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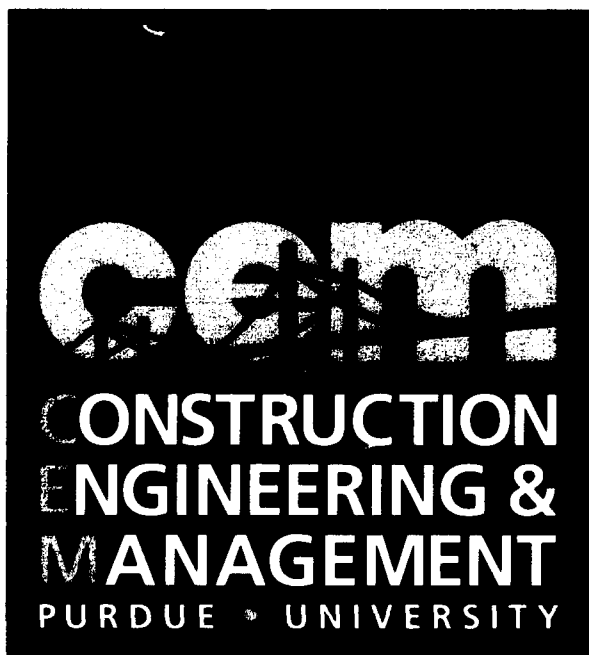
PARTNERING AT THE
NAVAL FACILITIES ENGINEERING COMMAND

AN EFFECTIVENESS STUDY

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PARTNERING AT THE
NAVAL FACILITIES ENGINEERING COMMAND
AN EFFECTIVENESS STUDY

A SPECIAL RESEARCH PROBLEM
PRESENTED TO
THE FACULTY OF THE SCHOOL OF CIVIL ENGINEERING
PURDUE UNIVERSITY

BY
BEN D. PINA

JULY 2, 1993

In Partial Fulfillment of the Requirement

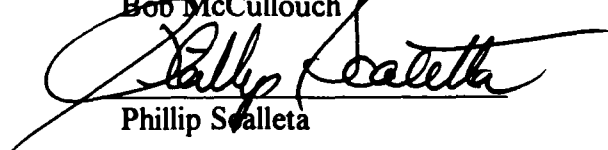
for the Degree

MASTER OF SCIENCE IN CIVIL ENGINEERING

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ABSTRACT

The Naval Facilities Engineering Command is actively involved in partnering in an attempt to cut costs on construction projects and litigation. Partnering also affects many other areas throughout construction project administration. A survey of construction contract administrators indicates that opening lines of communication through partnering has helped most in the areas of working relationships, customer involvement, and schedule adherence. Project administration, submittal processing and construction quality are also enhanced. Partnering has minimally affected contract modifications and the number of unresolved issues. Survey results also reveal the potential for an increase in value engineering proposal submissions and subsequent acceptances.

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CHAPTER 1

PROJECT DESCRIPTION

1.1 STATEMENT OF THE PROBLEM

Many agencies both private and public are now using the partnering concept in the administration of their construction projects to reduce litigation, increase productivity and improve quality and safety. Partnering is not a contract, but an agreement by parties to cooperate fully and to achieve separate but complimentary goals. It is an innovation dispute resolution concept that allows owners and contractors to anticipate and solve problems through an open and trusting communication procedure.(Millard, 1992)

The Naval Facilities Engineering Command (NAVFAC) is committed to reducing litigation and providing a better quality product to its customer. To this end, NAVFAC has implemented various methods, including Partnering. The Naval Facilities Engineering Command is currently administering approximately 55 contracts using the partnering concept. There are plans for another 82 projects which will incorporate Partnering. The total construction value of projects using this concept is nearly \$3 billion. To date there have been no agency wide studies conducted to quantify and evaluate the effectiveness of the partnering program within NAVFAC.

Twenty nine survey responses regarding NAVFAC partnered projects were received and analyzed for the completion of this study. Only six of the 29 projects were substantially complete (98% - 100%).

1.2 INTENT AND OBJECTIVE

Partnering requires time, money, and commitment by all stakeholders of construction projects. This study was developed to identify and quantify benefits and shortfalls that partnering administrators are experiencing in today's ongoing NAVFAC construction contracts. This study was also conducted to develop a lessons learned database from which areas of conflict and ideas for improvement can be identified and shared.

1.3 METHODOLOGY AND SCOPE

This study was conducted in the form of a survey. Information was gathered from naval bases across the United States that are currently utilizing partnering. The survey questions were developed as a consorted effort with the Naval Facilities Engineering Command Headquarters in Alexandria, Virginia. The survey was developed in an attempt to quantify the effectiveness and possible cost benefit ratio of partnered projects in comparison to non-partnered construction project averages. A copy of the survey is enclosed as appendix A.

Surveys were sent to four of the Navy's seven engineering field divisions(EFD's), Atlantic Division, Western Division, Southwestern Division, and Southern Division. The EFDs then passed the surveys on to separate field offices in which partnering is utilized.

The survey intent is to compare cost growth, schedule adherence, litigation and to quantify benefits of partnered projects. As previously mentioned only six projects of the 29 survey responses were at 98 percent completion or higher. A project response listing is enclosed on appendix B.

Additional information and data was gathered through the use of personal interviews with contracting officers at various locations. No formal interview structure was used. Responses and remarks were candid by the interviewees on their perception of the effectiveness of their partnering program or their experiences with partnering. The interviews conducted were very short and the majority consisted of clarification's and expansions of survey responses. The majority of the surveys were completed by contract administrators. In two cases construction inspectors responded to the survey.

Information regarding non-partnered averages, NAVFAC's policy on partnering, and other partnering information was provided by Naval Facilities Engineering Command Headquarters, Alexandria, Virginia.

A literature search was also conducted through journals, trade magazines and agency guides regarding partnering, its implementation, use and potential benefits to the construction industry.

CHAPTER 2

INTRODUCTION

2.1 HISTORY

In the 1980's there was an explosion in the number of claims being filed within the construction industry. Industry response to the increased number of claims was to train personnel on claim analysis and avoidance. However, this solution had very limited success in reducing the number of claims filed. Another method, implemented by chemical companies and large industrial contractors, was to form alliances by which agreements were made early on how problems would be worked out and how litigation would be reduced. The success of this method in the chemical industry prompted the Construction Industry Institute (CII), an institute founded in 1983, to improve cost effectiveness in the construction industry, to formulate a task force specifically to study partnering and make recommendations on its applicability and possible implementation throughout the construction industry. In 1989 the CII published an interim report that included the results of their efforts on the partnering study. The preliminary study found that partnering could offer many possible opportunities to the construction industry by development of an atmosphere "more conducive to innovation, teamwork, trust, and commitment." CII also found that in order for partnering to be successful a cultural change was required. Included in the report was a formal definition of partnering;

"Partnering is a long term commitment between two or more organizations for the purpose of achieving specific business objectives by maximizing the effectiveness of each participant's resources. This requires changing traditional relationships to a shared culture without regard to organizational boundaries. The relationship is based upon trust,

and dedication to common values. Expected benefits include improved efficiency and cost effectiveness, increased opportunities for innovation, and the continuous improvement of quality products and services."

