what's the big guru on TQM? . . .) Deming. They've read all the books, so they're a manager. Well, yeah, they are. But can you put them in a specific factory and they be a success? Probably not.

So it gets right back to the same thing about what we have been talking about this whole time. You have a GS12, 13, or 14 engineer-in-charge. You hire an A/E firm that you pay 6% of the job to design the job. And then you give it to an 1102 who doesn't know shit about what you have been doing and say "alright your in charge". Now that don't make much sense. You can go back later and defend yourself with a auditor and say "well I followed the rules, I followed the system, I gave it the 1102," the 1102 says "here's my file, I've got a record of everything we did." Here's a customer over here that gets his job 6 months late, or whatever and he says "well I don't like it worth a shit." Now what's your objective? Is your objective to be able to audit everything and check everything, or get the job to the customer on time?

So I think you should go back to (your report should kind of focus on) whatever your doing, you must measure it how well did I satisfy the functional operational requirements of the command, of the organization, of the American people, of the government. How well did I satisfy that? Not how well did I execute these processes. If the end product doesn't meet the expectations of the customer, then go back and look at the processes. But only to meet this end result. So you have to have a big enough perspective to know what your product is. And my position is that we've lost that perspective. We have so many people in charge that nobody's in charge. We have much frustration; we have much lost energy; we have greatly reduce productivity. We have doubled the contract staffs; all that's done is give us twice as many files and it takes twice as long to do the job. The end product is no better, if anything it's worse.

INTERVIEWER: [Fishing for information on the STAR Report] There was a STAR report I don't know if you've heard of it. I know that up in contracting they were talking about it . . . ?

Mr. Rutherford indicates no.

INTERVIEWER: Okay, that was one of the studies that just recently came out. Basically saying the same thing you've just said and most of my previously studies that I've ever looked into have said the same thing . . .

Mr. Rutherford interrupts: I never saw that study.

INTERVIEWER: Okay.

Mr. Rutherford: But I think what I'm saying to you is just what you will hear any professional engineer or architect who's been involved in construction will say to you. And you have just confirmed it. I feel really good about it.

INTERVIEWER: CONCLUDING REMARKS AND THANKS ARE EXTENDED TO MR RUTHERFORD.

Appendix F: Transcript of Informal Interview with Maj Hal Rumsey, PhD

MAJOR HAL RUMSEY, PHD
ASSISTANT PROFESSOR OF GRADUATE ENGINEERING MANAGEMENT
AFIT/LSM
SCHOOL OF SYSTEMS AND LOGISTICS
AIR FORCE INSTITUTE OF TECHNOLOGY
WRIGHT PATTERSON AFB, OHIO 45433

NOTE: The interview with Maj Rumsey was not recorded verbatim. The essence of this transcript comes from several seminars given on Total Quality Management (TQM) to the students of the Graduate Engineering Management Program and from an informal interview conducted on 18 June 1990. Maj Rumsey has reviewed this transcript and has been given the opportunity to correct any errors.

INTERVIEWER: Major, what is the Total Quality Management perception of the problem?

Maj Rumsey: Maj Rumsey concurs with the perception of dysfunctional conflict between BCE and Base Contracting. The conflict results from the isolation of all parties involved within their functional stovepipes. The functional barriers of the organization prevent the effective management of the projects. Neither party possesses a competent understanding of the roles of the other. Instead of crossing the barrier, they retreat into their functional roles.

INTERVIEWER: Major, how would TQM address the problem?

Maj Rumsey: Process management is the vehicle to overcome difficulties. Process management is the method in which a process (e.g. the construction project management process) is measured, evaluated, controlled, and improved. Process management is the top-down approach to resolving problems. Management commits to the resolution of the problems and enacts the method to develop it.

The method by which problems in the process are addressed is called the Transformation Process. Strategic planning identifies the desired results. Next, Process Action Teams (PAT) and Corrective Action Teams under the guidance of a top-management steering group implement the process management. Finally, the transformations are

institutionalized through communications, structural changes, rewards systems reinforcements, etc.

In order to implement process management for a functionally oriented process problem, the following steps are involved:

1. Appoint a process owner, the single individual with the responsibility and authority to define, measure, control and improve the entire process.
2. Define the process, including measurables (inputs, outputs, etc.), all tasks involved, and possibly the customer.
3. Simplify the process, breaking the process into unit operations, work flow, and logic flow.
4. Measure the process according to the defined measurements. This step establishes a benchmark for evaluation.
5. Control the process. Identify points of control: key individuals, informational control, and actions involved to control the process.
6. Improve the process. Implement the determined solutions of the team, centering upon the control points and affecting areas of measurement.
7. Measure success or failings, evaluate the results, and start process management again.

The key to effective process management is the appointment of process owner and delegation of authority to effect change. The team must be members from all portions of the organization; this measure ensures involvement of all parties in the solution. The process owner can come from anywhere, but the owner must established high enough in the organization to control the whole process.

Continued process management ensures continued involvement in the solution and continued incremental improvements. The PATeams will probably come up with the same solutions as the consultants. However, their involvement will aid in the implementation of the solution.

INTERVIEWER: Major, what solutions to the problem do you recommend with your insight into process management?

Maj Rumsey: Maj Rumsey declined to commit to a specific solution. The problem is systemic. We can continue to work the way we exist. However, what we seek is an approach to have everyone work better. The solution is to manage the horizontal process; the PAT must manage multifunctionally.

INTERVIEWER: One proposed solution involves incorporation of contracting officers into BCE. One criticism of this approach is that contracting officers would be influenced to no longer be impartial; they would be persuaded to side with

BCE against the contractor more often. How do you perceive this difficulty being managed?

Maj Rumsey: Maj Rumsey could understand the perception of the contracting officers that this could occur. However, his experience with contracting officers lead him to state that, no matter where contracting officers are, they won't violate the law. A lot of contracting officers know only one portion of their job very well; they are used to one way of contracting (e.g. sealed bids). Thus they are sometimes viewed in the role of obstructionists. Our [BCE] role is maximum flexibility within the law. Under process management, (if brought to BCE) the contracting officers can be induced to greater flexibility.

INTERVIEWER: Another criticism is that contracting officers within BCE could not be kept busy, that the BCE work load is not stable enough to maintain a full-time force. How do you perceive this difficulty?

Maj Rumsey: They are probably right about the contracting officer work load. The solution must be resolved and tweaked by the PAT.

With all the previous research commissioned by the Air Force to study the problem and recommend solutions, no significant solution has yet to be implemented. This reflects lack of commitment on the part of top-management to resolve the problem. Process management represents a commitment on the part of upper management to the resolution of the problem, a commitment to change.

Appendix G: Transcript of Informal Interview with Mr. Allen Hurlocker

MR ALLEN HURLOCKER
CIVIL ENGINEER
HEADQUARTERS, U.S. ARMY CORPS OF ENGINEERS
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QUESTION: . . . do you have any experience with the Air Force's situation?

Mr Hurlocker: I've had a little bit of experience with the Air Force program and the relationship between the Corps and the Air Force in the South Atlantic division, a little bit, looking at the Air Force work. And a small amount of exposure to the program since I've been up here. But not a whole lot; my primary background has been civil works construction and then, later on, the military construction arm, as in at the division office.

INTERVIEWER: Okay, well, the main thing I'm trying to find out is how you perceive the organization to work for the Army Corps of Engineers as well as throughout the Army (in DEH), as well.

Mr Hurlocker: Are you talking about the way we do our contracting and assign our contracting officers?

INTERVIEWER: Right. You get a requirement, it's designed or you contract out for an A&E (you could talk about that as well), but you've got a requirement, how do you or how does your organization get the contracting officer going on it and how do you work, between you and the contracting officers?

Mr Hurlocker: Okay, we (of course I'm in the construction side of the house), we get the projects when the design is completed and the contract has been awarded. The way it works in the Corps of Engineers, in a Military Construction Project, we get the project from the customer (say the Air Force, for instance). They've done what we would call the planning on the civil works side. Then we go through and contract for the design. Now that's some inhouse design, but we contract the design. That's a contracting chain in itself right there; that's the A&E contracting chain which

I'm somewhat familiar with but never have been involved with personally.

After the design's been completed the contracting function in our districts will take the contract documents (which they have reviewed and had some input into, but which were mainly prepared by the technical people) they will take those documents (and counsel also has some input to it) they will then advertise and award that contract. That is, construction contract. That's a sealed bid contract which is what we normally do. The contracting folks are in charge of the contracting up to the point of award and notice to proceed (there would be a good place to cut it).

The contracting officer is usually a military man, either the deputy district engineer or the district engineer for construction contracts. . . . It's possible that a civilian contracting individual could be a contracting officer, but I don't personally know of any. I can't put a finger on any where we've done that.

INTERVIEWER: The individuals who carry the package through the solicitation period, are they in a separate department underneath the district engineer?

Mr Hurlocker: They are in the contracting division; the chief of that section reports directly to the district commander who is normally going to be the contracting officer on anything over, say, $5,000,000. They carry it through the awards process. Once the contract is awarded and notice to proceed, the day-to-day administration is turned over to an administrative contracting officer which typically is an engineer, who typically is an area engineer or a resident engineer. The contracting people normally don't have any contracting authority, although they may have COR authority (may be able to handle some correspondence after the award).

So, after the award of the contract, you have the administrative contracting officer who is responsible directly to the contracting officer who will generally be the deputy commander or district commander. (I'll use those terms 'engineer', like 'district engineer', and 'commander' and 'contracting officer' sometimes interchangeably. So if you have any questions, ask.)

The contracting element in the district then supports the commander, the contracting officer, and offers a certain amount of support to the administrative contracting officer. But the most of the support of the ACO comes through the construction division. You'll have a group called the contract administration section, where most of the support that that field office will need in the area of contract management and contract administration will go through . . .

INTERVIEWER: [Interrupting, which may have been disruptive] . . . That's in the construction division? You have a contract administrative division inside the construction division?

Mr Hurlocker: Yes. A little bit is changing in the Corps, right now. We are putting more emphasis on complying with DOD-wide guides. If you look back five years ago, or not even five years ago, you will see a lot of things that the Corps was doing that was unique to the Corps. For instance we had our engineering contract instructions, ECI's, which were the way we did our contract administration. A lot of it was different, we used different forms than everybody else in the government, or the DOD. Over the last five years, and recently, we really are making an effort now to comply with the DOD guidance and the FAR, etc., everything down to the letter. As a result we've developed a new training program for engineers to train them in acquisition areas.

INTERVIEWER: [In the pause] . . . so that they, when they rotate into the contract administration division, they have the experience; or when they work with the contract division, they have the experience to talk . . .

Mr Hurlocker: And the training, mainly.

[NOTE: This exchange may have tipped off the subject as to the researcher's opinions on training and thus may have biased his responses. As the Corps' position on Engineering and Contracting co-training is well established, this should not impair the validity of the subject's training discussion. However, it must be noted that the researcher has introduced a minor bias at this point in the interview.]

Mr Hurlocker: We have always thought (and frankly, most of us have never known anything different, until recently, until the move to have 1102's do contract administration), we have always had engineers administering technical contracts. Our technical contracts are construction contracts and architect/engineer contracts. We've always felt like that was an absolute necessity. I guess you could say, if we ever thought about it (like I say, I've never known any different) we would say that it's easier to train the engineer to administer a contract than it is to train a procurement person in the technical aspects of the work.

The thing to keep in mind is that our district engineers truly are engineers, so everybody in the normal structure, in the Corps, who [is] the contracting officer, is in fact an engineer, a technically trained person. There are occasions in which some district commanders are

assigning contracting people to be contracting officers, but right now, I would say that 99% or 99.999% of the ACO's are engineers. Probably, out of our thirteen divisions, there may only be one or two in which you will find a procurement or acquisition person being a contracting officer on a construction contract.

INTERVIEWER: You said something before that the Corps of Engineers is kind of leaning towards getting 1102's into the organization more as in administration, things like that. Do you see that continuing in the future and why do you think that they're going that way?

Mr. Hurlocker: Well, what we are going to do, and what we are doing with the training that we've developed, is structured around the engineers still being the ACO'S and we have a concurrent effort that has to do with training of military officers, to prepare them to be contracting officers. So the direction that we are taking with this training, specifically talking about the civilian training for ACO's, we are training them to do post-award contract administration, which is a narrow view. I mean really, if you look at the total acquisition process, then we're talking about the tail end of it where all the Competition-In-Contracting Act, etc., the advertising, negotiations (if it happens to be a negotiated contract) are done up front. So the contracting people, we're trying to start doing business so that when they can become a part of the team and contribute their expertise into the process. For instance on construction contract, I think that probably you will start seeing 1102's working in the office of the engineering branch field office, that will be handling paper work. Possibly doing negotiations on smaller modifications. I think on large modifications you're going to see 1102's helping out with the cost-analysis, helping out with the various things that you have to do to document a business clearance memorandum. So even though our direction right now is to maintain engineers as ACO'S, we're trying to pull all of our resources together and use these resources as a team effort. Now that varies, in our organization, the capabilities of the contracting division varies from district to district pretty dramatically. Based a lot on tradition, and on how things have been done. But we are moving toward training our engineers in the acquisition confidence that they need to do the post award contract administration. We are also moving toward pulling these procurement people who will, I use the word procurement because it used to be Procurement and Supply in the Corps. We still use a lot of contracting people in that light, and some of them don't have any training in anything other than Procurement and Supply. But we are getting people now who

are trained in cost-analysis for instance, and in negotiations, so they can help out. So we are trying to build more and more a team effort into the process. That would come into, particularly, for instance, on major modifications to a construction contract, that over one hundred thousand dollars you need cost and pricing data, then your area engineer typically would not have the capabilities to handle that. The approvals would have to be done in the district so your contracting people in the district will get involved in that process. Even though the authority would still be with the ACO & CO.

INTERVIEWER: How do you think (and this is more or less trying to compare our system with yours, because we think we know how our system is), how do you think having engineers working contracts and engineers doing most of the busy work, most of the contracting expertise work, how do you think that helps the contracts get administrated effectively?

Mr. Hurlocker: I think on the construction contract it's different from, for instance, a weapons system contract. I think its different in that it's very site specific, it's unique in many aspects. I think you need engineering expertise on the ground on the project to administer the contract in a timely manner, to respond to the contractors submittals, any changes that may come up, to oversee the quality control program, etc., quality assurance program. Now we've always done the contracting administration in conjunction with these other things, to pull that out now would be very, . . . it would create another organization. For instance, suppose that we had a contracting individual, or we said okay, we are going to create a separate contracting administration with the people who do not have the technical background, then those people would be very specialized. They would be different people than the person who is out there telling the contractor that no you can't place concrete today, before your forms aren't ready. So it makes it more efficient because you have the technical people who are overseeing the construction are also expert in post-award contracting administration. So they know enough to do the documentation that is necessary. They know enough of how to deal with the contractor without getting the government into undesirable positions like unintended change orders, etc. So I think it's much more efficient to have your technical expertise and your contracting expertise in one individual at that field level. And your resident engineer was a engineer first and generally the training in contract administration is what he received when he came to work for the government. So frankly, the contracting administration takes up a lot of our time. But its not something that requires a lot of intellectual capability, so

I think the real danger is in the technical aspects of the job. That's where you've always got to be alert. When building an earth dam, the contracting, of course, is important and that's why it takes up a whole lot of time. But the safety of that structure is the most important thing we have to deal with. So I think that having those two people, I mean those two functions in the same person, it compliments things and then when it comes to making a decision in construction, the technical aspects of anything, a change is very critical. So if a person who is a contracting officer or administrative contracting officer on a construction contract, who doesn't have the technical background, is going to be a great disadvantage in trying to sort out the facts. And see which facts are correct, and which ones are incorrect.

INTERVIEWER: I just want to run a couple of scenario's past you and just see what you think about them. Your out on a site, the construction inspector finds the person is putting a pipe 90 degrees different than what it should be. And you got to stop him, you've got to turn him around, you have to do a change order. How does that work? (Just to get the system down).

Mr. Hurlocker: Practically the way it works if a corp QA inspector sees a contractor putting something in that is wrong and it needs immediate attention, for instance, suppose he's got the pipe in and he's getting ready to back fill . . . (**INTERVIEWER: start pouring concrete**) . . . the Corp inspector will go over, typically, and talk to whoever is there. Hopefully the contractor quality control man would be there, that's who we like to deal with; but quite often it's the foreman, or supervisor. He would say, hey that's not right and we need to stop. Generally our working relationship with contractors is such that he would stop. Then the management of the contractor would show up and there would be some conversations as to " well what's going on here." And realistically if the contractor says "no, I'm right, I'm going to continue with this." Then the government inspector couldn't physically stop him from doing it. However, most contractors are not going to do that because they are going to be wary enough to where they are going to make doggone sure they are right before they start covering up work. They know they are going to have to take it out again if it's not right. If it came down to the point, let's change the scenario a little bit: suppose that the government inspector saw that what was there is not what we wanted, but it was in compliance with the specifications and so forth. Then he is in a position of deciding whether or not he needs to go ahead and stop the work, which technically he can do, legally and technically. But today

with the radio's, all he has to do is call the area engineer, or resident engineer, someone with contracting authority to come down and take a look at this. And then that individual would have the authority to issue a change which may amount to, hey stop working here, until we find out what is going on. If he didn't have the authority, if the magnitude of the change would be such as it obviously exceeds his authority, then he would have to get on the phone and call the contracting officer and consult with him. It works pretty good. Occasionally you will have a case where a contractor will be hard headed, for instance, you will run a slump test on concrete and it will fail. He will continue to place the concrete. Now that is a very bad situation. Generally, maybe we are getting off the point, the real hammer is you've got to make a contractor comply is that his quality control people are supposed to be there. They are supposed to have made sure that everything is in accordance with specifications. So that when we find something above indicating there is a physically problem, it indicates there is a failure with the quality control problem. So that is really where we can go back and say, your quality control program is not working, and tell me what you are going to do about it to make it work. Those folks who are out there on the front line really don't have any contracting authority, the Corps shift inspector doesn't have contracting authority. His boss usually does, who is the area or resident engineer.

INTERVIEWER: So the inspector could actually pick up the phone and call up his . . . or pick up the radio and call his boss, the area engineer who has contracting authority and get the thing done that afternoon.

Mr. Hurlocker: Yes, we've had cases where, and personally [I've] been on projects where we were building a dam, had a flood, and the bypass structure was eating out the toe of the coffer dam. The area engineer directed the contractor to stabilize the toe of the embankment with rock. If we had not had that capability there, who knows. Generally you can get somebody on the telephone, this was when I was at the Savanna District a couple of hundred miles away, but sometimes you have coffer dam's that are flooding, and you have to do something right now. And having the authority on site to do something is absolutely essential I think in construction.

INTERVIEWER: You've got a claim that comes into the office. Contractor sends in a letter that said somebody told me to put this in or I was suppose to have 30 days of clear sunshine in July, and it rained 20 of the 30 days. I need

some more time or need some more money. What kind of structure do you go through in reviewing that claim?

Mr. Hurlocker: Well that particular claim would be under the weather clause, which is a special case. It's easy to handle that one. The people in the resident office would do an analysis in accordance with the contract clause we have and they would give him time. The ACO could issue him time.

INTERVIEWER: Let's say there's a change in site conditions.

Mr. Hurlocker: Okay, differing site conditions. For right now, the contracting, the ACO could have up to 100 thousand dollars authority. That's a recent change. He, but in any event, suppose it's just a change condition, the area engineer would take a look at that claim. Usually it's a letter, he's saying hey, I encountered a rock over here and it wasn't shown on the plans. He will take a look at that letter. He will go out and look and physically investigate the site. He may say, hey there is no rock there, or that rock was shown on the plans. So he will write a letter back to the contractor saying, "I've investigated your claim or contention." He may not want to use the word claim, he will try to resolve that issue, at his level. But there is always a understanding that the contractor can go to the contracting officer if he wants to ask for a decision from the contracting officer. But the scenario usually is, the contractor writes in a letter. We take a look at the conditions. If we agree with him, that there is a change, then normally we will work back and try to issue a change order to mitigate the damages resulting from the change condition. And if the monetary amounts are within his authority, then he can do that. If they are not, then he has to go in through the district construction division engineering district and get it involved and it will have to be a modification that the contracting officer would sign. Or if it's a claim, your looking at a long time, to process a claim through claims process.

INTERVIEWER: Each individual process isn't monitored directly by the area engineer, it's monitored by the construction manager under his command or something like that?

Mr. Hurlocker: Each individual, usually on a project of any size, a resident engineer will generally have project engineers working for him. And the project engineer may have one project or he may have several depending on the size of the projects. He will, the project engineer will generally have quality assurance personnel under him that again could be moving from project to project, depending on the size of the projects.

INTERVIEWER: When you say the area engineer goes out and investigates each claim or each letter of contention, would he send his project engineer and get info back from him or would he go out himself?

Mr. Hurlocker: Either way, if it's anything, if it's very much, or has a potential of being much at all he is going to go out there himself. If your building a small road into a rec. area and the guy says, "hey I hit a little bit of rock here and it's going to increase my cost about 2,000 dollars", and probably the initial visit is going to be by the project engineer. And if the contractor persists, or if the project engineer comes back and says, "yes I believe he's right". Then generally the area engineer will see it. But the contact with the field, the day to day contact, is the project engineer generally. The area engineer's varies from project to project. Let me give you a example, Tenn. Tom, Tennessee Tom-(?) [indiscernible], huge project; had a area engineer that was located in a town along the alignment. You had several resident offices going at any particular time. **[here, tape ended and was turned over]** . . . most people involved, more commonly he will have a area engineer or resident engineer who is located in one office. He will have either a couple of resident engineers working for him, maybe only one. Some project engineers, the area engineer will have contracting authority, maybe one of his resident engineers will have contracting authority. Some of his project engineers may have limited authority, like COR authority. Some of them can write letters, but nothing that causes an increase in time or money. So the level of involvement of area engineer for the head manager in that particular office varies depending on the circumstances of the office. But they all get out and look at the work; they are familiar with the work. On a base for instance, they go out and see the work at least once a week. They will see every job, some of them make a point of going to every job every day; a lot of them do. That has to do with whether are not they are a hundred miles apart, and that sort of thing. That also determines what level of supervision that he would put over that office. If it's a remote location that he's not going to get to but once a week, he is going to put a resident engineer that has some authority, a more experienced man there who will probably be resident at that site. We have offices, for instance, we've got a office in Raleigh, North Carolina, which covers the northern part of North Carolina, all the way across the state so the resident engineer, or the area engineer is located in Raleigh. He's got work out on the coast, he's got work up on the mountains, even in Virginia. So he can't visit those sites everyday. He does visit them generally once a week. He assigns people to those projects who stay there, and who

have a certain amount of authority to act. Now that versus being on the base where all of the projects are in a 10 mile radius. Well, he would go and see every project, everyday.

INTERVIEWER: One last scenario I want to run pass you, is that this is common criticism, or possible criticism in the Air Force. If the way our organization is, the civil engineering branch is all separate. Then under the wing commander, the main boss, way over on the other side is the procurement department. Every time we need to do something in procurement or construction we have to shoot it to them through the whole information channel. One of the criticism of trying to put the two together, or trying to get some of the contracting officers in the civil engineering organization, is if they are working for that boss, there's always the possibility that, that boss has to get the job done, doggone it, go out there and get the job done. You never know if your contracting integrity is going to be maintained with contracting officers who are subservient to a boss who absolutely needs the job to get done. Is there any kind of feelings that there is perhaps some pressure in the Corps of Engineers that when the job has to get done and your all of a sudden rather than being a impartial party to the contract, more less you're a party to the Air Force, or a party to the Army (I'm sorry) who's taking the part of the Army and trying to get the job done rather than being the impartial party? Do you see what I'm trying to get toward?

Mr. Hurlocker: I really don't think that is much of a problem in the Corps of Engineers, particularly with our contracting officer being military. They don't have, I've personally never seen that be a problem with the contracting officers. They take serious the idea that the contracting officer has got to be a honest broker and has got to weigh his role as a protector of the tax payer's interest and to also give the contractor a fair shake. Now, if you get down to the ACO level where you have an engineer, or even if he wasn't a engineer, but anybody who is dealing with a contractor on a day to day basis, then he's got to be on the technical level plus he's got to be on the contracting level and exercise that deciding judgement that goes along with being a ACO, administration contracting officer. Do they ever have any conflicts in there? I'm sure they do. I'm sure there are cases where a person, either consciously or subconsciously, lets the fact that hey, I don't have any money to pay for this change, so I'm not going to recognize this change. I think it would be naive to not recognize that's a possibility of human nature. But that is not a major problem in the Corp of Engineers. I think that our people are aware of the fact that the government is going to pay for legitimate changes, legitimate claims and while we

all have our opinions on various claims which develop. But in the end the process is generally going to work out to where the contractor is going to get paid for additional work, so by trying to hide it, or trying to push it down, it's not going to work. I really don't think. And our contracting people are independent. I mean, you might think that a deputy who's a contracting officer would be influenced by his boss, and I'm sure from a practical point of view he is. Except that when he makes his contracting officer decisions, they are independent of any other control. So I don't think we have that problem very often. Just doing the work in a timely manner, is not inconsistent with being an impartial contracting officer. So in my experience that has not been much of a problem.

INTERVIEWER: Just a change of vein, the DEH level, at the base level, or the fort level, whatever, to get the regular day to day construction repair and maintenance needs done, how do they go through their contracting system? Is it completely different from the Corps', or do they refer to the Corps for their contracting capability?

Mr. Hurlocker: I think they do both. And I think you could talk to Jim Lovo, he's more familiar with that. The DEHs, on their O and M work, they have the option of doing it themselves, or doing it with the Corp. If they decide to get an A-E contract to do some design I believe they have to come to us, for us to negotiate the contract for them. But then it's my understanding we can turn the contract over to them, and they can actually get their design and then they can proceed to do their construction. Now my understanding on the DEHs is they have a office of contracting and I'm not sure how the authorities are broken down.

INTERVIEWER: The office of contracting is in DEH or is it separate?

Mr. Hurlocker: I think it's a separate function. I'm really not that familiar with them.

INTERVIEWER: I'll poke around and see what I can find out.

Mr. Hurlocker: They are doing maintenance, O & M type work; they are doing some small, I forget what they call it now, it's some kind of small Army construction, they can also do that, there's a dollar threshold . . . **INTERVIEWER: . . .** minor construction . . . yes, minor construction.

INTERVIEWER: CONCLUDING REMARKS AND THANKS ARE EXTENDED TO MR HURLOCKER. THE END OF INTERVIEW.

Appendix H: Transcript of Informal Interview with Mr. William Fee

MR. WILLIAM FEE
ARCHITECT
HEADQUARTERS, U.S. ARMY CORPS OF ENGINEERS
CEMP-CI
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20 MASSACHUSETTS AVENUE, N.W.
WASHINGTON DC 20314

NOTE: Mr. Fee holds a wide range of experience in the Corps of Engineers from the base-level (DEH) type work to headquarters level and thus represents a wide view of the project management process. However, his professional concerns focus more upon the programming functions in project management than contract management. Thus, several times during the interview, he diverts to a discussion of programming issues. At these points, the researcher has edited or eliminated these discussions to produce a concise presentation of his professional perceptions.

INTERVIEWER: . . . do you have any experience with the Air Force's situation?

Mr. Fee: My experience with the Air Force was working at Fort Bragg, North Carolina. Of course, immediately adjacent is Pope AFB that provides all the airlift support to Airborne, down there. I was in the installation . . . , first of all it was called Post Engineer, then it became Directorate of Facilities Engineering and now it's called Directorate of Engineering and Housing, just like your BCE. Then, when I wore the green suit, I was a deputy chief of Engineer Plans and Real Properties Division, they called it. And when I got out after a few years, back home, I came back to Fort Bragg as a civilian and worked for the Master Planning shop there, that I believe you all call community planners at the BCE level.

Where my interface occurred was with the Pope AFB community planner. And of course, the bulk of our work in Master Planning at Fort Bragg, as it did everywhere else in the Army, came not in community planning anymore but in project development, the programming activities, more so and more so as time went on. So that was basically my interface where we would have problems with the outside community and things like installation compatibility review zones, a highway we wanted to build, some accesses to the installation, to Pope AFB. We definitely worked with them very

closely when we were moving some helicopters up there from our airfield so I know a little bit about how they work.

And my judgements of that, and I stand corrected if I'm wrong, is that the installation in the Air Force had less control over their destiny (quote, unquote) than we did at the Army installation. The philosophy we operated under was largely the installation commander was the commander of that installation and had full call over what got programmed, what got billed, what went where, what happened, and all that. And as we saw it from looking outside into the Air Force, the MAJCOMs seemed to have a lot of influence over what went on and what got done and when it happened. Notice the difference.

INTERVIEWER: What I'm looking into is . . . , you're correct that there's a difference in how the Army directs where a base is going to go in the future and how the Air Force directs where a base is going to go. But I'm more or less taking a look at the contract management portion of construction. I know that (and this is really fortunate that I've been able to get hold of you because you've worked with the DEH level and the fellows I've talked with across the hall [MR HURLOCKER] have worked more or less the MCP level of the COE. What I'm more or less interested in researching is: you've got a requirement (a house needs to be built, a building needs to be repaired, something like that); you've researched the requirement; you've put together what you think the requirement should be; now how do you go out and get it contracted for and what the process is. If you could outline that whole process . . . .

Mr. Fee: What you have . . .

Here Mr. Fee begins to describe, in detail, the programming process of defining and evaluating a requirement. This researcher has edited this portion out.

INTERVIEWER: Well, for example if you have got a base-level O&M type project and you need just use this year's money (you have already got the requirement programmed); you have already got, basically, the requirements, in fact you might have used inhouse resources to design it. You have got to put the contract on the street, how do you do that.

Mr. Fee: Okay, that backs away from what I was saying. There's still a 1391; it's done in an abbreviated fashion. That goes in every project . . . **[He again discusses programming]** . . .

There's two ways of doing that. The classic way and the normal way for a relatively minor maintenance and repair project or little construction job would be to go to what

they call now the Director of Contracting on the installation (they used to be called Procurement and Contracting). They would perform the contract legal review on the document. And then within the DEH, of course, we have our engineering division (or Engineering and Services Branch it's called now) that represents the people who designed it or who got it designed somewhere else. We have the inspection branch; they would look at the project for constructability and for field locations, haul routes, dump sites, you name it, all kinds of things. And then the project would be awarded by the installation, by the Director of Contracting, and be put out on the street for bids in the normal procurement regulations, the normal FAR. We get a bidder; we'd award the contract through the Director of Contracting. Then after award, our inspection branch would take over and do the inspection on the job, along with the user (whomever). They would be kind of the COR (Contracting Officer's Representative) with the Director of Contracting being the contracting officer. And that's how it works. Does that . . . ?