In July 1991 CII published results of a further study on the applicability, considerations, and potential benefits to be gained by the general use of partnering in all types of construction projects. It also identified areas such as improved communications, sharing of goals and development of mutual trust, and highlighted areas where partnered projects diverged from traditional construction practices. CII concluded that although limited data existed, partnering had been successfully implemented by several large contractors and that in the long term, partnering would give all participants a competitive advantage through better quality, shortened project schedules, and reduced costs.

As a result of CII's findings the Associated General Contractors of America (AGC), in September 1991, published a guide on the basic implementation of a partnered project. The guide outlines the partnering process and provides samples of partnering provisions to be included in specifications; partnering charter; and a sample partnering evaluation. This AGC guide entitled "Partnering" has become the standard for which the partnering process is being implemented across the country today.

Since its formal endorsement in 1991 by CII and AGC, partnering has been gaining popularity throughout the industry. Although there is no industry wide data to indicate exactly how many projects have been partnered, a recent survey conservatively estimates the value of partnered construction projects at approximately \$6 billion.(Hartnett, 1993)

"Partnering" as defined for the purpose of this study is an agreement that begins after a contract is awarded and focuses on creating an atmosphere that is conducive to enhancing communication, preventing disputes, and avoiding litigation. The partnering agreement is terminated at the conclusion of the project.

2.2 IMPLEMENTING A PARTNERED PROJECT

The implementation of a partnered project, although there are many variations, is a fairly mechanical process with focus on creating an atmosphere that is conducive to enhancing communication and minimizing disputes. (Schriener, 1991) However, for partnering to actually be successful it requires a cultural change and is not a "business as usual" type of process. For partnering to be successful stakeholders must adopt a "win-win" philosophy that recognizes trust, open communication, and early problem identification and resolution. (Cooper, 1992) Partnering also requires constant monitoring of progress and process. In addition, it requires a personal element where team members get to know one another better, and that in and of itself is beneficial. (CII, 1991)

Partnering begins with the stakeholders', owner and contractor, desire to partner. Executive level contacts are then made and an executive workshop is conducted to make initial contacts at the top of each organization. A group level workshop is then held where a common mission statement is formed; a problem escalation system is defined; an issue resolution process is tailored to the project; and initial team building occurs. At the conclusion of the group workshop a partnering agreement or charter is formed and signed by all stakeholders in the project. (Cowan, 1991)

The partnering agreement formed by stakeholders is actually outside the legal binding contract. It is an agreement outlining how stakeholders will conduct day to day business and how and at what level problems will be resolved. Partnering encourages problem-solving at the lowest possible level at the earliest time. Under the prearranged plan, problems are escalated through management levels until they are resolved. Since the natural tendency is not to let your boss resolve your problems, they are usually handled at the lower levels.(Cowan, 1991) Further, by encouraging personal relationships partnering brings stakeholders closer together and allows them to work and solve problems as a team.

2.3 PRIVATE VERSUS PUBLIC PARTNERING

Partnering has not only become popular in the private sector. It has gained substantial popularity in the public sector as well. Colonel Cowan, of the Portland District, United States Army Corps of Engineers, is credited with successfully implementing partnering in the public sector. Colonel Cowan is cited for saying that his expectations were exceeded on every one of the 100 partnered projects administered by his district.(Cowan, 1991) Although not using the term "Partnering", Washington Department of Transportation has been using Partnering type problem solving strategies since the early 1980's in an effort to reduce litigation.(Anderson, 1992)

There are some differences between private and government contracts that may influence or put limits on partnering agreements. In the private sector, partnering agreements such as those between Fluor Daniel and Dupont, since 1986, are aimed at long term commitments between partners.(Wilkinson, 1988) In public contracting however, federal procurement regulations require the Government to deal with contractors only at arms length. Although the Government

steps down from its position of sovereignty and enters the domain of commerce, its contracting officers are not allowed to assume a paternal role to "take care" of them or "guarantee" them against losses as would be possible in a private setting. Additionally, government officials being vigilant over tax payer money, never knowingly give away the rights of the Government and usually seek scrupulously to protect them. Lastly, government partnering agreements are only for the duration of the contract, and are usually only used during the construction phase.

The second major difference between private and government contracts is the lack of real negotiations. In a private contract both parties can modify and amend the provisions of the contract until both parties are satisfied with the terms. In a government contract, however, the contractor can accept or reject the entire contract as it stands, boiler plate and all. It is required that many provisions be included in contracts that often times inexperienced government contractors, much to their detriment, may overlook.(Trowbridge, 1968)

One possible pitfall of a government partnered contract is that the participants' relationship may be perceived negatively by other contractors. Contracting officials and a contractor in a partnering agreement may appear to have too "cozy" an arrangement to competing contractors.(Backman, 1993)

A possible barrier to public sector partnering occurs when the contractor perceives an inequitable allocation of risk between himself and the federal government. This perception of inequity may undermine the open communications and mutual good will developed by partnering. It is hoped that the partnering process will build such a strong relationship that these inequitable perceptions will be diffused.

Nevertheless, these possible pitfalls and barriers have not stopped partnering from being widely used and accepted by both Federal and State agencies. Partnering is now used extensively by the Army Corps of Engineers, Naval Facilities Engineering Command, Bureau of Reclamation, National Aeronautics and Space Agency (Mosley, 1991), General Services Administration, U. S. Postal Service (Wolcott, 1992), and many of the state transportation agencies including Arizona Department of Transportation (Rosenbaum, 1992), Washington State Department of Transportation (Anderson, 1992), Kansas Department of Transportation (Carlton, 1993), and is being considered for use by the Department of Energy on the multi-billion dollar Super Collider project in Texas. (Mosley, 1991)

2.4 NAVAL FACILITIES ENGINEERING COMMAND

The Navy shore establishment is anything that does not float or fly. The Navy shore establishment is widely dispersed throughout many different cities and countries around the world. Each naval base is a separate collection of different naval commands each with its own mission and facilities. These facilities are acquired and maintained by the activity's facility budget sponsor such as the Army or Air Force might have. (CECOS, 1985)

The Naval Facilities Engineering Command (NAVFAC) is responsible for the acquisition and maintenance of shore facilities; utilities purchase, generation, and distribution; maintenance and operation of transportation and specialized rolling stock; and the maintenance and operation of Navy Family Housing. To discharge this responsibility federal procurement regulations have provided NAVFAC with the authority, through warranted contracting officers, to contract for these services. Since public funds are used NAVFAC contracting officers are required to follow

provisions and guidelines as set forth by the Federal Acquisition Regulations (FAR). Under these regulations, contracting officers are charged with ensuring that full and open competition is maintained throughout. There are only a few circumstances that would allow NAVFAC to limit full and open competition. These include; unusual and compelling urgency, mobilization, International agreement, national security or in the public interest.

The primary types of contracts that NAVFAC uses to procure and maintain facilities include fixed price, cost reimbursement, indefinite delivery, time and materials, and letter contracts. Under these types of contracts the relationship with the contractor usually begins after award, unlike the private sector where the relationship is usually long term over many projects.

2.4.1. IMPLEMENTATION OF PARTNERING ON NAVFAC PROJECTS

The goal of partnering at NAVFAC is to serve customers better, faster and with less costs. "It will also make our people's jobs more enjoyable by reducing conflict with our customers and suppliers."(Buffington, 1992) Partnering was formally authorized to be used on construction contracts within NAVFAC through an instruction by Commander, Naval Facilities Engineering Command on February 1, 1991, although it informally began in 1989 when the Naval Intelligence Center contract was partnered.(Holmes, 1992) The instruction recognizes that the partnering concept was developed by The Construction Industry Institute and had been successfully implemented by the Army Corps of Engineers on public contracts. The instruction includes an implementation guide from the Mobile District of Army Corps of Engineers dated January 1990 to assist in implementation and explain benefits that can be expected from the use of partnering..

The Army's guide, included in the instruction, offers specific steps required to successfully implement a partnered project. Eight steps and recommendations are listed and are as follows:

1. Begin early. If the project is a potential candidate for partnering due to complexity, size, etc. it must be identified early and potential contractors must be notified through the specifications.

2. Obtain commitment from top management. Partnering requires top management support since it requires additional resources both in terms of money and time. Without top management support, partnering stands a much less chance of success.

3. Identify a "sponsor" or "champion". One person in each camp must be deemed as the partnering champion. The champion will keep track of the partnering process by scheduling meetings and monitoring its progress.

4. Select participants. Anyone that is considered a stakeholder in the project must be included, at a very minimum, in the working level workshop. The executive level seminar usually requires only top management to lay the framework for the working level workshop.

5. Select a facilitator. As partnering has become more and more popular the supply of facilitators has been increasing. Facilitators must not only be knowledgeable about the partnering process, but should also understand the construction process and be mutually respected by both parties.

6. Schedule initial workshop. An initial executive level seminar should be set as soon as practical after contract award. The contractor must be willing to volunteer not only to partner but also to share all costs incurred by the partnering process.

7. Conduct workshops. There should be two work shops, an executive level workshop and a working or "group" level workshop .

8. Follow-up. Follow-up sessions to renew the commitment to partnering and to keep track of each party's expectations and fears. Also at the follow up meeting parties are allowed to work out some problems that they may have been experiencing during the contract.

The guide also lists the types and magnitude of costs to be expected in the implementation of a partnered project.

2. 4. 2. PARTNERING APPLICATIONS

The most popular use of partnering has been with fixed price, lump sum type contracts. As of February 1993, NAVFAC had 55 ongoing Partnered contracts and plans to partner 82 others.

Partnering is also used on maintenance type facility support contracts(FSC). Both Pearl Harbor, Hawaii and the Philadelphia Naval Shipyard are now using partnering on their housing maintenance contracts.

At the Philadelphia Naval Shipyard partnering, along with a stringent source selection procedure, has helped turnaround years of traditional substandard performance on a fixed price award fee contract. The \$6.3 million housing maintenance contract was awarded in January 1992, and has a four year option.(Thomsen, 1993) Since contract award, the contractor has been given the full award fee each quarter. This contract is said to be the "best housing maintenance contract ever seen." The occupants are delighted and prices are lower than what they are used to. (Saltoun, 1992)

At the Public Works Center in Pearl Harbor, Hawaii, partnering has also been implemented in their housing maintenance contract, also with impressive results. Their housing contract, said to be the largest in the Navy, averages approximately \$31 million per year. Annual services provided by the contract entail over 6,000 delivery orders with over 3,600 changes of occupancy. Faced with an adversarial and sometimes confrontational relationship and three years of unresolved issues, partnering was incorporated in the third year of the 4 year option contract. In only seven months the contractor's average monthly performance rating, as shown by Fig 2.1 went from 91 percent to 98 percent. This rating is based on service calls, recurring work, and change of occupancy housing maintenance and is assigned by a panel of base personnel including the head of the contracting office, a housing representative and the Command Master Chief.

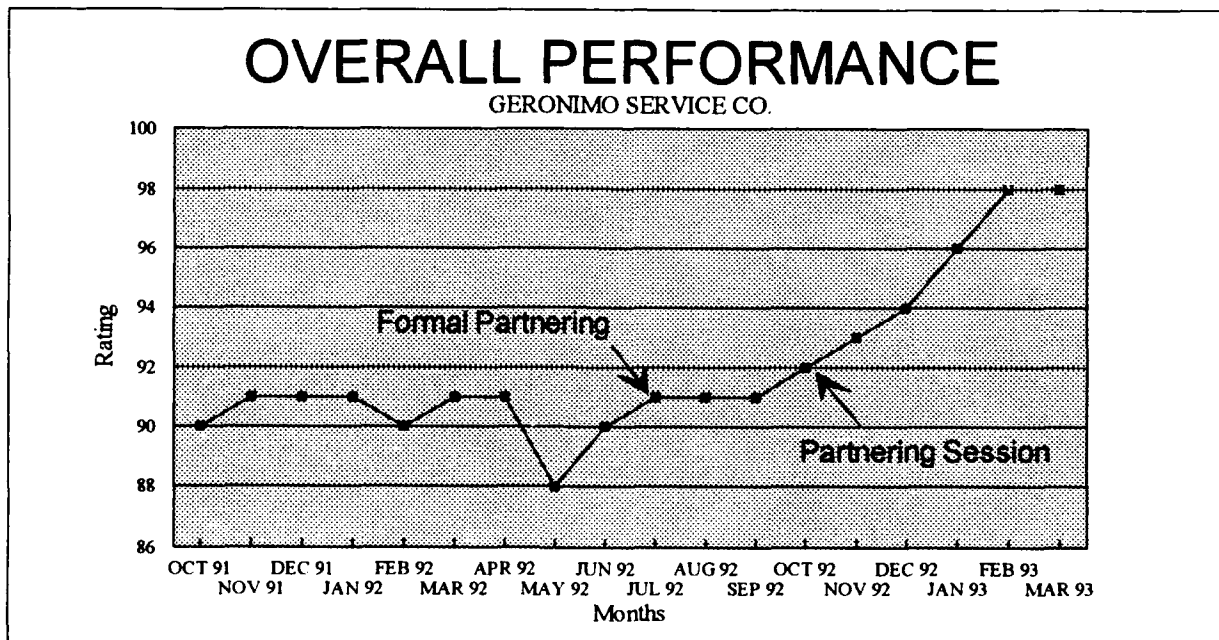


Figure 2.1

Likewise, discrepancy reports went from a high of 140 reports down to less than 20 as shown by figure 2.2. (Wilborn, 1993)