INTERVIEWER: That sounds similar to how the Air Force does it; in fact, it's almost identical. The Director of Contracting, who's his boss? Is that the base commander or the installation commander?

Mr. Fee: Yes, it's a staff arm.

INTERVIEWER: So it's in no way related organizationally to the DEH?

Mr. Fee: Other than being a lateral staff section, or special staff section . . . [meaning: no].

INTERVIEWER: Well that differ's from the Corps of Engineers in that the COE has their own contracting group that works withinside of them and the contracting officer is district engineer.

Mr. Fee: Yeah, that is. As the Corps of Engineers, we normally support . . . and that's the other option I was going to get into. Let's say that our Directorate of Contracting was backed up; it's possible at a big installation to have a couple hundred projects. Let's suppose that he's backed up. Certainly we don't have anybody inhouse, in the Directorate of Engineering and Housing, that can do anything over a small procurement action. So we might get the district engineer involved, certainly with the design and in the award and supervision and inspection of several of the jobs. Just because we can't handle it. And also on a big job, a big maintenance

and repair contract, they are set up much better to supervise and administer that thing than we are at the installation. So we'll do that and we'll give them usually 10% of the contract's value and start up money. It works out usually to 7 1/2 to 14% of the contract value for them to run it for us. They go out and go to the contract review through their area offices at our installations, the resident offices. They'll do a constructability review on a project, put it out on the street, solicit for bids, legal review and all that. They'll do all of it, you know, they'll work through the liaisons and our inspections branch. So there's that option as well.

INTERVIEWER: You did mention that there certainly were not a lot of people in the organization that had any procurement capability to do anything more than just a small thing.

Mr. Fee: Other than our, the supply and service folks. They could get an air conditioner and they could get a transformer for us, things like that, but they can't do all the local procurement stuff.

INTERVIEWER: You do have people with contract authority in your organization who can get small items?

Mr. Fee: Small items [nodding his head yes]. In fact, we almost lost it 2 or 3 years ago. It's coming back.

INTERVIEWER: Do you know why you almost lost it?

Mr. Fee: Because of the creation of the Directorate of Contracting. You know, they wanted to gather in from all organizations on the installation anyone with procurement abilities.

INTERVIEWER: So the Directorate of Contracting is a new move for the Corps or for the Army?

Mr. Fee: Well, it used to be called the Purchasing and Contracting and it was a much smaller operation. But they still did the construction. And as part of coming to the Directorate level, they made a move at the AR-staff level to gather in all purchasing and contracting people on the installation. And we darn near lost that.

INTERVIEWER: Alright, you're going into a construction contract and all of a sudden the contractor finds a change-of-site condition. And he says "oh, I can't do this" and he comes back to the inspector and says "I can't do this." So the inspector's got to do something. How would he handle it

if he has the Directorate of Contracting working it and how would he with the COE to do that?

Mr. Fee: Well, at the Directorate of Contracting level, it's been my experience that it's fairly easy. What he would do is have everybody sit down in his offices and including someone from the engineering and services branch usually or the utilities division if it was that kind of a project. [They'd] look at the options with respect to this condition that came up and then attempt to negotiate if possible. And you'd have move money around to increase the funds on that job locally, which is fairly easy to do. You know, you don't throw out all your money all at once so there'd be some flexibility there.

With the district engineer, they're more used to it than we are, I guess, because of the big jobs. But there it would involve, probably, through the area or resident engineer office at the installation. The same sort of a meeting, but perhaps with some district design people coming in along with our engineering and services people, maybe the customer and that sort of thing, coming in and trying to negotiate the contract. And if not, well then, coming back to us, the installation, for more money, and probably more money to run the job because it takes some redesign work.

INTERVIEWER: Then that brings up a question. Because obviously the Corps of Engineers would have the more-technical capability in their contracting section because they do use engineers as contracting officers whereas, typically, in the Directorate of Contracting you could get somebody who has absolutely no construction experience. So, in your experience, which has been more responsive; which has been more contracting integrity? Just tell me what your feelings are about the two.

[NOTE: Although the interviewer has introduced his opinion of the technical capability of the Directorate of Contracting, he is reflecting the previously voiced perceptions of the subject. This question requests the subject to go beyond this perception and describe further pros and cons concerning the alternatives. Insignificant bias is introduced.]

Mr. Fee: My feelings there are that for the normal operations and maintenance from the maintenance and repair job that's not too large, most of your constructability review and procurement review can be carried out at the Engineering and Services Branch at the installation DEH and then given to the Directorate of Contracting. The result: you get a quicker turnaround on an installation designed and installation awarded contract. However, in cases where there is rehabilitation work, extensive alteration to

buildings, repair work where you're going and you don't know what's behind the wall, the installation route is just how you described before. You'd have changed site conditions, I think, all the time. The district does a better job with that. They take longer; that's the price you pay. In fact, it's getting so that nowadays, a district almost needs to know what your work load is going to be like next year before the fiscal year even gets started.

INTERVIEWER: But the difficulty you're describing is because you're dealing with a completely separate organization that's not affiliated with the installation.

[NOTE: Here the interviewer is drawing conclusions from the subject's material. Although not an invalid summarization technique, this method can lead the subject to agree with the interviewer's views. This comment introduces bias. However, Mr Fee does not draw upon this bias.]

Mr. Fee: It just takes more time; plus they're more thorough in my opinion. The district is generally more thorough than an installation DOC with the Engineering and Services Branch-type people. I think, and I've been away for a little while, but I think that that disparity is increasing because at the installation level you're losing people and you're certainly not keeping the trained engineer. We're winding up with engineering technicians/ architectural technicians instead of engineers. When you get engineers, they're very young, very inexperienced.

At the district, that is the opposite case. You have the technical base there. I think . . . **[The tape ends here. The interviewer continues on the next side.]**

INTERVIEWER: Well, you've got a contract, as you've said. You said that there's a difficulty working with the Corps of Engineers because they have such a, because you're crossing organizations and things like that, you've got quite a time period that adds to your contract because of that. However, when you're working with the Directorate of Contracting, you have said that there's a disparity in the experience and construction expertise, I was wondering how that affected things.

[NOTE: The conclusion that the difficulties in timeliness in working with the COE was primarily drawn by the interviewer, not Mr Fee as stated above.]

Mr. Fee: I think it's going to affect it more because of the people at the DEH. They're just not what they used to be. I think something's going to have to be done in the future about the DEH staffing levels. Speaking to that, I'm speaking from the Army side of it. It's just been allowed to fall pretty low. More is going to have to be done to get

engineers to stay on, to get people to stay at the installations. That's the key to the problem. Yeah, the problems are there in terms of contractors being able to get away with things that they didn't use to.

INTERVIEWER: And the contracting organization?
[NOTE: Here the interviewer is directing the question towards the weakness(es) of the DOC. In light of the testimony as to the weakness(es) of DEH, this direction is merely exploration of new testimony, not introduction of bias.]

Mr. Fee: I meant the contractor. Normally the inspector and the DEH does the inspection. Somebody from the Engineering and Services Branch, same organization, helps. Without that kind of experience going in there that you used to have, the contractor can get away with work that he wouldn't have done years ago. That's the problem.

Another answer might be to reorient the area and resident engineer offices of the Corps so they can provide inspection services quickly and cheaply on maintenance and repair projects. That would avoid that problem over at the DEH organization. You'd get that kind of inspection you're looking for and quickly because they're right on the installation.

You know this is just an opinion, and it's a wild one, another opinion would be to beef up the area engineer offices so that they could provide some design services in addition to construction inspection. Thereby you'd eliminate that turnaround problem. But they could handle it all and just as quickly as the DEH/Directorate of Contracting consortium could handle it. That might be another way to go.

INTERVIEWER: Outside the shortage of technical experience that you think DEH is experiencing these days, what do you think about the contracting organization that can be done? You might see I'm trying to pierce into the contracting organization and the CE/contracting relations. What's going right there and what's going wrong there?
[NOTE: Although the interviewer is struggling to shield the subject from bias, this question directs the subjects critique towards DOC and the following testimony should be judged accordingly.]

Mr. Fee: I don't think it's right and wrong. I think . . .

INTERVIEWER: Well, what's going well and what could go better?

Mr. Fee: In my experience with what used to be called Purchasing and Contracting was that they were pretty good

people in what they did. They were not engineers. A good percentage of contracting is knowing procurement procedures and law and so forth and I still think that's going right as far as that organization is concerned. In fact there was a time when they talked about bringing an engineer onto the staff of that organization so that they would have some engineering background.

But I think that, generally, an installation being what it is and procuring what it procures, probably the Directorate of Contracting is just what it should be. Engineering, services, construction, maintenance and repair are one slice of the pie that they handle. And in reality, normally they'll put one person on the engineering support on a pretty regular basis unless they're totally backed up with things. Procurement of other things would go to other members of the staff. So that person could get a little bit of expertise, if you want to call it. That I see should be; I don't see much wrong with it. I think that as long as installations do all that they do, that it's all focused on this Directorate of Contracting, it's got to be that way. You know the only correction would be heresy and that would be to move some contracting capability into the Directorate of Engineering and Housing greater than just the supply and services. With it, the manpower and resources to do it, and the expertise. I don't know; that goes against pretty much what the Army's been doing.

INTERVIEWER: And what do you feel about that?

[NOTE: Here, bias is great. The interviewer is drawing the desired conclusions from the subject.]

Mr. Fee: My gut feeling is that the Directorate of Engineering and Housing is set up primarily to provide maintenance and repair service, to answer repair calls, to meet job-order requirements, to make repairs or supervise the repairs, to program construction, and do minor designs. He is not set up or oriented as a contracting organization. It would take some doing for him to get out of the day-to-day rush of answering repair orders, just speaking metaphorically but that mentality, and to move over to contracting and procurement mentality. In a practical way, somebody sitting at their desk and performing a procurement review of a contract simply should not be interrupted by hordes of visitors and hordes of telephone calls coming in, and that's how DEH organization runs day-to-day. I think that the merger of those two kinds of activities might be like oil and water; I don't know whether you could do it.

The only thing we used to do was back before World War II, we had what we called the constructing quartermaster on the installations before the Corps of Engineers ever got involved. That organization did that sort of thing along

with all the maintenance and repair and things. But as I recall, they also had a so-called post engineer that was located physically away. And you would call them up and they would, in those days, literally send a truck over and do the repair and record it in some fashion. The constructing quartermaster office was the contracting organization. They did the design and the construction right on site, on the installation; they did all of it.

You'd almost have to have those two kinds of separate organizations to make it work, I would think, almost geographically separated.

[Here the conversation digresses to shared contacts at the Huntsville COE training facility and in Mobile. No further pertinent material is covered.]

INTERVIEWER: CONCLUDING REMARKS AND THANKS ARE EXTENDED TO MR. FEE.

Appendix I: Transcript of Informal Interview with

Mr. James V. Bartlett, Jr., P.E.

MR JAMES V. BARTLETT, JR., P.E.
DEPUTY DIRECTOR, INTERAGENCY CONSTRUCTION DIVISION
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INTERVIEWER: First, have you ever worked with the Air Force contracting system, or worked with Air Force base level type contracting?

Mr. Bartlett: I never have.

INTERVIEWER: Are you aware, on a MCP level, of how we, the Air Force contracting and civil engineers, are separated?

Mr. Bartlett: I knew they were separated but I don't know how.

INTERVIEWER: Okay, well it is basically, the Air Force contracting is a completely separated organization that handles every single bit of contracting that comes through the Air Force. The civil engineering is just a customer from the outside who bids in for their work, just like anybody else is.

Mr. Bartlett: Okay.

INTERVIEWER: First thing I wanted to find out is if you could explain to me how NAVFAC contracts things out and how's the NAVFAC contracting situation?

Mr. Bartlett: We do contracting through our engineering field divisions; we don't do any here in the headquarters, virtually none here in the headquarters. So we divide up the world into seven engineering field divisions geographically. Each one of them has an O-2 who's the contracting officer and they have 1102's or contract specialists in their organization and they do the contracting functions; they sign the contracts. About 4 or 5 years ago the O-2 was under our O9A; O9A in the Navy is acquisition group. And under acquisition typically was the O-4 who was engineering and O-5 who was construction, administered the construction contract. And it used to be the O-2 was contracts, the officer for acquisition. About 4

years ago we separated them out and O-2 now reports directly to the commanding officer of the engineering code division as a separate thing. He gets his contracting authority on the acquisition procurement contracting chain of command. So it comes up here to NAVFAC O-2 contracting officer and up through the commander of NAVFAC, COM NAVFAC has the authority to contract for construction. On up, now, it goes through the assistant secretary of Navy, for (I think it's) research, development, and acquisition (there is a acquisition name up there) that goes up through the Navy to OSD acquisition (Under-secretary of Defense of Acquisition). So the acquisition business, the contracting business, has their own chain down through the military system and they respond to that. So from that aspect our project management group, meaning O9A, and the O-4 who does his own review and O-5 who carries out the construction, they then have to marry up with the O-2 folks for contract action and so we form teams that have contract specialists in them and engineers and architects in them and project managers in the team to get an acquisition. But the contracting part of that acquisition has to go up the contracting chain and the requirements and the scope and that sort of stuff is through the project manager (schedule, that sort of stuff comes through the project management).

INTERVIEWER: But in the project administration through out the, for example, through out the construction period the contracting administrator or the contracting officer whose actually working the contract, how is he related to the project engineer who's involved with the technical aspects?

Mr. Bartlett: They have separate chain of commands until they get to the commanding officer of the engineering field division, who is the same. It goes from the commanding officer of engineering field division to the O-2 who is the contracting officer and then for specific levels he can delegate that down to some other people. But they're all in the warranted contracting officer chain of command, to sign the contract and to do contracting functions. The commanding officer goes down through the O9A acquisition side, to project management, to engineering or to field offices on that side that administer the contracts. They do the supervision, the inspections, surveillance of the contract, but the contracting officer is a different person.

INTERVIEWER: Okay, if there is any kind of communications that's got to go on between the project engineer, the project engineering section and contracting administrators does it have to go up through the chain of command?

Mr. Bartlett: No, it goes straight across.

INTERVIEWER: Like a official letter and things like that can go right across?

Mr. Bartlett: We would not normally write a official letter within a command, the letter head said you don't do that. The memorandum would go back and forth.

INTERVIEWER: Okay.

Mr. Bartlett: But the project manager who's like a GM 12 in our field divisions could talk directly to the contracts specialists or write a memo over contracts specialists. Because he wants to form a team between the contract specialists and say the design engineer, the EIC (engineer in charge of the contract dealing with a architect engineer firm or something like that) so he forms that team and he writes lots of memorandums among himself for that. But in general they would not send the memorandum up to the commanding officer and back down to the other side of the chain.

INTERVIEWER: How are they situation locationally, are they right across the wall in an office or are they down the hall?

Mr. Bartlett: They're different in different places. Generally the O-2 organization will have it's own place in the organization. Here at NAVFAC headquarters the O-2 is just on the other side of the wall from us. That's just happenstance, it could be any place else in the organization. Out in the field it's the same way, sometimes they're on a different floor at a different end of the building, sometimes they could be side by side. There's no . . . the physical location usually depends on how the building's orientated.

INTERVIEWER: Do you think that effects the communications in anyway?

Mr. Bartlett: My own personal feeling is that we have too much reliance and adherence to official communications back and forth which bogs the system down. Because each person is writing a memo to the next person who has to act on it and respond to it. You spend a lot of time doing nonproductive communiques back and forth and not enough time actually sitting down and writing a business clearance, or negotiating, or slating, or what ever you need to do. And it's just my experience that in the field the best system is the team system, where you take a 1102 and an engineer in charge and a project manager and the three of them make up a team to get something done and they don't have to write up

memo's to each other at all, they just talk. And that's more team work, so they can spend their productive time actually doing what needs to be done.