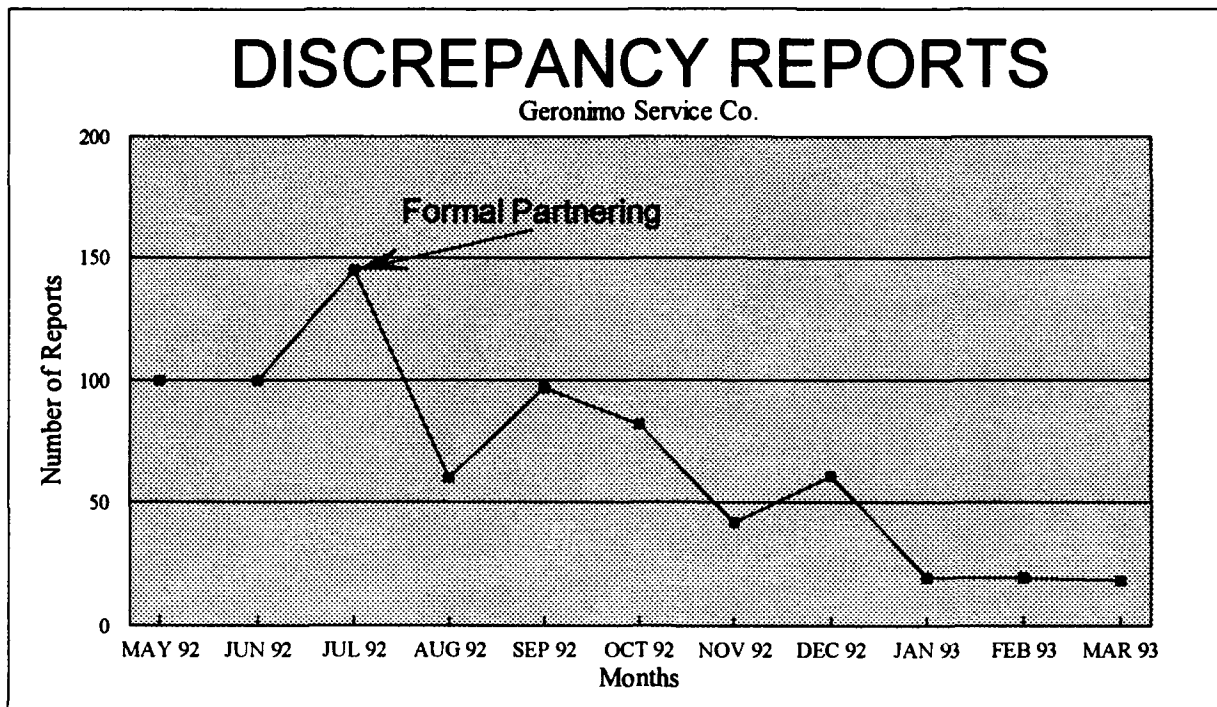


Figure 2.2

Partnering is also finding success between some of NAVFAC's "in house" departments. The Philadelphia Naval Shipyard Public Works crane department has incorporated a partnering charter. The constant battling between the maintenance and inspection divisions has been significantly reduced. The previously "dysfunctional organization" is now more in synch than ever before. (Saltoun, 1992)

2.5 COSTS

The cost of implementing a formally partnered project in NAVFAC's Western Division is said to be averaging between \$10,000 and \$12,000. (Eichert, 1993) The majority of these costs are shared by both NAVFAC and the contractor. A list of the expected costs is as follows:

1. **Facilitators.** Facilitators' costs can be expected to be around \$1000 per day. A good estimate for facilitators for a two day workshop and follow-up sessions is \$3,000-\$5000.

2. **Labor.** Labor costs include the costs of getting the personnel who are involved in the project to attend all the meetings. The cost of the personnel time for meetings and travel must be taken into consideration.

3. **Meeting facilities.** Typically partnering workshops are held in a "neutral" facility, usually a hotel conference room, where both parties can feel free to express their feelings and are not on the other party's territory.

4. **Supplies.** Supplies can include overhead projectors, markers, paper and other office supplies needed for the workshops. Sometimes, hotels can provide these materials.

5. **Travel.** Workshop participants require reimbursement for travel and per diem. These costs should not be difficult to estimate.

6. **Administrative.** The administrative time is mainly composed of the champion's time. A champion is necessary to keep track of partnering's progress, schedule future meetings, and to tabulate the partnering grade scores at follow-up meetings. Additionally, 2 to 3 days should be allowed between sessions for maintenance activities.

7. **Lost productivity.** The productivity lost will include the loss of personnel while they attend the partnering workshops. Personnel involved in other contracts or with other responsibilities will be unavailable to perform other duties while attending workshops.

8. **Perks.** Perks can range from coffee and refreshments at workshop breaks to providing T-shirts to participants and awards at various periods throughout the project period. (CII, 1991)

CHAPTER 3

RESULTS

3.1 AREAS SURVEYED

The survey was developed as a fill in the blank type where respondents were encouraged to enter their opinions and comments. Administrators of all contracts, regardless of work in place, were asked to respond to the survey. As a result, many of the contracts for which surveys were returned were less than 50 percent complete. All gathered survey information was used, with the exception of that pertaining to cost growth, for the development of the results. In the case of cost growth, only projects whose completion was at 70 percent or higher were used. The areas surveyed were:

Influence on project schedule.

Increased value engineering proposal submissions.

Increased acceptance of value engineering proposals.

Impact on working relationships.

Impact on time required to administer a contract.

Impact on processing time for submittals, modifications, payments and requests for information.

Impact on the number, value, and type of modifications being received.

Impact on quality of construction.

Increased customer involvement on projects.

Impact on claims.

Impact on contract cost growth from original award amount.

INFLUENCE ON PROJECT SCHEDULE

The area of the survey pertaining to schedule was intended to develop a sense of whether or not partnering has a positive impact on a contractor's ability to stay on schedule. The responses to this question are based primarily on the sentiment and opinion of the contract administrators.

Of all respondents, 68 percent indicate that partnering does have a positive impact on the contractor's ability to keep within schedule. Regarding one of the more successful projects the inspector had this to say about the effect of partnering on his project schedule, "very helpful, contract on a "no slip" schedule, mutual trust was established quickly and all agreed to skip the blame stage and solve problems, ASAP." (O'Brien, 1993)

However, not all feel that partnering has a positive effect on schedules. One administrator explained that "partnering may have had a negative impact on schedule due to the delayed implementation of contractual remedies (i.e. retainage) until much later than would normally have been done." He also feels that "partnering may have led the contractor to believe that there would be downward negotiation of liquidated damages, despite frequent written and oral communications to the contrary." (Mengel, 1993)

VALUE ENGINEERING SUBMISSIONS

The purpose of value engineering is to encourage contractors to seek and be allowed to participate in cost savings by suggesting alternative construction methods that do not reduce

quality or intended purpose but do reduce construction costs. The savings are then realized by both the contractor and the government. (Barrie, 1984)

Value engineering was included in this survey since all phases of a value engineering cost proposal should be positively influenced by a partnering atmosphere of openness and mutual trust, making contractors more inclined to prepare and submit them. Subsequently, government contract administrators should be more willing to embrace the submission of proposals and expeditiously review them, and recommend their approval.

Of all respondents, 23 percent believe that partnering has a positive influence on the value engineering program. On only one project is the submission and subsequent approval of a value engineering proposal directly attributed to partnering. The administrator's remarks were as follows; "Partnering encouraged submissions of VECP's. One VECP submitted to date for a carbon adsorption system designed by Calgon Corporation Design saved substantial money and resulted in a technically superior product." The savings was \$270 thousand on a \$5.9 million contract.(Bunker, 1993)

INCREASED ACCEPTANCE OF VALUE ENGINEERING PROPOSALS

Another question regarding value engineering, is whether partnering has an effect on government representatives' willingness to increase their acceptance level of a value engineering proposal as a result of partnering. Only 10 percent of the respondents believe that partnering has an effect on their acceptance level of a value engineering proposal. One administrator pointed out that as a result of partnering they have agreed to review all value engineering proposals

together and decide their merit prior to the contractor formally submitting the VECF.(Burns, 1993)

IMPACT ON WORKING RELATIONSHIPS

A question was developed with the intent of finding out if the normal adversarial relationship is reduced as a result of partnering. Quite frequently working relationships are strained and administrators and contractors expend much time and effort on defensive positioning and case building. Successful partnering implementation will allow both the government and contractor to spend more time on construction.

Of the survey respondents, 90 percent indicated that partnering does have a positive impact on the working relationships between government personnel and contractors. One respondent indicated that relations with a specific contractor were better as a result of partnering than on other contracts with the same contractor.(Crickette, 1993)

IMPACT ON TIME REQUIRED TO ADMINISTER A CONTRACT

The survey reveals that 58 percent of the administrators believe that partnering is helping to reduce the amount of time required to administer contracts as compared to conventional contracts.

Typically, NAVFAC construction contract administrators are either civilian civil service employees or military officers in the Navy's Civil Engineer Corps. Their typical duties include the administration, inspection, and surveillance of assigned construction projects. Their work includes:

Technical review of drawings and specifications to determine constructability.

Investigation of field problems and related engineering evaluations, interpretations and decisions.

Review and acceptance of Architect-Engineer drawings.

Preparation in the negotiation of contracts.

Estimation and negotiation of change orders.

The review of value engineering proposals.

Correspondence relating to contracts.

Preparation of negotiation Board Reports.

Service as government witnesses in claims hearings.

An average construction contract administrator will usually have several contracts in progress at any given time depending on size and complexity. It is not unheard of for contract administrators to have responsibility for ten or more contracts that are in various phases of completion, from scope development with an architect engineering firm through contract close out. Relief in the form of easing the burden of contract administration would allow the contract administrator to concentrate less on the development of defensive type correspondence to cover himself against possible contractor litigation and concentrate on the delivery of a quality construction project.

Some administrators feel that partnering allows problems to be solved at the job site instead of through correspondence. Conversely, partnering is said to have increased the time required to administer a project. One administrator noted that he practiced a greater-than-normal degree of "forbearance" throughout the project with regard to issuing delinquency letters and retaining

funds for unsatisfactory work on anticipated liquidated damages. The additional time was expended researching and negotiating a large number of variance requests and in processing the large number of submittals of which some required two or three resubmissions. (Mengel, 1993)

IMPACT ON PROCESSING TIME FOR SUBMITTALS, MODIFICATIONS, PAYMENTS AND REQUESTS FOR INFORMATION

When surveyed as to whether partnering has an effect on the time required to process submittals, modifications, payments and requests for information 58 percent responded affirmatively. The Partnering concept, through enhanced lines of communication, should be able to increase the contractor's knowledge of government expectations on these required correspondence documents. Understanding the requirements fully, contractors are able to submit correct documents the first time and reduce processing time required of administrators. One administrator noted that due to the milestones adopted in the partnering charter they have been able to meet the goals for processing and turnaround times of these documents.

IMPACT ON VALUE, NUMBER AND TYPE OF MODIFICATIONS AS COMPARED WITH A CONVENTIONALLY ADMINISTERED CONTRACT.

The majority of the respondents do not believe that partnering is having an impact on the number and type of modifications as compared to non partnered projects. The results of the survey showed that only 29 percent of administrators believe that partnering has a positive influence on these modification rates. The purpose of this survey question is to determine if partnering is having a positive or negative effect on the number and types of modifications being

submitted. Closer working relationships may either increase or decrease the contractor's propensity to submit modifications. However, a clear majority do not believe that partnering has a noticeable impact on the modification rate of construction projects.

Some respondents commented on the increased number of customer requested type modifications. One noteworthy comment from the Naval Hospital at Twenty-nine Palms, CA, "I feel that the number of bilateral modifications on this project was higher as a result of partnering than we would have conventionally, but we have had no claims and no unilateral modifications."(Ludwig, 1993)

IMPACT ON QUALITY OF CONSTRUCTION

Another survey question was whether partnering has an impact on the quality of their projects. Of all respondents, 48 percent believe that partnering does have a positive effect on quality. Others indicated that the quality standard was already high and partnering was not significantly increasing an already high quality standard. Some respondents indicated that as a result of a very effective Construction Quality Control (CQC) program quality is already extremely high and they cannot fairly attribute better quality solely to partnering.

INCREASED CUSTOMER INVOLVEMENT ON PROJECTS

Over 77 percent of the surveys indicate that customers are becoming more involved as a result of partnering. In some cases, customers are asking for more changes as a result of their increased participation. When asked about increased customer involvement on his project one administrator exclaimed, "Yes! They feel more at liberty to request modifications." Customers have noted that

they now feel they are part of a team where they know and understand what is happening not only with the contractor's schedules, but also how they can be of assistance in expediting the availability of spaces for them. Some administrators feel however, that this is allowing an "open door" for the customers to request changes. These results concerning customer involvement are in line with TQM concept where the customer is the focus of the product.