INTERVIEWER: [Attempting to get at the training and experience issue] The experience of your 1102's and your experience of your engineers . . . do you have any . . . for example, are your engineers very familiar with the FAR? Are they very familiar with contracting and how about your 1102's are they very familiar with construction practices?

Mr. Bartlett: I think with any community like that its hard to make a blanket statement. Our 1102's, particularly in the last 5 years, are intensively educated in FAR. We have a contract college, if you will, out on the west coast and they all go to school out there and they take all the courses that they need to get warrants. Obviously not everyone of them has had every single course. We have in the pass had a tendency to get what I call housewives and secretaries into that field and they don't have a whole lot of background to start with. But we train them with how the FAR works and they go to these various schools and get to be pretty good at it. There, in the last 2 years with more emphasis on the procurement business, there's been a move afoot to try to get only college graduates in that business. OPM has recently come out and said you can't levy that requirement as a requirement, but you can use it as a selection factor and what predominantly has happened is everybody is using it as a selection factor and only college graduates are getting into that business. In our business here, they've pretty much shut down any of this training for engineers until they get all the 1102's fully trained in it, so the engineers haven't been doing much of that. Not withstanding that, the engineers that are in project management that are EIC's working in design divisions managing A/E contracts have, over time, assimilated a pretty good knowledge of the FAR, because they work on these procurements all the time. And they are very much involved in it, so they kind of self study, on the job training, they've learn a lot about the FAR. Of course all of these people are college graduates in engineering or architecture. And many of them have had contract law and they have a lot of experience in it. So they are very much professional people and approach it from that aspect. The 1102 community is working very hard toward that goal. Now on tne other hand there's always new requirements that come out and new policies and things like that for the contracting community. And, anymore, you will find some of the engineers kind of caught short on some of that because they don't get regular schooling in the business end. And you also find some 1102's that pick this stuff up real quick and are really,

really good. As a blanket I would say that for a long time the engineers knew more about it, or knew a lot about it, and could hold their own. I think they've tended to drift away from that because the engineers aren't getting educated or trained in that area. But the 1102's are getting a lot more training in that area. So I think you'll see a trend or tend toward the 1102's being much more expert in procurement matters that type of thing and engineers being less so.

INTERVIEWER: You don't think, do you think there is any conflict that develops between the contracting officer and civil engineers in NAVFAC level because engineers don't perhaps understand why the FAR has to push them in one direction, or another, or anything like that?

Mr. Bartlett: For that reason I don't think there's any conflict. I think almost all of the engineers understand, or if they didn't know about the rule, readily accepts the rules of FAR. They all understand we work under the FAR and I don't think there is any problem in that aspect. The only problem that would come up is if there is a new rule, or rule that was formerly unknown to the engineer. But as soon as its made known to the engineer that this procurement has to go one way or it takes X amount of days to do something because it is in regulations they accept it wholeheartedly, there is no conflict there. There is a conflict in the Navy, namely the Civil Engineer Corps community, in that for many, many years the engineers, project managers, the engineers in charge managed and were in charge of negotiations and procurement actions. And we had a 1102, sort of a staff assistant who wrote things up for us and things like that. With all of the pressures these days that we have got from on high, this is shifting to where they want the 1102 to be in charge of negotiations and in charge of A/E selection and things like that. And that for a long time was a traditional role for that engineers played.

INTERVIEWER: When you say CE, you're talking about the base level type of functions, the M&R and things like that, or are you still talking about NAVFAC?

Mr. Bartlett: I'm talking about NAVFAC at the field division level, base level if you will. But in our engineering field division where they negotiate the contracts, change orders or whatever, negotiated A/E contractor, negotiate a change order with a construction contractor, that typically 5 years ago the engineers were in charge of that business; project management ran things and now the engineers, . . . it's been dictated that the procurement specialist, the procurement folks, the

contracting officers would be in charge of that. So we do have, particularly in the older engineers that we have, some conflict in their mind that some of their purpose or their responsibilities are being taken away. So there is some friction there, but we're working real hard to over come that and retraining people because it is shifting from the engineers of the procurement, not necessary the whole job but contracting. **[Here the tape ends and is turned over. Mr Bartlett continues:]** You're saying is there a conflict because the contracting officer, the procurement side, doesn't understand the construction business?

INTERVIEWER: Whether or not a level of experience in construction effects the relationship between the contracting officer and civil engineer?

Mr. Bartlett: I don't have any first hand knowledge of that. The fear is that that could be a problem. If you had a real strong contracting officer who wanted to be in charge, but didn't have the experience, there is a nervousness in the engineering community that the contracting officer could assert himself and say that he was the contracting officer in charge and potentially make a mistake because he doesn't understand the construction business. But I don't have any specific . . . .

INTERVIEWER: Well I'm not accusing NAVFAC; I'm just trying to surface out if NAVFAC has any difficulties in that area. Mainly if your in a negotiation and the contracting officer might have to make a ruling, or some sort of thing like that. And you have two different people saying two different things and he has to make a ruling on someplace he may not have as much experience.

Mr. Bartlett: In general, I'd say 95, 98% of the time this is not a problem with the Navy. Because the contracting officers are very aware of the knowledge of the engineers, the COM Reps and the other people that are in the business. And they would not make a ruling, an uninformed ruling, the contracting officers are very conscious of what they do and what they don't. I think in almost every case we have a good working relationship between the contract specialist, the contract folks and the engineer folks. This has not been a big problem, we work real hard toward fostering that and insuring that. We have a saying that every engineer should go out and kiss a 1102 just to make sure they are married up and they work well together and that we don't get some strife in there. The, in the grand scheme of things, the engineer doesn't know all the procurement regs, now, and the procurement people don't know all the, there is to know about construction business. So the two must rely on each

other. Now I think the vast majority of the cases they do work that out and that we don't have, I don't think we have a fear, or cases of contracting officers making uninformed decisions. They pretty much get themselves informed, you know, where they need to.

INTERVIEWER: At the Public Works level down at the bottom where we are doing M&R, major repair projects, or whatever, where contracting officers are dealing with over, I don't know, 50 or 60 projects and dealing with several project engineers, whatever. Would you explain to me how the system in the Navy works and whether or not the same things apply.

Mr. Bartlett: When you get down to the Public Works level, the Public Works officer, a Civil Engineer Corps officer has a lower level warrant and is authorized to do contracting actions down to a lower level. He often has a little engineering staff there and he often has some people go out and watch them, watch the construction, and I don't really see a problem with that level either.

INTERVIEWER: If he needs to contract for anything larger than his warrant, would it bump up to the Civil Engineering Corps or whether or not go over to the base procurement?

Mr. Bartlett: No, it would never go to the base procurement. The construction procurement business stays in NAVFAC chain and in fact the public works officer himself reports and gets his fitness report from the CO of the base. When he puts on his, we call them ROICC hat, his construction hat, he is reporting to a different chain of command. As a contracting officer he does not report to the base, he actually reports up through the NAVFAC system and gets a concurrent fitness report for his, how he does as a contracting officer. So he basically gets reported on by two bosses. But the CO of the base can't make him, using his contracting officer hat, do something. Now they can make him do something as a Public Works officer, he reports to the base CO as Public Works officer. But if he needs as a Public Works officer, needs to do a grounds maintenance contract or a janitorial contract, if he contracts for those things and he turns his hat around as a contracting officer he's reporting up the other chain again. Because the contracting authority does not come down through a base, through the base commander. Contracting authority flows from OSD to SECNAV to NAVFAC headquarters and then down to the contracting officers. NAVFAC has pretty much a lock on everything having to do with facilities and construction. So we, if we want some lock sets or something like that we may go to the base procurement guy and order some through the supply chain and that type of thing. All of our

construction contracts are done like that, and even the facility support contracts we contract for ourselves.

INTERVIEWER: What do you think are the pluses of having contracting within the NAVFAC rather than through the Director of Procurement system.
[NOTE: Here, bias is introduced when the interviewer identifies his need for pluses, and neglects to request minuses.]

Mr. Bartlett: I, although a lot of people don't like to hear you say it, I believe that construction is in fact different. A different procurement than buying bullets and toilet paper and a different procurement than buying airplanes and submarines and missiles. Construction is just different, we have a different boilerplate, we have a different case law about terminations, about weather related delays, about change orders, latent defects and all that sort of thing. The case law of procurement of a construction is different than a procurement of other things. A lot of the principals are still the same, but the cases that build up over these is different. And so I think that having that procurement in the NAVFAC side the house is necessary because you get to work your construction issues and become expert in construction procurement arena. And I think the contract specialist and the way we work with FAR and everything like that is tailored to the construction industry. We have a lot of discussions with the AGC and the AIA and the other people, the professional groups that are involved in the construction as opposed to buying airplanes or ships or something else. So I think its healthy to learn all those rules and keep it specialized. We tend to be, or least in the Navy, tend to be acquisition oriented. And we'll award contracts in the year that they are authorized. They're pushing the schedule and pushing acquisition. And right now we have a compatible procurement system to that if we went out and used the pencil and paper procurement system to try to do this, they are unfamiliar with the rules, case law in our business and I think that'll be a real step backward.

INTERVIEWER: What do you think the minuses of working up through the NAVFAC command every time you need to construct rather than being able to go to base procurement. Do you think there are many minuses?
[NOTE: Here, the bias is ameliorated. By addressing the minuses separately and drawing them out, the interviewer intends to draw an objective view of the system.]

Mr. Bartlett: You probably have, if you're saying if somebody just took their procurement and went to the base

and did it, certainly that would be a more convenient system for the smaller procurements, or it would be perceived as that. You know when you go to the base, go for that procurement. Although the individual procurement process might be easier to do it that way, I'm not sure in the long run it would be. You wouldn't get the same kind of competition, the even handiness in dealing with the contractor you're used to dealing with and they will give us bids that reflect back. The rules are special for that and the contractors are used to those rules. It would be convenient to go the other way. Convenience, you miss the experience of it and all that construction . . . [fades out]

INTERVIEWER: The real reason I'm poking around with those kinds of questions is that one of the, of course I've already told you that Air Force Civil Engineering has absolutely no contracting authority and the only way to get anything done is to go to the base procurement system. Which it does on all the supply and acquisition for the base and that has caused a little conflict. The things that we are taking a look at is trying to pull them over , conceptually, pull them over into the civil engineering organization, or collocate them with the civil engineers. Get some contract specialists over in contracting, or something like that. And we're really trying to see if there are, what the other organizations see are pluses and minuses and what we see are pluses and minuses, compare them and see which ones weigh stronger.

Mr. Bartlett: When you're talking about construction, the law says that construction, any MILCON money, will be done by the Corps of Engineers or NAVFAC.

INTERVIEWER: Right, we're talking about minor construction under $200,000.00, or else major repair projects, things like that.

Mr. Bartlett: I think again you're going to find that the case law that builds up in construction; I worked on one here about two months ago here in Washington, D.C., an annual seminar that pretty much the lawyers put on that said, "here's all the cases that were decided, decisions rendered in construction over the last year, the last one year" and then they talk about all the case studies. About how a service has to pay extra money because we didn't process a change order on a timely fashion and how things are decided and what the decisions are. And they filled up an auditorium with people interested in that business. So I say again that the construction business has, even in that case, has a former lesson-learned process for construction. That if you keep things in that chain you have the benefit

of the lessons-learned. If you go outside that chain you might have to learn all over again; you might repeat mistakes that you've made before. So I think as long as you have a military construction organization set up you might as well use it for all the construction and I think you're better off in doing that. Yeah, you might argue that the queue is a little longer and you got to stay in the queue a little longer, I'm not sure that isn't a different problem, you know, how to get something small through the system quicker. The solution isn't necessarily "well don't use that procurement path use a different procurement path." Well that might be the one alternative way of skinning that cat, but some other ways might be to try to shorten the process, or have expedited procedures through the construction system. My experience has been, even with the procurement business, the nonconstruction procurement crowd, its not like they are all waiting for work to come in and hop right on it right away. There are some real horror stories on that side in the length of the time it takes to do the procurement. I don't think you can just say, "well let's just go to the bullets and pencil crowd and get them to do this procurement because it's gonna be a lot faster." Sometimes it might be, other times it's going to be a lot longer. One of the other things is do those people know to check for historic preservation and for flood plains and for environmental impacts and whatever. Do they know all the peculiar rules that you have for a construction project? I don't know, probably not.

INTERVIEWER: Well in the Air Force civil engineers have to do all that and we basically hand a ready package over to procurement. They don't have any hand in the rules and regulations part of preparing it, they just handle procurement.

Mr. Bartlett: So they just take what comes in the mail and they open it up and sign their name to it.

INTERVIEWER: Not necessarily that, they go through it and make sure that legally all the where-for's and where-as's are . . . .

Mr. Bartlett: But they're not even sure what they're doing right?

INTERVIEWER: Well they're not sure, you can have .....

Mr. Bartlett: What their procurement is .....

INTERVIEWER: No, you can talk about some kind of .....

Mr. Bartlett: You could give them a swimming pool in back of the Colonel's house.

INTERVIEWER: Right.

Mr. Bartlett: As long as it legally looks right, they go build a swimming pool?

INTERVIEWER: Right it could violate all the square footage rules and stuff like that.

Mr. Bartlett: I get called from time to time about our O-2 community and they are saying "hey are you sure you're legal" and I say "hey is that any of your business?" And they say "well, not really but I want to keep you out of hot water." They learn a lot of those rules and again you got different boilerplate and different case law, then you have how much time do you allow a contractor for weather delays. There are lots of different theories, and probably you have developed some issues . . . . But you don't give the guy day for day. He could have 20 days of weather delay and you might wind up giving him legally 10, because 10 of them didn't really impact the work. Or you could conceivably give him 30 because he said the 10 there prevented him from doing something else that might had been another 10 days. And so he was really impacted 30 days. Now in general, if you study how that works, and all of us that come up through this business study that, if you're a pencil procurer or bullet procurer guy you may not understand that. You might tend to say well 20 days of bad weather, 20 days of delayed.

INTERVIEWER: Or in my experience 20 days of bad weather plus money for those delays.

[NOTE: This remark of agreement on the part of the interviewer has cost the interview from this point on some validity. At this point, Mr Bartlett has been led to be less objective. The interviewer has revealed bias against inexperienced construction procurement personnel.]

Mr. Bartlett: Yes, so I get real nervous about people who aren't conversant in construction procurement doings. And I like to think it isn't just because I'm guarding the rice bowl, it's because, legitimately, the intelligent way to do it is through people who have the experience of doing it. And I think it pays off.

INTERVIEWER: Something that, I don't know how much experience you have with the lower level base O&M type of stuff, but some of the contracting officers in the Air Force say that they probably couldn't keep a good crew of contracting officers busy over in civil engineering, there's

just not enough of work over there for them. I don't know if I necessarily agree with that and I was wondering what your opinions were on that?

[NOTE: Again, here the interviewer draws the subject into disagreeing with the comment. Bias is maintained.]

Mr. Bartlett: My opinion is, I'm going to draw you a little diagram which your tape recorder won't pick up. The headquarters is up top of one side of the line and the field is down here. From the headquarters perspective we look at this and say "hey you got this great, big, huge military construction **[MCP]** workload" okay, but to the field it's just some more work down there. The field, when they look at it they're saying that they have a huge O&M workload and when you get up to headquarters its almost zero. We, I don't fiddle with any of that. I don't even recognize that the field has, I think if I give them a military construction project they'll hop right on that as if it was the only thing they had. But in fact at the field level they have a lot of O&M work procurements to work on. So the headquarters perception and the field perception are different on the issues. So what was your question on that again?