IMPACT ON CLAIMS

Another area surveyed is the area of claims. On four of the 29 contracts surveyed administrators indicate that they anticipate having claims on their projects. However, it is unknown whether the unresolved issues will be settled before litigation is sought. The four contracts where a claim is anticipated represent nearly 14 percent of the contracts surveyed. On one contract the administrator anticipates a claim for a government delay in turning over the construction site. On the second, the administrator anticipates a large claim in an attempt by the contractor to mitigate the value of significant liquidated damages. The third administrator indicates that the contractor has already promised him at least five claims on a contract only 50 percent complete. The last contract where a claim may be pending concerns a large project where the contractor is involved in and is focusing his labor resources on another partnered project. However, no claims have yet been filed on projects with potential for claims, so the actual claim amount is still unknown.

IMPACT ON CONTRACT COST GROWTH FROM ORIGINAL AWARD AMOUNT

In order to compare non partnered averages with partnered averages a list of approximately 300 Military Construction contracts that have been administered by NAVFAC and completed between 1988 and 1992 were reviewed and analyzed for determination of average cost growth per non partnered contract. The average increase per contract was found to be 7.05 percent. A review of the cost growth per category revealed that there is no apparent trend for differences between cost growth rates based on increasing contract value. This cost growth per contract takes into account all changes. It includes value engineering, customer requested changes and all other categories for changes.

Of the projects surveyed only six are 98 percent or more complete. These completed contracts have an average of 10.75 percent cost growth and are shown on Table 3.1. Since the amount of complete partnered contracts is relatively small, contracts that were more than 70 percent complete were also included for comparison of cost growth.

TABLE 3.1 Cost growth for contracts surveyed with work in place (WIP) from 98% through 100% (No significant cost growth anticipated to close out projects with the exception of Propulsion Training Facility, Charleston S. C. with one possible claim pending).

<u>Contract Title</u>	<u>Award Amount</u>	<u>Final Amount</u>	<u>Cost Growth</u>
Propulsion Training Fac. Charleston S. C.	\$15,763,000.00	\$16,644,413.00	5.59%
Dry Dock #2, Portsmouth Naval Shipyard, Portsmouth, NH	\$26,050,869.00	\$29,705,908.00	14.03%*
Replacement Hospital, Phase III, Portsmouth, VA	\$28,369,393.00	\$33,650,000.00	18.61%
Naval Hospital & Dental Clinic, Twenty-nine Palms, CA	\$37,200,000.00	\$39,495,600.00	6.17%
King Hall Upgrade, Monterey, CA	\$2,191,066.00	\$2,313,521.00	5.59%
Urban Training Facility, MCB Camp Pendleton, CA	\$6,568,494.00	\$7,515,307.00	14.41%
Average			10.75%

* Fast track design, original A/E estimate was \$34 million, 60%-100% design completed in 6 months. Construction completed on schedule, no claims or disputes.

The contracts with 70 percent completion or more, as shown on Table 3.2 average an unadjusted 10.58 percent cost growth. This average is significantly higher than the average of 7.05 percent for non partnered project data. These results, although limited, indicate that partnering, thus far, is not having a significant impact on reducing cost growth on construction contracts.

TABLE 3.2 Cost growth for contracts surveyed with work in place (WIP) from 70% through 100% (Based on cost growth through April 1993)

<u>Contract Title</u>	<u>Award Amount</u>	<u>Current Amount</u>	<u>Cost Growth</u>
Propulsion Training Fac. Charleston, S. C.	\$15,763,000.00	\$16,644,413.00	5.59%
Dry Dock # 2 Portsmouth Naval Shipyard, Portsmouth NH	\$26,050,869.00	\$29,705,908.00	14.03%
Replacement Hospital Phase III, Portsmouth, VA	\$28,369,393.00	\$33,650,000.00	18.61%
Naval Hospital & Dental Clinic, Twentynine, Palms, CA	\$37,200,000.00	\$39,495,600.00	6.17%
King Hall Upgrade, Monterey, CA	\$2,191,066.00	\$2,313,521.00	5.59%
Urban Training Fac. MCB Camp Pendleton, CA	\$6,568,494.00	\$7,515,307.00	14.41%
Fuel Maint. & Corrosion Control Hangar, ANG Channel Island, CA	\$2,2924,000.00	\$2,966,191.00	1.44%
Weapon System Integration Lab, Port Hueneme, CA	\$6,498,000.00	\$8,105,047.00	24.73%
Explosive Handling Wharf, No. 2 Kings Bay, GA	\$37,777,000.00	\$39,081,923.00	3.45%
Fleet Logistics Support Center, Port Hueneme, CA	\$5,836,092.00	\$6,519,876.00	11.72%
		Average	10.58%

The above paragraphs present the survey results on a category basis. In summary, it appears partnering has been most beneficial in the areas of working relationships, customer involvement and schedule adherence. Partnering can also be credited for moves toward smoother project administration and submittal processing, as well as improving construction quality. The results pertaining to unresolved issues and contract modifications are somewhat disappointing. Of the contracts referred to by the survey respondents, four are expected to have claims filed for various reasons cited earlier in this section. These four contracts represent nearly 14 percent of the contracts considered in the surveys. As for decreasing the number of modifications, only 29 percent of those surveyed feel partnering has helped.

Although the percentages for increased value engineering proposal submissions and subsequent acceptances are rather low there is potential for positive partnering influence. Not many survey respondents commented favorably on this area. Most simply did not encounter any proposal submissions. The only project where partnering is believed to have had great positive influence in value engineering proposal submissions saved a substantial amount of money. The results of the survey by category are shown on figure 3.1.