INTERVIEWER: Whether or not a good size O&M, base O&M program could keep a couple of contract officers busy.

Mr. Bartlett: My impression is that it would. The field, our field has a lot of O&M work and it is a work load on the O-2 organization. Now how much you have until you reach a break point that says "okay now its intelligent to have a staff to handle this, instead of giving it to somebody else." Generally when you give it, if you had 2 contract specialists locally to do it as opposed to sending it over to some place else which has 10 contract specialists to work on it. The benefits is, sometimes you say "well with my 2 guys I know I can get the work done when I want it done. I can set the priorities and get it done in no big hurry, but when I send it over there sometimes they get lost." The problem almost always is lack of communication. If you can communicate that this is a higher priority project, it can get moved up into the queue. The solution is to communicate better, not necessarily to establish a whole bunch of different procurement peoples. Whenever you get 2 procurement people here and 2 there and 2 some place else as opposed to 6 in a central place you then get into a work load leveling problem. Where you've got to your work may go up a little bit or down a little bit, its hard for those two to adjust to that. Where as if you take that up and down work load and combine it with the other two sites up and down work

load as often as not some of the peaks and valleys cancel each other out.

INTERVIEWER: Except at the end of the fiscal year.

Mr. Bartlett: Well then everybody's got a problem then you see. And believe me I've been there. I've managed those priorities before and you got people coming in and saying "this is the most urgent," "well this one here is more urgent than that one was more urgent," "well this one here I want at the top of the pile." You get a lot of that at the end of the year. But you can't solve that by having, you know, 2 guys instead of 6 guys, actually with the 6 guys on a group you're better able to manage the priorities and the fluctuations of the work load than you are with just 2 people. Two people, you can get swamp under real quick, but it might be there is excess capacity somewhere else in the system where lower priority could pass. Now the alternative is every now and then your own priority isn't as high as the other guy's and you have to do his work.

INTERVIEWER: At the base level and you're suggesting having an office for say, 3 or 4 different bases, or whatever, with a group of contracting officers for their bases. Would there be a problem of coordination between the base and the office of procurement for the construction of those bases?

Mr. Bartlett: What kind of coordination?

INTERVIEWER: Or communication, whenever you dislocate a group that is important to a organization mission, you have a little problem with getting a hold of that group.
[NOTE: Again, the interviewer answers the question he asks (i.e. there are communication difficulties due to dislocation). Bias is maintained.]

Mr. Bartlett: Well you only have a problem in communications to a extent if you let there be a problem with communications. You can make communications work. It's cooperation, professionalism, communications it can work. Where communications bog down is because people aren't paying attention to business. They get lazy; they don't want to make or write up a memo, or whatever. But the communication is exactly the same if you had them divided up. It's just that maybe the guy answers to a closer fitness report-writing officer, or something like that, I don't know. But the problem is not one of organization, very seldom can you just change the organization to solve some systemic problem just by an organization change. The problem that you have there, if it's a lack of communication, the problem is a lack of communications, not

the fact that the organizations are arranged some different way. You need to separate those out. There is a tendency to say, well since that guy wasn't responsive to me yesterday let me get one of my own and he'll be responsive to me. And he might be for a little while. But the reason the other guy wasn't responsive probably due, almost entirely due to a lack of communication, proper communications back and forth. And if the other person was so overburdened that it was impossible for him to do the work, that overburdening is gonna to occur even to a larger degree if you have your own guy doing it. I mean if there is to much work in the system for a big system to handle it why dividing that up into 3 or 4 or 5 small systems would you all of the sudden have the capability, you know you wouldn't be over burdened. What I'm saying is the quick fix says "give me those people and they'll be responsive to me." But in the long haul it wouldn't work, when you need more than 1, if you go to a office that has 6 you can draw on the other 5. They're there and with the right amount of discussion back and forth you can get them even. Okay, but if you only have the one you're kind of stuck. You can make that one person work on whatever is your hottest priority, but you have no depth to give him, you don't have 2 people, you don't have 3 people, you only got the one. Whatever it is you only have a little piece, see you don't have as much flexibility as you would really have. That's just like you all dealing with the Corps of Engineers, half the Corps of Engineers is set up to handle half of Air Force work. There's virtually no requirement the Air Force could come along with that it would be to heavy for the Army, the Corps, to work on as long as you could communicate it's a high priority business. But by the same token when their work load, as it is right now, drives way up, you don't have to worry about having those people on your payroll, normally you wouldn't. But now on a Army payroll and the Army does the work load for them, gets rid of them, or whatever. Just be careful about dividing up the individual procurements I would say. Its a tendency for base commanders to want to have full and complete control. They're not looking at what is best for the Air Force, or the Navy as the case may be. They're looking at what is best for number one, themselves. And I've seen it many times they say well what is best for me and I don't care what happens to the other guy. I might have this guy twiddling his thumb part of the time, but he's on hot standby for me. In the mean time the other guy could be in dire straits needing somebody, "too bad this guy's mine". So we have inefficiencies there. You actually foster that feeling of dividing it up into, "I'll take care of mine and let the other guy worry about his." So its something to think about.

INTERVIEWER: I was looking down the list here and I wanted to clear up in my head, you have said there is a separation between the contracting folks and the requirements folks in the NAVFAC community. For the responsibilities that they share that, say the project falls down and its not done on time and everything like that. And somebody needs to get booted, who gets booted?

[Here the interviewer is investigating the ultimate responsibility for the project (i.e. the project owner).]

Mr. Bartlett: Its up to the commanding officer.

INTERVIEWER: Or who gets the bad rating?

Mr. Bartlett: That depends on who's doing the rating and where they want to fix the blame on it. In our system of doing things in the Navy, the project manager responsible for getting the work done, 'cradle-to-grave'. That's the business that I'm in and we like to press on the PM's who's job it really is. You're going to get beat up if it doesn't get done right. If the PM can point sufficiently to the contracts people and there is a lot of this that goes on: "well, it was down in his basket for 5 weeks and never made it to the top," etc., those kind of stories, then you might be able to put the onus on the contract people. The commanding officer is open to that. Of course, this is the pitch that I gave at AFIT **[Here he pulled out another pamphlet and showed the interviewer an organizational diagram]** and it has, it shows you the procurement, from the Secretary of the Navy we have an Assistant Secretary of Installations and Environment, that's an assistant secretary of the Navy just for NAVFAC, sort of like your Mr. Boatwright. We also have the research development acquisition which is a single acquisition executive in the Navy and the procurement business flows down through him. And we get our procurement authority from this guy. Here is the NAVFAC headquarters where I am down here; here is one of our engineering field divisions okay; here's the acquisition department with our project managers and the engineering and construction and up here is the contracts office. So contracts and acquisition report up there. Now if the contracting take a long time down there and its documented, then this guy right here is making a recommendation on pay rating for his people. And he'll say "you know, yes it took a long time but let me tell you all the reasons why it did," or he might say "it took a long time and we should had really done better so let's give them a poor eval.." And we might go over here to this guy and say "well it was out of your control you get a outstanding anyway," or we might say "you didn't do everything you could to really jack this guy up to make him do his job so because you couldn't do that

we'll give you a bad rating." So you look at what each person, their own response . . . . Obviously its hard to tap this guy for having a long procurement unless he, the project manager guy was doing it, was responsible for that.

INTERVIEWER: The reason I ask is because in the Air Force experience, civil engineering tends to be product oriented and contracting tends to be process oriented. And that has been causing some of the friction and I didn't know whether or not ...

Mr. Bartlett: We had the same thing and I think the solution we had was this team work. In trying to get the contract people out of this process orient. Used to be the contracts people who say "there were 15 negotiations came in this month and 15 left this month." Well that doesn't tell you if that was 7 that had been there the past 3 years. But now by forming teams, getting everyone involved in the acquisition schedule, the teamwork seems to focus more on that, slowly but surely trying to get the contracts folks in the product orientation that we have. Get the contract out on time, so they just don't say 15 in, 15 out, we're breaking even.

INTERVIEWER: CONCLUDING REMARKS AND THANKS ARE EXTENDED TO MR BARTLETT.

Appendix J: Standard Organizational Charts for PWDs (46:2-2)

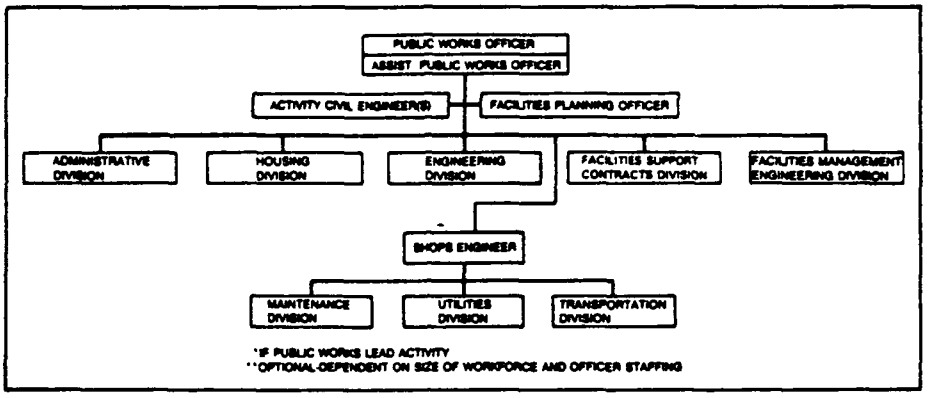

FIGURE 2-1
Standard Organization for Public Works Department
With 100 or More Positions in Production Divisions

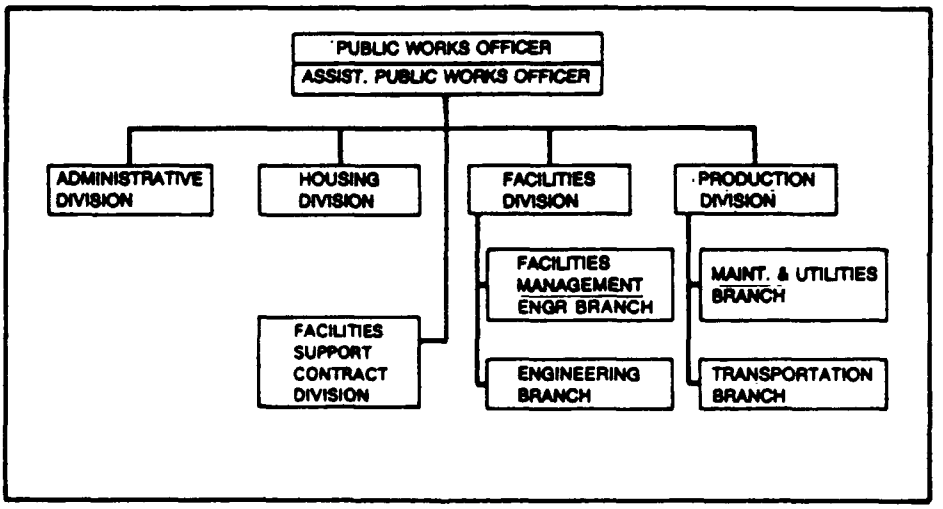

FIGURE 2-2
Standard Organization for Public Works Department
With Less than 100 Positions in Production Division

Appendix K: Transcript of Informal Interview with

Mr. Bernie Adamec

MR. BERNIE ADAMEC
CIVIL ENGINEER
DIRECTOR OF THE PROJECT MANAGEMENT DIVISION (PQS)
HEADQUARTERS, GENERAL SERVICES ADMINISTRATION
GSA/PBS
18TH AND F STREETS N.W.
WASHINGTON, DC 20405

INTERVIEWER: . . . We have to develop a working relationship with that contracting department to get the contract on the street and to get that contacting for and things like that. You have a similar organization, although it's all under the same PBS system, PBS organization. Whereas our's is separated completely organizationally, contracting organization over here and civil engineering organization here, with no ties together. What I wanted to ask you is to kind of go over what your perception of how the organization works and how well it works, how the responsibilities are divided and things like that, and to see how well that you think that division of responsibilities as it's changed over the years, how effective it is?

Mr. Adamec: I guess when your talking about contractually it's for both design and construction and, contractually, we have procured design and construction, for the most part traditionally separate design, separate construction packages. But we have on occasion gone design-build and we are involved now with what we call a lease-purchase program, where it's a design-build as well as financing package. And no one separate direction is the ultimate answer. I think you have to analyze each particular project program, what you got, and apply those processes to specific needs. And when I say traditionally for the most part over the course of at least my career, is been a separate design and construction package. We have gone from an organization of about 20 years ago, 25 years ago where we did a majority of our designs in-house, to an organization now where, because of increase of responsibility and decrease in resources we contract out better than 90 percent of our design contracting needs. And on the traditional method and as described by the Brooksfield, we advertise publicly and go through a evaluation process, using the 254, 255 and go through a interview process with a short list, rate the responses, rate the award and conduct a negotiation with the selected firm within the 6% statutory limitations for design

fee, administer the contract through design development and completion, take the completed documents on the street and go for a lump sum bid award it to the lowest responsible contractor for construction.

INTERVIEWER: When you say "we do this," are you talking about your organization, the programs department, or are you talking about the contracting department? At which point does the package switch over and how do you guys relate?

Mr. Adamec: Okay, internal GSA organization: I talked about 20 years ago traditional procurement and otherwise. 20 years ago the design and construction organization was a self-contained entity, whereby we had both the contractual capabilities as well as the technical and professional capabilities to develop a scope of work, solicit for a contract, do the evaluation, make that contract award and then administer that contract, all within a single group. Again as the program grew and specialties occurred the contracts element was separate from the design and construction grouping to where it exist now and we have a separate contract office of contracts and a separate office of design and construction. I say office of at the headquarters level, GSA is decentralized; we have 8 regional areas geographically located and in that context, in the regional organization, they are called divisions. Division of Design and Construction Contracts and a Design and Construction Division. These are probably the major separation of work that goes into procurement and administration of whether they be designs or construction contract or a single design-build contract. Initially when this separation occurred, or let me backtrack, when it was a single entity, it, I think, obviously worked well because there was a single overall control within the same organization. The people knew each other intimately; majority if not all of the contracts people were professional and technical people who may have migrated to that contracts work force either through choice or necessity. But in fact they may had been educated and did in fact practice as a engineer or architect. There was kind of a sympathetic understanding between the two, so it worked well, as well as from an organization standpoint, it was singly controlled, because it was in the same organization.

When the units were separated and we got a separate office of contracts and a separate office of design and construction, the idea being that the contractual grouping would be involved with that portion of procurement only, the administration of procurement of a contract regardless of whatever it was for, the office of design of construction will be involved in the technical aspect of the contract, the engineering or architectural scope of work, the review

process of what goes into it, the specifications, put together with the general information, boilerplate and acquisition requirements, at the office of contracts. Together they made up this procurement document, this contract that would be awarded.

Now when the two entities were separated and you had an office of contracts and an office of design of construction, initially they worked well, because majority of people that were in that office of contracts were pulled out of the original office of design of construction. So again the sympathy and understanding still existed.

As time went on and you got a turnover in personnel and you got a contracts person who is not an architect, who is not an engineer you have a further division of people, you have a further division of understanding and with that division, I wouldn't say conflict came about, but there was a lack of understanding and a lack of sympathy. "I've got my job, you have your job and that's the way it goes." And we did encounter difficult times and still do. Over the years and that's been about 5 or 6 years now since that separation has occurred, we have to come to an agreement and an understanding to where the 2 groups work relatively well together. I use that term relatively well because it's going to be different with each regional because you are dealing with people. Every time you deal with people you get a different attitude and a different result from the same effort. But for the most part if I had to give an evaluation, it does work well now. We have a expertise in contracts in one entity and the professional expertise for design and construction in the other and they do work well.

I find, I guess, a fault or difficulty in the joint association of maintaining a schedule and that's only because of the separate entities that they are. A person by nature is selfish, I'm interested in my job and I have to get it done. The normal course of events is when I finish my portion of it and give it to the other entities whether consciously or not it's not longer my job, it's your responsibility. And that does not work well in trying to fulfill a contractual obligation to get a complete contract out.

It's got to be a conscious effort on both sides and just because I've done my part, the job is not finished until I get that contract awarded. That's probably the only impediment or the biggest impediment I see in trying to get contracts awarded when you're working with two separate entities, the office of contracts and the office of design and construction. It's an on-going thing, I don't think it's ever going to be answered or resolved to everyone's satisfaction, because we all have priorities; I've got my own design and construction project priorities; that office of contracts answers to a different supervisor that may set different priorities. They will be at odds at more times

than not and that resolution really still is an impediment to the ideal, getting this contract out. It's not a question of quality input, completeness of information; it's a quality of administration, or timely administration and I see it as a present problem and an on going problem.

INTERVIEWER: Because you were both working for the PBS system and eventually it elevates up to the PBS boss itself, does that keep a lid on the level of conflict?

Mr. Adamec: Yes, conflict may be a strong word. It's really not a . . . .

INTERVIEWER: Well, there are two different kinds; there's effective conflict and there's dysfunctional conflict.

[NOTE: This question was to lead to a discussion of contract authority within PBS compared to without. However, the interviewer, through choice of words and conflict explanation may have biased the subject toward contract authority within PBS. Mr Adamec does not appear to pick up this bias significantly. Thus, the effect is small here.]

Mr. Adamec: That's right, dysfunctional conflict to the point that we each have separate priorities. When we can't resolve that, then yes it has to go to the highest quality of PBS. And really it's our responsibility at the lowest level to prevent that from ever happening. Let's get it done at our level and get it out. Unfortunately it doesn't always happen.

INTERVIEWER: It has been said by you and by Mr Belcher that because the switch between from internal contracting to separate organizational contracting happened so recently, that a lot of the contracting officers and a lot of the upper staff in that organization have a lot of technical experience or a lot of experience with the technical personnel over here. As time goes by and you start getting more 1102s over there, who are 1102s careers and not a lot of experience with you, what steps (along with your engineers are not going to be getting a lot of direct experience with contracting) what steps do you think the organization going to have to take to ensure experience, cross-organizational experience?

[NOTE: Here the interviewer has clearly biased the subject towards cross-training. The only useful information Mr Adamec can now provide is factual information on current and proposed training.]

Mr. Adamec: You just hit upon the right word, cross-experience. It's both through exposure as well as through training and practical application of contract procurement

administration. I think it would help if you could afford that time and effort. Maybe through a understudy program, maybe through a trainee program as you get new employees on board that while this employee may be a architect or engineer and will eventually spend his/her career in the technical end of it, a portion of that training should be like a co-op program, spend six months in contracts and function as an 1102. And you then get not only the understanding, but the sympathy for what they have to go through. The complexities and those obstacles involved that we don't see down here. They are very real for them and visa-versa. Down here they may not be able to do the technical work, but just by observation or being exposed to it then they would at least get a little understanding and sympathy for what we have to go through to get our portion of it done. That to me would be probably the best answer or best approach.

INTERVIEWER: Does GSA do anything like that right now?

Mr. Adamec: Yes, in our regional offices; you don't see it up here. In our recruiting program we have what we call a career development program, and it covers a number of professional MOSs. Take a architect or engineer that has graduated out of college and is going through the career development program. I'm not sure how long it is, I think it's 3 years; when I went through it 25 plus years ago it was 2 years. But I believe it's 3 now. That 3 years is a very definitive and organized plan and schedule of assignments and exposures in different aspects of the design of construction field, which includes an assignment to the office of contracts and assignment maybe to real estate where the individual will get an exposure to leasing and acquisition of space and that. Not that that would be his or her forte or finally assignment. But when they do come across it later in their career they at least know what they are looking at and that does happen. So to answer your question, in short terms, yes. If an individual is hired under what we call a career development plan and that development plan includes an assignment, that can vary from a month to 3 or 6 months. Depending on what need is necessary.

INTERVIEWER: In the most recent (quote, unquote) austere times, we are finding all the way throughout the government organization, lots of programs are getting cut. If a program like that is cut and you start just getting guys out of college that you have to filter projects to and let them go with it; same as contracting officers, you have brand new contracting administrators you have to give them a project and let them go with it and learn as they run. What do you

foresee happening or do you foresee that being a problem?
[NOTE: Again, this is a leading question which draws the foregone conclusion from Mr Adamec. The usefulness of the following information depends upon its factual basis rather than Mr Adamec's opinion.]

Mr. Adamec: Like anything there is good news and bad news. The bad news is that you are going to run up against delays; you are going to run up against difficult and long contract administration because the individual just doesn't know and hasn't been exposed, and does not know what other outside influences have an impact. The other side of the coin is over a period of time because they have made mistakes, because they fell on their fanny and got up and learned, they are going to be a lot better for them and if they stay with the organization you will have a stronger and more knowledgeable organization. But that will take time and a little of effect and hopefully if the government whatever the agency can keep these people (whatever, through incentives, through a program) it will be a lot better for it. In evaluating 2 people, one who has book knowledge and is the brightest and best in the class, and one who is mediocre and has some years of experience of making mistakes and has been through it. I would certainly pick that second person because he has lived through it and he knows the ramifications and impacts of doing something right and doing something wrong. The other individual can only surmise because the book said so. In the real world it doesn't always work that way.

INTERVIEWER: Communications between the organizations.

Mr. Adamec: A must!

INTERVIEWER: Because you have separated them into 2 organizations, you're not able to holler over the desk and get something done that way. How do informal communications occur and how do formal communications, how do they help or impede the system?

Mr. Adamec: You said you're not able to holler over the desk, but I as a individual see that as a necessity. It goes back to what I was saying. When I get finished writing this letter, my job isn't finished until that letter is signed, sealed and sent out, and then a follow up to see if I get a response. So if I need help from the office of contracts, when I put together a technical scope of work, just putting it in a envelope and putting on an office symbol doesn't get the job done. I can do that, but I can also prepare it with a phone call to those people, or a visit to those people. And let them know it's coming so

they are prepared for it. When it does get to them, instead of looking at it and setting it aside, they look at it and recognize it, because of the conversation with me and process it right away. And again that's going to be different with individuals because you are dealing with people. And in terms of diplomacy you may get a individual who is very capable at that and very much at ease at that and he or she will get things done. You get another individual who may be of a disposition that's either nasty or shy and doesn't want to or can't go through that, and unfortunately that piece of paper will sit. The biggest key is people and how they operate.

INTERVIEWER: So you don't find sometimes official organizational communication systems where it has to go up to a certain level boss and then come back down. That doesn't impede getting the informal communication.

Mr. Adamec: It wouldn't for me. I would go so far, and have, to go to the commissioners office, or go to the administrators office and talk to the real person who runs the office, the secretary or the administrative assistant. And speak to them that this is coming and try to put across the importance of whatever it is and I would know it will get through. It again depends on people.

INTERVIEWER: A case in point and I'm just trying to feel out the system to make sure I have a understanding for it. You have a construction inspector on the site; the contractor just uncovered a sewerage pipe that wasn't on the drawing and you can't cut through it. What are we going to do? The inspector calls back to the project manager and says, "hey we have a problem," what happens then?

Mr. Adamec: The project manager who may or may not be the contracting officer, so we have to make assumptions .....

INTERVIEWER: I assuming that he's over in the construction organization or the requirements division.

Mr. Adamec: The contracting officer is?

INTERVIEWER: No, the project manager . . . .

Mr. Adamec: And he or she is not the contracting officer. In our organization, contracting officer authority or change of authority can be granted to the resident engineer on site up to a limit. It might be $10,000 or $100,000. So if it falls within that purview, the resident engineer can make that decision and tell them to go ahead. If it does not, it would be incumbent on that project manager to facilitate a

respond for that resident engineer to keep the job going and not be held up. Not only with what to do with that sewerage pipe, but later on for a delay claim from the contractor because we didn't give him a answer. So that the contracting officer in this case is really operating a crisis management problem. It's not a question of writing a letter, typing it up and putting it out. It is a question of a phone call, a visit, walking down the hall or upstairs getting a answer. And if there is documentation needed, maybe a handwritten description with a signature or initial on a box letter which is authority enough to be followed up by the formal documentation. But that's what project manager's role is, is to keep that job going. And maybe not to do the work, but to insure the work gets done.

INTERVIEWER: You said something very interesting that on projects, depending on level of the projects, the contracting authority will delegate a change order authority to the resident engineer or the project manager, whoever.

Mr. Adamec: They can grant what they call . . .[he doesn't compete his thought] and then this individual becomes the contracting officer's representative, and that authority is as I say is delegated.

INTERVIEWER: How well does that work?

Mr. Adamec: Very well, as a matter of fact there was a time way back when, when that resident engineer was the sole authority and then it went to an extreme I think. Right now it works very well, because you do run into a series of incidents that are just unforeseen site conditions or such, or the particular design is not carried out properly under the construction conditions the way it was put on the drawings as such, but I need a immediate decision just to forego what I said. I either hold up the job or have a delayed claim from the contractor. So depending on the nature or limit of that change order authority it works very well. And again it comes back to people. The resident engineer, if he is a level-headed, stable individual whose got a comprehensive view of the job knowledge of how it should go he or she will make proper decisions. You get a excitable clown and you could blow the whole job.

INTERVIEWER: There has been some decisions in the Air Force as to whether or not we should be doing that, delegating some of the limited authority to the project engineers or the base civil engineers.

Mr. Adamec: I would be in favor of it as an individual. Because I would be in favor of limited contracting officer

authority and that limitation only you can determine, depending on the size and complexity of the job, I'm guessing now, but I think the maximum might be around $25,000.

INTERVIEWER: To what degree would that perhaps jeopardize or put in danger the contracting integrity by making the requirements department also responsible, or also on the side of obligation.

Mr. Adamec: I don't see any jeopardy. Because as soon as, say it does happen, as soon as that resident engineer makes the decision and authorizes the contractor to go ahead and expend up to $25,000 to do something, it's not a dead issue. The resident engineer must file a report on a change, an amendment to the contractor for this amount of money. And when that report is filed and processed that amount goes through the contracting officer file against the total contracting award amount. So that if it is a dumb decision, you can't do anything about that decision, maybe the authority will be rescinded. If it's a good decision you can save 10 times that amount. I don't see where it jeopardizes the integrity of the contract. There is no sure thing. And in that case I think the risk is well worth it, if it's a reasonable amount, the contracting officer representative authority onsite. Now that term reasonable is a relative term, but it's got to be evaluated and assigned accordingly and that again depends on the job, size, complexity and it depends on the individual who is going to be the engineer on that job. You may have the ability to give that blanket authority of $25,000., $50,000., or $100,000., authority to . . . .

[The tape ran out at this point. Mr Adamec finished by stating this authority may be given to the individual depending upon his or her capabilities.]

INTERVIEWER: . . . $25,000 limit set aside for that contract? [NOTE: here the interviewer was inquiring about the range and determination of the limit of the authority.]

Mr. Adamec: When you award a contract, you award a contract on the basic of the contract award plus you have a contingency fund 5%, 6%, 8%; you also have the authority for escalation of 10% of the contracting award amount before you have to go back to Congress a new appropriation. So all of that is within the initial project program appropriation. So yes again, the individual has to be astute enough to know what his or her limits are and that contracting officer likewise, so that you do not commit.

INTERVIEWER: Well basically we've hit all the major issues that the Air Force is trying to deal with our working relationship between civil engineer and contracting. We have a difficulty in communication; we have a difficulty with cross training and we have a difficulty with the organizational structure being a barrier in between the two organizations working well. And you've pretty well addressed everything that I needed.

Mr. Adamec: The key is people. Everybody moans and groans about a process that doesn't work right and I need this and I need that. And a good analysis of any process in the federal realm of procurement really show you that the process is good. It covers every aspect of contingency. What needs to be done is for the people to make that process go well. The key is anything is people. You as a supervisor, the key for making your job easier is to pick the right person for the right job. If you pick a clown he's going to make you look silly; if you pick the right guy you can sit back and have a cup of coffee.

INTERVIEWER: CONCLUDING REMARKS AND THANKS ARE EXTENDED TO MR ADAMEC.

Appendix L: Transcript of Informal Interview with Mr. Wade Belcher

MR. WADE BELCHER
CONTRACTING OFFICER AND ARCHITECT
DIRECTOR OF THE CONTRACT POLICY DIVISION (PPB)
HEADQUARTERS, GENERAL SERVICES ADMINISTRATION
GSA/PBS
18TH AND F STREETS N.W.
WASHINGTON, DC 20405

[NOTE: Due to Mr. Belcher's wide range of experience and expertise, he discussed many topics concerning GSA/PBS contracts. As this research is limited to the working relations between the technical and the contracts personnel, much of this material is not pertinent to this study. Thus, Mr. Belcher's interview has been edited in order to remove the non-pertinent discussions. The following are his words withdrawn from the two hour interview.]

INTERVIEWER: How does GSA perform its construction contracting?

Mr. Belcher: If I can, very briefly, in 1979 we here at GSA, or the PBS component of GSA, changed our technical contracting functions to the point where we separated them. Before that time we operated similar to what the Corps of Engineers uses as its operating procedures. The contracting function resides with the technical program office for the most part. There are some specialty areas, that pure contracting type. But its intermixed: those that have the requirement and those who can satisfy the requirement through contract all answer to the same sub-captain or sub-agency head.

What we did in 1979, based upon various studies saying that it's very difficult to stay abreast on the various changes (especially in laws) and to implement regulations, to really know what is mandatory or required in contracts and how to enforce them to at least identify them and to discuss them intelligently with potential bidders or offerers and then to deal with contractors. Also there are a lot of Board of Contract Appeals cases and GAO studies and reports that indicated that there needed to be a stronger concentration of procurement expertise in most agencies. So we established, I guess at that time, the Office of Contracts based upon a study done, I forget what the gentleman's name is, a nine month study following up some of the things that the Committee on Government Procurement many

years ago developed by making various recommendations. We separated those functions that were in our program offices, which I was a part of the Design and Construction Contracting Group who were still architects and engineers but we decided contracting was our particular strong suit at the time and I've stated it since then. We looked at having a more professional approach to contracting rather than having it as an afterthought because of the pretty sharp cutoff point. There were an awful lot of birthpains, growing pains, to make sure that those contracts that were ongoing we took over and continued those. Then we started the new contracts using a different technique.

There was still some apprehension on both sides, program and contracting side, because many people in the programming office remember when they did it all; they feel that by having to go to separate organizations it delays accomplishment of whatever goals there are. We've found after the last check, I think, about 14 studies since 1979 to show that the major problem is in identifying what the requirement is. The area that I've concentrated in, up until 3 years ago, was in architect/engineer, technical consultant, construction management, in that area where when you're buying ideas or buying the services of someone to interpret ideas. The worst job anyone had to do was to define how we choose who the best firm is, and defining the scope was found to be, by GAO and others, the most difficult job some one could have. It's to take a dollar figure that Congress gave you saying "I want a building in Oshkosh, Michigan and I want it in 3 years." And then we'll say "well, what's supposed to go in there?" "Well you figure it out, we're consolidating space." That's easy to say, but then you have to figure out temperature variations . . . .