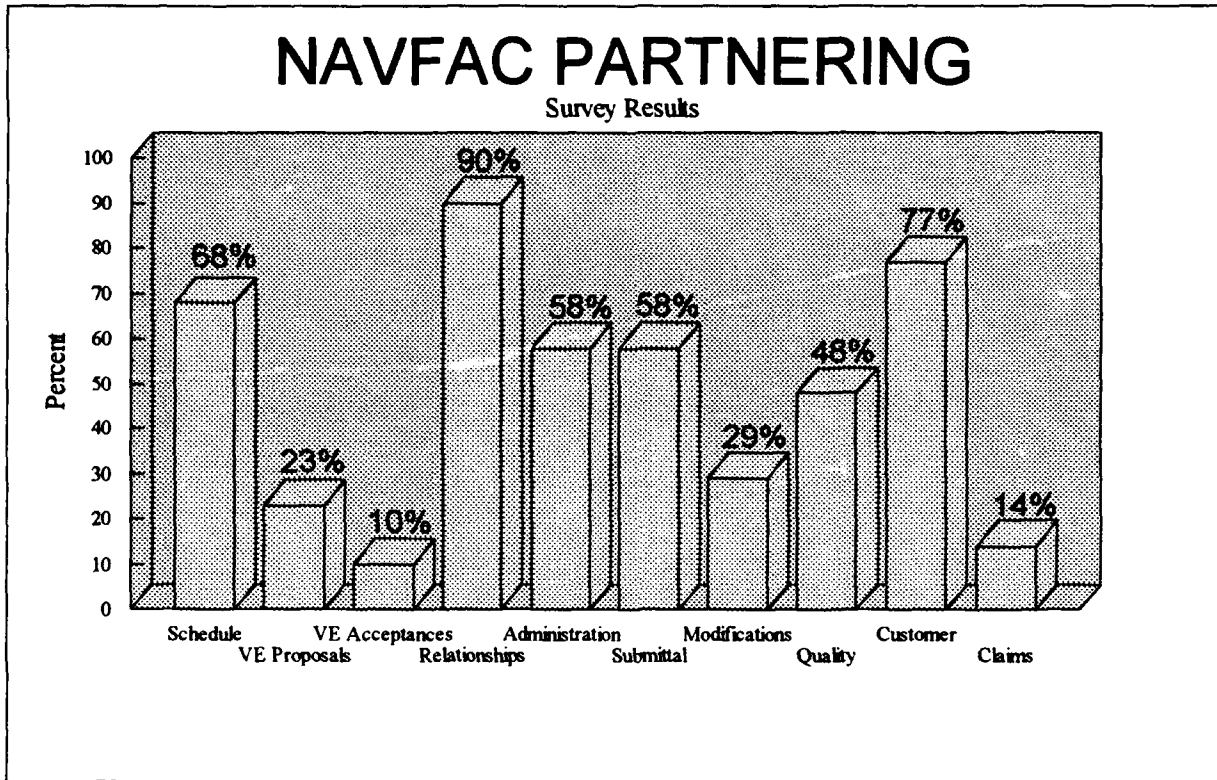


Figure 3.1

3.2 RECOMMENDATIONS

A method of payment must be standardized for the compensation of designers for their participation as full partners in partnering workshops. Presently, contracting officers are using "field time" for compensation of architects. A partnering provision or rate schedule should be negotiated with design firms prior to design award, and used for partnering related activities.

Continued support from top level management is required. Proponents of partnering must remain vocal and work to convince partnering critics that partnering is not just another passing management buzzword.

Training should continue on the process of partnering. NAVFAC personnel should be aware of the mechanics and philosophy behind partnering and the benefits it can provide. Exploration

for other uses of partnering, beside construction contracting, should continue. Partnering training should begin in the very basic contracting courses. It should incorporate partnering success stories with all types of contracts.

An independent facilitator should continue to be used for initial partnering workshops. Several attempts at having an in-house facilitator from one camp or another have failed. In the initial workshops, executive and working level, it is very critical that relationships get off to a good start. Private and public agencies strongly recommend a neutral facilitator. However, members of the government or contractor camp have been successful in follow up meetings.

Additional partnering workshops may be necessary if the personnel turnover is high. It has been proposed that workshops take place as often as every nine months where high turnover exists. The fundamental concept and attitude that partnering creates are very perishable commodities. A case study of the Army Corps of Engineers Bonneville Lock Project has shown that adversarial relationships and unhealthy case building begin to creep back into projects where relationships formed through partnering have become stale as a result of neglect or high personnel turnover.(Polack, 1993)

The value engineering program may be enhanced by incorporating a value engineering exercise as part of group workshops. In this exercise the goal is to focus and maximize the Value Engineering program. Such an exercise, in the contractor's opinion, was said to be one of the key elements to success of an Army Corps of Engineers partnered project at the Bonneville Lock Project.(Geary, 1991)

Government contract administrators must remain cognizant of the fact that they are legally accountable to very high standards of conduct. Partnering can create relationships that confuse

uninitiated administrators. They may develop a relationship too close to the contractor, losing objectivity to perceive conflicts of interest.

3.3 LESSONS LEARNED

On large projects it may be more beneficial to delay issuing the notice to proceed until after the executive level Partnering workshop has taken place. This allows the contractor's personnel to concentrate on the partnering related issues rather than being concerned about what is happening at the construction site. This also allows major subcontractors to attend the workshop.

Working level partnering sessions are more meaningful if delayed until work has been in progress for two or three months, after relationships and problems have begun to form. The partnering workshop will help to build and expand the relationship foundation between stakeholders in addition to clarifying expectations and outlining problem solving strategies.

It is beneficial for the facilitator to meet with each contracting party at least one week prior to the executive level session if possible. This allows the facilitator to understand more about the project and will provide a better opportunity to tailor the workshop to the specific project. Additionally, knowing the facilitator on a personal basis may enhance participant openness at the workshops.

The executive level session should include in its agenda time to determine which parties to be invited to the working level workshop.

Workshop sessions are more effective if attended by all stakeholders. It is crucial to the partnering relationship that all parties be regarded as full partners. Some stakeholders often

overlooked include, safety, city officials and inspectors, local utility companies, design subcontractors and environmental agencies.

It is helpful to contractors if government representatives explain the government organizational chart and the government contracting procedures. Additionally, an explanation of submittal, and invoice and change request processing should be included in the workshop agenda. This allows the contractor to have a clear understanding of the procedures followed by government procurement officials.

If there is an award fee clause in the contract it should be discussed at the workshop and subsequent follow up meetings. Each party's expectations regarding performance and award fee should be shared so that everyone understands and there are no surprises later.

The partnering relationship should be regarded as one that will be in effect until expiration of the warranty period. Specific arrangements for service or repair calls during the warranty period should be clearly outlined.

The specifications for partnered projects should outline all requirements for the workshop, follow up meetings, expected attendants, duration and costs. This eliminates any confusion and possible surprises that may be detrimental to the partnering relationship.

Partnering requires the support and endorsement of senior management. It is very important that they support partnering throughout the project and attend every workshop. Partnering also requires a strong proponent, high in the organization, to act as a partnering mentor.

The success of the partnering workshop is vital to the ultimate success of the partnering relationship. During the workshop clear lines of communication and authority must be specified and established. Independent decision making by either side should be avoided and discouraged

and a neutral facilitator should be used to create a level playing field between all parties. Parties should express their ideas in a non-judgemental way.

Follow up workshops are very important. They should be conducted every 2-3 months and be tentatively set up as early as the first workshop. Progress should be evaluated on previously agreed areas.

Do not assume that everyone will act in good faith, this must be earned and comes with trial and error, team building and mutual respect developed over time.

When selecting a facilitator, look for one who understands the construction process.

3.4 OTHER FINDINGS

As of November 1992, NAVFAC had 55 ongoing construction contracts using the partnering concept, worth \$1.86 billion. Another 84 projects, worth \$740 million, have been identified and are expected to make use of partnering.