[Mr. Belcher discussed design programming, energy requirements and other difficulties involved in the technical design of a requirement. He then lead into staffing problems:]

. . . we have lost, over the last ten years, at least over 60% of our technical and professional staff. We don't have architects, engineers, and estimators who have a wealth of experience in building buildings or seeing someone else build buildings. Many of the people that we are able to hire may have experience, but not the experience that probably will allow them to see the strangeness of government projects.

[Mr. Belcher discussed the experience of building managers and the lack of experience of facility support contractors. He began talking about the review of these

contractors by technical personnel and the lack of experience.]

That's where it begins. Once we start in the project development, procurement of A/Es, to the end of construction, it's very resource intensive. And if we don't have the people who have the wealth of knowledge the likelihood of us choosing the most appropriate and best firm for the job slips through our hands quite often. I'm not saying that the firms don't do an acceptable job, but if we knew more about the job or if we had a better feeling for what usually does go wrong in an older federal building, we could clue the A/Es in on it so that they could be on the look out for it. But after we award it, and have the designs come in for review, we now are reduced to pretty much a cursory review. Now of course, in every government contract, we have a catchall statement that says regardless of the government's review you, the A/E, are responsible for doing it right. That and fifty cents will probably make a phone call somewhere. But then to take that and put it out on the market for bid for construction, and the typical construction contractor looks at it and says "OK, what's the job worth; let me deduct all the change orders I can find; add 10% and we'll all go off to Mexico after we beat the government down with all the change orders that I can see." And then, of course there'll be some when we get into it. If it's a new building: we find that there are different soil or site conditions; in an existing building, we say that there's a riser somewhere: it doesn't exist; we say we'll tie in to the sewer line: nope, we blocked it off and we concreted over the access panels. And all sorts of things that, as I said before, heretofore we had someone who would say "no, I know when that was taken care of and it doesn't exist anymore; don't do that; that's not very intelligent."

And then when we do get the construction going, to verify that the contractor is performing satisfactorily, we have construction managers reviewing the progress of the construction contracts and recommending acceptance, recommending payment. In many cases, we do that without having a government official go out to verify. We have to do it on final acceptance, of course. But if you're looking at a 13 month job, if you can only get out there 2 or 3 times, how much catching can you do. Now we rely upon the construction manager, and for the most part I'd say that they do an adequate job. But the incentive to do more than what is acceptable is really not there. If they do a less-than-acceptable job, then they take their money and leave, and figure they'll never get another GSA job. You can tell that I have a built-in bias for having government eyes, not necessarily full-time on the job, but at least be out there

so that there is a presence to avoid what the auditors and the inspector general call the potential for collusion. I guess that's the role I really see as not giving enough attention to currently.

I don't know. I'm trying to think if . . . .

[Mr. Belcher trailed off searching for more helpful information. The interviewer helped by directing research questions.]

INTERVIEWER: Let me ask for clarification real quick. You've given me a lot of information I really can use. Just to clarify the structure, the requirements division and your contracting division are separated.

Mr. Belcher: They are separated.

INTERVIEWER: But they are still under the Public Buildings Chief.

Mr. Belcher: Yes.

INTERVIEWER: So they are still in the same organization but in separate offices.

Mr. Belcher: Right, what we have, typically in our regional offices where most of our contracting is done, we have an Assistant Regional Administrator for Public Buildings. Our Director of Contracts is the procurement arm. And our Real Estate division, which primarily is leasing and other folks, they do leasing because that's a strange specialty. Then we have our, probably in Air Force jargon, our base management group, our facility management. We have our facility security and law enforcement group where we hire contract guards, perimeter security, internal security for occupants such as judges, food and drugs, and others. We have our design and construction group; that's probably the big ticket items. But, I guess, our maintenance and facilities group have the largest number of dollars because it's to maintain every building that GSA has under its control. But, in each of those cases, the program offices funnel all of their requirements to the contracts division. We have, in many cases, specialists, or generalists who can handle a little bit of everything, work with the program office developing the requirements to the point to where we can issue a solicitation, then if necessary, negotiate with the technical organization providing support. So we are a support organization but, let's say if I were in an organization in our regional offices, all but two are support. We support each other to the extent that it all has to mesh together. Because if we lease a facility, but

then we want to do alterations to the facility, the design and construction group would be involved and in all cases our contracting group would be involved. We have to have guards or some security; and then we have to have someone to maintain and operate the building. But all of this, of course, is done through a contract. In some cases the leases are all inclusive and in other cases we buy the space but then we supply the support to that space. In some markets is more beneficial for us to contract for some services than for the leaser to put in their administrative markup and amortization rates and everything else.

INTERVIEWER: How do communications go in between you and the requirements branches? Is it informal, do you walk down the hall and say "I need this" and they'll take it and go with it?

Mr. Belcher: It is more formal than that. There is a series of forms (you can't operate in the government without forms) but we have a system. And it has, out of necessity, become more structured because of the increased amount of contracting and with the diminishing technical reservoir, we've had to say "if you have a requirement, define it, give us an indication if you think it's something we can obtain through sealed bid or is it something you feel we have to negotiate. Do we have to conduct discussions with offerers? Are we sure that we cannot make an award for services based upon price and price related factors?" The scope of work, as I said before, is the big sticking point. Describe in three pages or less what you want so that we can translate that into a definitive scope of work, evaluation criteria if necessary, and then send out the RFP. Also we've had to make the government estimate a stronger requirement, and in many cases if we're provided with a government estimate we will then seal it in an envelope. Then it will be there when we get proposals in so there's no chance of anyone being accused of offering it for a soft drink or take-us-to-the-ballgame or anywhere else.

Communications, for the most part, are there. But it's "why do you need more information, I know what I need and that's sufficient." We have found that because of the Competition in Contracting Act and the protocol, the aggressiveness of various boards of contract appeals, especially the GSA board of contract appeals, if we ever receive a protest or we get into a situation where we go merrily along our way we might get hit with claims. Unless we have a well documented audit trail, we lose. I know that it's painful sometimes to document everything that you do. I've had at least two bosses that have given me evidence that even the blotter on your desk, if you make any notes on that, it can be entered into evidence. In fact, one of our

directors, her blotter was admitted into evidence and served to convict a contractor because she left some phone numbers and notes she made beside that this contractor called and said that he talked with this other person. When the investigators talked to him, he said "no, I never talked to him at all." I think he went out of business shortly after that. I use those anecdotes to remind people that if you write it down you don't have to worry about your memory failing you. And if anyone comes in and says "you shouldn't have made that decision," then fine, at the time I thought it was the most prudent decision to make. If I'm proven wrong, it won't be the first time. Hopefully I won't do something in a malicious manner, or willfully do something, that s improper.

Where we have potential for improved communications is the entire process. We, in GSA, quite often are on the tail-end to find out that a requirement exists, not just in design and construction but guard service, space . . . . A typical scenario would be an agency that will remain anonymous but we quite often think of them April 15th or April 16th. . . .

[Mr. Belcher here told an example of an agency requiring renovations and informing GSA late in the process. The thrust of the example is that all parties should be informed in a timely manner early in the process.]

Another area of communications that we have had the luxury is that the people in our contracting areas have technical backgrounds who come from the program office who are not necessarily architects/engineers but have worked in the areas enough to understand the jargon to understand where do I get help and when do I ask for it. Rather than saying "I know everything about contracting; I can buy anything; all you have to do is describe it." For the most part, that's true, but in some areas it's not always true. It's a matter of knowing when to ask the questions and who to ask.

And then on the other hand, having the program office willing to take the time and give you at least a reasonable answer, whatever judgement they feel is appropriate. We are finding it very difficult, and (I guess) up until a month ago, the office of personnel management included the procurement series, the 1102, the 1105, and 1106, as purely administrative occupational areas. Now they're included in one of the professional areas. Before that there was the requirement that you had to have at 24 hours of business in order to qualify as an entry level, out of college, into the procurement area. In our special school, I took business because I felt it a good elective; in graduate school I took lots of business related courses. But a typical engineer or

architect would not qualify. So we were unable to hire them. We are able to hire some people with technical backgrounds now because that requirement is gone. And by being redefined as professional the stigma of, that's the people who shuffle papers and will do the work and just get them to rubberstamp it.

Hopefully it's going away because we're finding that contractors are getting much more sophisticated than they were in the past. That's from the standpoint of being able to play the contract for all it's worth. I'm not saying that they are any better at performing; their performing being pretty much the same or maybe the performance used to be a lot better when contractors put more pride in their work. You probably could say that for the entire U.S. economy. We are finding that when the contractors receive a contract, usually their first job is to go out and hire a project manager or assign a project manager. We jokingly say the first thing that they do is make sure that they have the best litigation attorney under retainer and then they go from there. The filing system that they had was the working file and the complaints file, and having to deal with that we've found that it's getting more difficult not to get paranoid. Maybe we're trying to convince ourselves and down at the program office that we're trying to keep our act together. In documentation we make sure that no slips to the point where "that wall that's there on the drawing, well move it over 6 inches." That's innocent, but it may cost you. After you get through with the alleged impact cost and, I'm not sure if you're familiar with what's called the Ikely formula for the various burdens, overhead, and everything else, a $5000 change may end up costing you $25,000 to $30,000. It just depends upon how it works. And that's direct dollars, not counting . . . . **[Here one side of one tape ended. Mr Belcher continued talking on the other side about the positive and negative aspects of technical personnel managing contracts.]** . . . But in many cases, it's a hindrance (I will say this diplomatically just in case the tape is played) because of the background of many of us having been in a program office, we know when we're being snowed. And we'll say to them "don't hand me that."

INTERVIEWER: From the program office?

Mr. Belcher: Yes, as a part of the contract group we'll say "don't hand us that, we know better than that." It's not that they're doing it on purpose, but it sounds good to say "well we need this and we need this" and it doesn't take too long for you to say "well wait a second;hold it. You define what your requirement is; tell us what you had in mind concerning the qualifications of the organizations that you

had in mind for performing the work. Give us an estimate and we can do whatever you want." They'll come back and say "aw you don't need that, you can go ahead and get started." And I'll say "no, because I remember when we had to go and undo what we had done." And that can be done diplomatically so it don't sting too much. I guess having been through, having done some of those things, the idea of being sold a bill of goods becomes a little bit more difficult. And hopefully, the friction diminishes.

In a different aspect, though, it does help. Because if there's something that needs to be described, I'm familiar enough with some of the buzzwords and the jargon where if someone says "I need a VAV system," I know that that's Variable Air Volume. All mechanical contractors and I think it stinks. But at least I understand what this may do in terms of what are the potential change orders needed, especially when we go in and start testing the air handling system when the building's completed.

[Mr. Belcher related an anecdote about a VAV system in Michigan. He definitely demonstrated technical experience and capability. He continued:]

. . . But knowing something about that can help. I feel that we can hold meaningful discussions challenging each other stating "why did it take them so long" and "well, because you wont tell me what you need," "I can't tell you what I need because . . . ." But then we can work out what can we define in general parameters; can we set performance criteria. So at least we can get something that keeps the building cool, keeps the building warm, keeps it dry, and keeps it from falling down. That can get a building that meets your needs or it can get you an outhouse, because an outhouse with a tin roof on it and a fan keeps you warm, keeps you cool and everything else.

But this is, I feel, some of the checks and balances that we have in the system. We still have those of us that have the crossover experience, and it's just a matter of making sure that it works most of the time because personalities always get into the picture, differences of opinion. And then we add into the system the attorneys, and most of the time they're very beneficial. But if you have three people in the room and one of them's an attorney, you have four opinions, and if it's a sharp attorney, you have seven by the time you leave. In many cases we are involved in types of contracts on the leading edge of the construction industry where we want to try something; that's where we learn the hard way sometimes what is and is not proper. And that's where everyone, I think, starts cooperating more because we're getting into some unknown areas and we're dealing in the types of contracting (especially

incentive-type contracting) that we have to make sure that we must rely upon each other more. Once the ship starts sinking, you want to make sure that there's somebody there to be able to bail you out. I don't want to belabor that.

INTERVIEWER: Your government people who are coming in now and are your contract administrators now 20 years from now will be your contracting officers in this separated organization. I assume that they probably have less experience in technical matters. How do you see that affecting, how do you see the way things are managed changing to accommodate them and how effective it will be?

Mr. Belcher: Well, on both sides of the issue we're looking at in the contracting area, you have less knowledge and experience in the program area [on the part of the contracts specialists], they will be more reliant on the program offices for 99% of the input. But the program offices can not maintain a high enough level of technical knowledge because we can't hire engineers or facility management types when they can get a lot more money outside the government. And those that are hired, not to take anything away from them, but to take time to learn, that's a luxury because you have to come right in and get your feet wet and learn while you're doing it. And in many cases, while you're learning, you may make errors and that becomes ensconced in your mind that that's how you do it. You don't have the opportunity to start off with a clean slate.

We have proposed, and I'm hoping that OPM finally agrees to allow us to act to a training program. I came into GSA under a Real Property training agreement where they could hire architects/engineers, not without competition but through merit staffing procedures; but you don't have to go through some elaborate system, you just compete among your peers. Then you are hired for 2 to 3 year period whichever way depending upon your entry level. In that period you had an opportunity to learn by being under the tutelage or coaches would then give you some peach assignments (peach to the point that you sometimes find the pits in there, too) where you got to look at the types of jobs you would be doing if you were planning to make the government your career. I was fortunate that my first assignment was to work upon the redesign of the federal courts, federal court rooms.

[Mr. Belcher discusses for a short time his initial projects redesigning and renovating the federal court rooms. He continued:]

But, yet, going through that gave me the opportunity to see that there are some choice opportunities here. But then I

had the opportunity to do alterations to Post Offices. That's real grunt work, if you want to call it. But you had the chance to do it where you had the chance to work on those projects you had the opportunity to see the people that really did construction, that inspected construction, did the design, talked to them, asked questions and it wasn't a matter of "go sit in the corner and we don't want to hear it." You had a job to do; you worked on it.

Someone was there to show you why, in doing cabinet work in the government, especially in a Post Office, it has to be different. You can't be creative because the units are interchangeable, they're manufactured by, I think, Federal Prison Industries. They were built to a certain specification and they all have to roll under the cabinet, fit in, and there could be no deviation. And after being told "that's a pretty drawing but we can't have that; it has to fit this standard and you follow this standard or else it wont work."

[Mr. Belcher began discussing the worth of standard designs. He then continued discussing contracting officer training:]

In the contracting area, a couple of our regents have done that, putting people in, but they have done that under their own ceiling. What was so great about the Real Property Management Training Program, we were not counted against anyone's ceiling other than the head of the program office here in Washington, and they usually had, maybe, 2 to 3 or sometimes up to 15 slots that would be given out to each of the regents where, in effect, you would have a free employee and all you had to do was train that employee and hopefully, after the 2 to 3 years, you'd be given the opportunity (and hopefully if they'd stayed around that long they would become a productive employee) they then would pick them up on their rolls, the ceiling would be transferred officially and then they'd pick them up. In fact one fellow that came in, when I was in Texas, from Baylor, he was in charge of the division that he came into after 12 years; so coming in as a trainee and then taking over after 12 years is a little bit ambitious, but he did. Again, it took a little tenacity and took a little good fortune. I guess in the 11th year, there was a big early out and lots of folks decided that they were ready for retirement.

But if we can get that authority, we can have the cross training. We have recommended that our contracts folks have an opportunity to go look at the programs offices to see why they can't develop requirements, to go visit some of the clients to see why some clients can't make up their minds what they want out of a particular layout.

I don't know how we solve the last problem that we have; it's called Congress. Once I find that solution I'll

write my book and I'll retire right away. But we've had a couple of projects in the past 3 years where we had no idea Congress was going to approve it. But they decided "GSA, you have a project."

[Mr. Belcher here discussed an example of Congress shortcutting the project programming process. He continued:]

It's amusing in a sense that in a crisis situation, we're all one organization. If things are going along smoothly then we have our little bickering here and there. "I'm in charge; you're in charge; no one's in charge." You were mentioning about everyone being under the PBS umbrella. Our PBS Assistant Regional Administrator, the personality of that individual really determines whether or not there are any fits of bickering or anything else. Where that particular individual is no-nonsense, they really get along, whether you want to or not, things work out pretty well, like everything else. I don't know how many brothers and sisters, if any, you have, but to be in the same family, you bicker back and forth. Then if something from outside the family comes close, you're united. I guess that's what we hope to get without outside influences coming after us.

[Here Mr. Belcher referred to the outline to determine further direction of discussion. The subject of integrity comes up. The interviewer mentions the diametric situations of the COE and BCE situations of contract responsibilities and questions the possible conflict of interests.]

Mr. Belcher: We had back in the early '70s a situation which I feel was blown far out of proportion. Our contracting authority was assigned by position rather than by qualifications, training, or anything else. Not that the people weren't qualified for the most part, but there was no formal process that you had to go through to verify that you knew what was proper, improper, and then how to handle any situation in the contracting area that you were assigned. Our buildings managers had a certain level of contracting authority where they could do, within reason, pretty much what they needed to do to keep the building operating, cleaned, and repaired. They had the responsibility for developing the requirement, estimating what the requirement is, contracting someone to satisfy the requirement, and then to inspect, accept, and then pay. What was found after one contractor apparently did not get his fair share and went to the justice department, it was alleged that GSA was doing contracting on the side to the point that contracting officers, building managers were pocketing money or getting kickbacks. That was found to be true but only in a few

instances. However, because of the hysteria, it was stated that if they were doing this, the size of the GSA budget's this, therefore it may be up to $60,000,000 worth being stolen annually. And there appeared one article in the Washington Post, after everybody was saying it's better to work for a house of ill repute than GSA, showing 2 congressmen walking up to the GSA building saying "I knew that they'd finally take it too." Not that I want to cancel my subscription to the Post, but everybody was taking shots at us.

But it was decided then that, in order to prevent this from happening again, to separate the requirements office from the accepting office. So that there would have to be at least 2 people that were subject to a compromise. It got ridiculous in the beginning where we said "if we've got a project in Anchorage, Alaska (which we had) we would not take the word of one inspector, we'd have to send 2 inspectors, and we'd have to rotate which 2 went out.

[Mr. Belcher discussed the poor economics of sending many inspectors in order to protect the integrity. He continued:]

It still remains that the office that develops the requirement, there has to be an intermediate step, or someone independent of that group that makes the buy. The recommendation can be from the same office to make payment but the contracts group has to approve payments. So there's a check and balance in just about every part of the contracting function. Now that is to maintain integrity, however, like anything else, for enough money supposedly anyone can be tempted to sell themselves down the river. But we found that the things that happened back in the '70s we've seen no inkling of it yet, primarily because the more we locked at even the ones, one or two of the things that happened in this building, would it be worth losing your retirement, going to jail, or 4 or 5 thousand dollars. That's the most that any of the building managers got. One got a little bit more but I don't think his outcome was probably the way to go. He had a heart attack and died. I guess there was so much pressure.

[Mr. Belcher here discussed a specific example of a fraud in contracting charge from back in the '70s. It had to do with a building manager specifically arranging work with a contractor and receiving kickbacks to sign it off incomplete. As the Competition In Contracting Act, et al, prevents this situation today, this discussion has been edited. He continued:]

Hopefully we have taken care of that. We have, unfortunately, brought with that a paranoia. The idea of

taking risks is in the eye of who's being asked to take a risk. Is it worth going beyond what is the mundane routine way of doing things? Now we're starting to get more adventurous. But we're smarter; we don't allow much latitude yet. I think that's one benefit of all of this. In many cases we did it and it was viewed as being arrogance. It wasn't arrogance; we may not have known that you don't do something like this. Or someone may have acted in expediency. If you see a contractor pouring concrete, and you see the entire cage of rebars collapsed, first thing that you are going to do is say "hey, stop! You've got to take care of that." Now, in some cases if you stop to take care of that, the concrete may start forming up or hardening or drying. You may have grounds for a claim later on. You can't think about that at the time. Or if you see that the rebars haven't been tied properly. If you stop to do that, you have a claim from the concrete supplier where he has 14 or 15 trucks just standing there idling with his men going on overtime plus the concrete finishers. When they get in, the first thing that they are going to say "I'm sorry, it's beyond my control, I'll do the best I can" but then you start seeing cracks all over the place.

But I don't think we've lost all of that. I think we have to reinforce that no one's going to be taken out and shot. But we have to know a little bit more about what we can do. I think that's something where we've become better educated in the contracting arena. I think that it's probably the only thing that has saved us because of the more sophisticated contractors that we have started to deal with; or I should say the lawyers for the contracts that we've started to deal with. As far as some things that are making it more interesting, we've gotten into some areas now that make it difficult to administer even our small projects now.

[Mr. Belcher here related a story about a renovation involving Systems Furniture, telephone systems, and computers complicating a simple project. He also discussed the computer and communications portions of facilities becoming a portion of the GSA/PBS function. He asked about the COE situation and the interviewer describes it and the COE's satisfaction with the relationships. He then described his experiences 'riding the circuit' to manage projects across an area of country. He continued:]

We are not looking at a situation like the Corps. Many of program office officials who are no longer in the working areas think they are willing to go back to the way that we were. But other people who are working there say "no, we don't want the headache; keep it away." When you're specialized in a technical area you can provide advise or be an expert witness. But the paperwork is taken care of by

someone else; if you have a legal issue, the contracting officer and the lawyer can talk almost using the same language. But for an engineer to explain to a typical litigation lawyer who doesn't have a technical background why we put some type of shock absorbers in some of our buildings . . . .

[Here Mr. Belcher digressed to explain what he meant by shock absorbers. He explained using an example of a project in the mint. He continued:]

. . . explain that to a lawyer that that much difference [1/8th inch] was intolerable was very interesting. I don't know whether we've settled that case or not and that was 8 years ago.

[Mr. Belcher explained here more details of the project. He then discussed another project where the PMs were involved in a purely technical problem and the contracting officer, lawyers, and judge had to make decisions on a problem that they had no background to aid in the understanding.]

INTERVIEWER: CONCLUDING REMARKS AND THANKS ARE EXTENDED TO MR. BELCHER.

Appendix M: Glossary of Terms and Abbreviations

1102 - A contracts specialist. The civil service job series designation commonly used to encompass the administrative specialists in the contracting career field.

A/E - Architect/Engineer. An individual or group hired for technical services of and architectural or engineering nature. Further defined in section 36.102 of the Federal Acquisition Regulations (19).

AFB - Air Force Base

AFIT - The Air Force Institute of Technology. The post-graduate school for Air Force personnel.

BCE - Base Civil Engineering. The Air Force organization responsible for installation facility management.
- Base Civil Engineer. Commanding officer of the above organization.

BCM - Base Construction Manager. See CM and PM.

BCO - Base Contracting Office. The Air Force organization responsible for installation procurement.
- Base Contracting Officer. The individual contract specialist responsible for a specific procurement.

CEC - Civil Engineering Corps, Navy. The professional corps of engineers within the Navy. Primarily a professional career field designation.

Change Order (C.O.) - (1) Officially, a Unilateral Modification, where the contracting officer directs the contractor to make changes without the contractor's consent (19:43.101). (2) Commonly, this term refers to all pending modifications, uni- and bilateral.

CM - Contract Management. (1) The practice of monitoring and managing the progress of a contract; (2) The Air Force BCE office responsible for construction management (also called Construction Management).
- Construction Management. (1) The practice of monitoring and managing a construction effort; (2) The Air Force BCE office responsible for construction management.
- Construction Manager (Also PM.). The individual re sponsible for the management of a construction effort.

CO - Contracting Officer. See BCO.
- Change Order. See change order.

COE - Corps of Engineers, Army. The Army organization responsible for major design and construction efforts for the Army, Air Force, and other federal agencies. The Army COE also manages other federal programs, e.g., U.S. waterway management.

Cradle-to-Grave - The project management method in which one individual manages the effort from project inception to project completion.

DEH - Directorate of Engineering and Housing, Army. The Army organization responsible for installation facility management.

District - The major breakdown of Army COE geographic areas of responsibility. Each district is broken down into divisions, which in turn are divided into areas. At each installation, a resident office represents the area.

District Engineer - The commander of an Army COE district. Also called the Commander, Commanding Officer, District Commander, Engineer, and Contracting Officer.

DOC - Directorate of Contracting, Army. The Army organization responsible for the installation procurements.

DOD - Department of Defense. The portion of the U.S. executive branch responsible for national security. This branch includes, primarily, the four military services: Army, Navy, Air Force, and Marines.

EFD - Engineering Field Division, Navy. The field division of NAVFAC responsible for the management of NAVFAC projects and the contracting authority of PWD projects.

EIC - Engineer in Charge. The term used to describe the person responsible for all technical aspects of a project during a specific period. Also called the PM.

Facility Management - The management decisions involved with construction, maintenance, and repair of high-quality and economical facilities (29:1-1). The management of federal facilities.

FAR - Federal Acquisition Regulations. The regulations developed within the U.S. executive branch (through the combined efforts of GSA, DOD, and NASA) for the management of all federal procurement.

Function Departmentation (also Process) - Enterprise members "are grouped in terms of the major and minor functions" performed in order to accomplish the mission (40:357).

GAO - General Accounting Office. The organization within the legislative branch responsible for monitoring and auditing the usage of federal funds.

GSA - General Services Administration. The federal organization responsible for the procurement of supplies, services, and facilities for the federal government. Under PBS, this responsibility includes facility management of federal buildings.

IFB - Invitation for Bids. The term describing the request by an installation to all contractors for sealed bids on a competitive-bid contract.

Inhouse - The term used to describe the use of an organization's own workforce to perform work. E.g.: if the Air Force required a design, they could contract an A/E, hire the COE or NAVFAC, or use their own government designers to perform the work. Using their own designers would exemplify using inhouse forces.

MCP - Military Construction Program (also called MILCON). All military construction exceeding $1,000,000 which must be submitted for approval to Congress. These efforts receive individual approval and funding through the Military Construction appropriation in each fiscal year's congressional budget.

Minor Construction - All military construction less than $1,000,000. Approval levels for minor construction are base and MAJCOM for all construction less than $200,000. For construction less than $1M and greater than $200,000, Secretary of the Air Force approval must be obtained. Thus, commonly, base-level minor construction is considered to be that construction less than $200,000.

NAVFAC - Naval Facilities Engineering Command. The Navy organization responsible for major design and construction efforts for the Navy, Marines, Air Force, and other federal agencies.

NAVFACENGCOM - NAVFAC.

O&M - Operations and Maintenance. The routine portion of facility management involving the standard processes involved to keep the installation operational. This responsibility includes the operation of utilities, routine maintenance, and operation of facility services (e.g., cleaning and trash collecting).

OIC - Officer in Charge. See OICC.

OICC - Officer in Charge of Construction. Any NAVFAC construction contracting officer of a NAVFAC EFD acting within the contracting officer authority (as opposed to acting as the technical manager of the project).

PBS - Public Buildings Services, GSA. The GSA organization responsible for federal facility management.

PM - Project Manager. The individual responsible for a project over a specific time period. If the project is managed Cradle-to-Grave, the PM manages the project over its life.

Process Departmentation - See Functional Departmentation.

Product Departmentation (also Market) - Members of an enterprise are grouped in terms of the portion of the mission (or product/market) that their functions serve to support (40:360).

PWD - Public Works Department, Navy. The Navy organization responsible for installation facility management.

PWO - Public Works Officer. CEC commander of the Navy PWD.

Real Property - Any grounds, facilities, or installed equipment that are permanent fixtures of the base land. Non-fixed structures or other transient equipment (i.e. vehicles, furniture, etc.) are identified as government equipment.

Responsibility - The term referring to the qualifications of the contractor. A contractor who meets all qualifications for a project is considered responsible.

Responsiveness - The term referring to the completeness of the submitted bid package. A contract bid (by contractor) for construction work that complies with all material requirements of the invitation for bid (IFB) is responsive, those that do not are non-responsive.

RFP - Request for Proposals. The term describing the requests of an installation to specific contractors for proposals on a statement of work or specification. This method is used on negotiated contracts.

ROICC - Resident Officer in Charge of Construction. The PWO when acting within the delegated contracting authority.

SOW - Statement of Work. The technical description of work performance required. This document is produced by the technical organization (e.g., BCE) to be provided to contractors as a basis for a contract proposal. (This document is usually used on negotiated contracts.)

Spec - Specification. The detailed technical description of work required. This document is produced by the technical organization (e.g., BCE) to be provided to contractors as a basis for bids or proposals.

TQM - Total Quality Management. The term describing the management philosophy of constant improvement of a process through attention to quality. Accurate measures of performance are used to evaluate a process and control it.

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Vita

Captain Thomas L Glardon [redacted] Ohio ([redacted]) he graduated from Archbishop Moeller High School of Montgomery, Ohio in May 1982 receiving an Air Force ROTC Scholarship to the University of Notre Dame, du Lac. Upon graduating from Notre Dame with a Bachelor of Science in Civil Engineering and receiving reserve commission in the USAF in May 1986, he was assigned to Arnold AFB, Tennessee as a Civil Engineering Program Manager in October 1986. There, he managed BCE quality of life projects and the base Military Family Housing project program. In this position, Capt Glardon dealt directly, as project manager, with the project designers, inspectors, and contracting officers. As well, he was involved with the contractors through inspections, negotiations, warrantee issues, and claims. Upon observing the difficulties of this process, Capt Glardon resolved to study the process if given the opportunity. In May 1989, Capt Glardon entered the School of Systems and Logistics, Air Force Institute of Technology.

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13. ABSTRACT (Maximum 200 words) Extensive previous research has established the existence of dysfunctional conflict between Air Force Base Civil Engineering (BCE) and Base Contracting. This conflict has been proven to be dysfunctional in that it inhibits the effective and efficient management of Air Force construction projects. The conflict arises from three sources, organizational barriers, poor communications, and lack of cross-training. The previous research has not extensively examined solutions to this conflict. This research examined the Army, Navy and General Services Administration in order to evaluate their project management systems for conflict and identify initiatives to resolve Air Force conflict. This research identified and evaluated alternatives to the current BCE system. Revisions to the communications chains were recommended. New training programs and joint AFIT courses were proposed. Three organizational initiatives were addressed: collocation (of the two functions), incorporation (of contracting officers into BCE), and delegation of authority (to civil engineers). This research recommended testing of the three organizational initiatives. Preliminary analysis of the other federal organizations led the researcher to recommend collocation as the most feasible alternative.
THESIS ADVISOR: Mr. Douglas C. Osgood, Associate Professor of Contract Management

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