A review of partnered projects within each Engineering Field Division(EFD) as compared to the relative distribution of Military Construction(MCON) projects through the EFDs indicates that partnering is utilized more in some EFD's than others, as shown by figure 3.2. A list of the current partnered projects shows that 38.7 percent of all partnered projects are in the Naval Facilities Engineering Command, Western Division(WESTDIV) which includes the northwestern region of the United States, including northern California, Nevada, Oregon, Washington, Idaho, Montana and Utah. The Naval Facilities Engineering Command, Pacific Division(PACDIV), with naval bases in Hawaii, Guam, and other Pacific Islands has 24 percent of the partnered projects. Other EFD's with ongoing partnered projects include the Naval Facilities Engineering Command

Southern Division(SOUTHDIV), which encompasses the lower portion of California, Arizona and New Mexico, and the Naval Facilities Engineering Command Atlantic Division(LANTDIV), each with 11.3 percent of the current partnering list. The Naval Facilities Engineering Command Northern Division(NORTHDIV), with states in the Midwest and Northeast, has only 5.3 percent of currently partnered contracts. The Naval Facilities Engineering Command Chesapeake Division(CHESDIV), consists mainly of the Washington D. C. area, and has 4.7 percent of the current partnered projects.

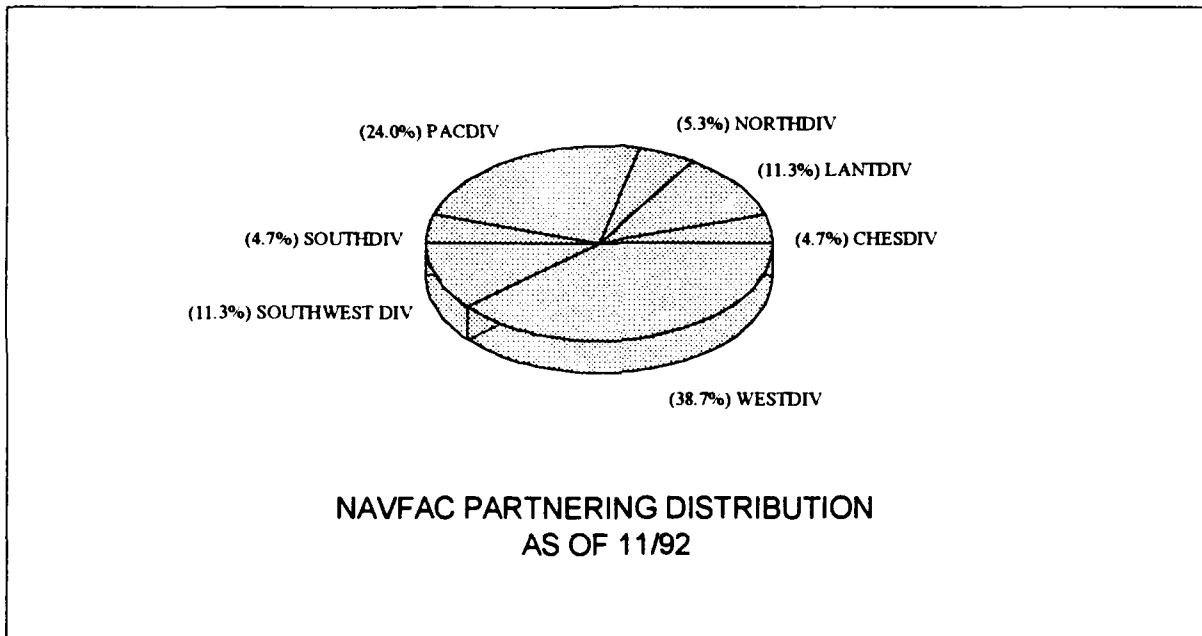


Figure 3.2

The list of planned partnering projects indicates a continuing trend with somewhat wider use of partnering in both WESTDIV and PACDIV. Partnering in the other EFD's appears to remain relatively constant, as shown by figure 3.3.

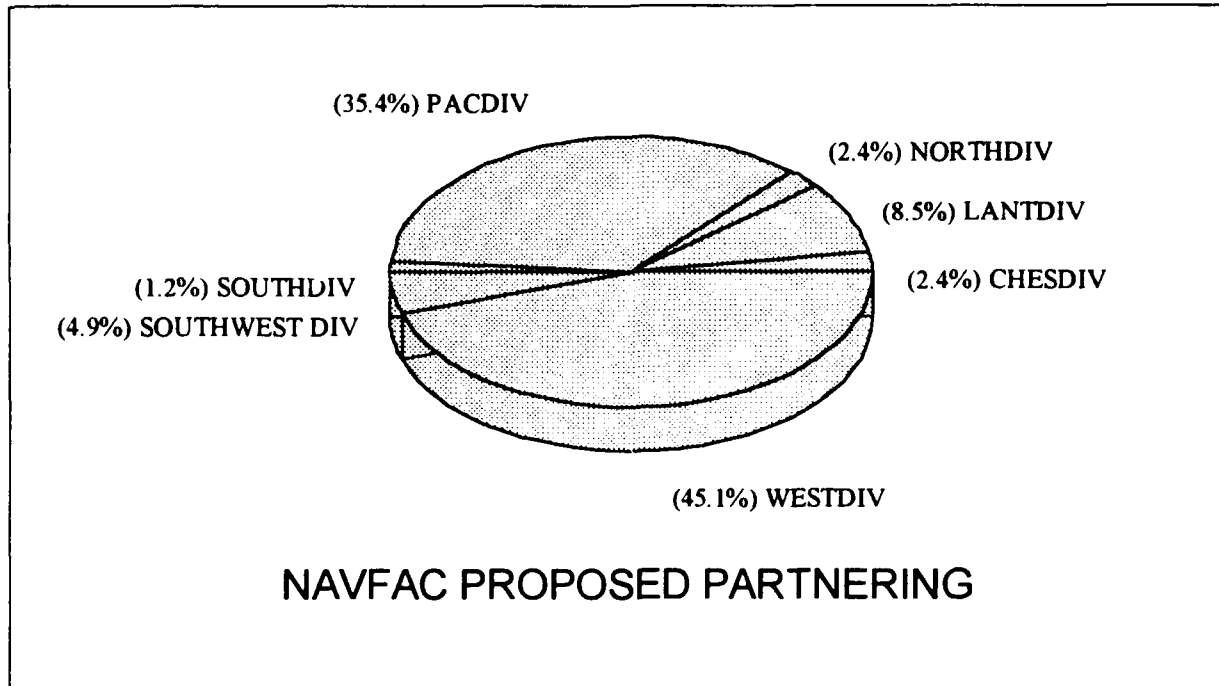


Figure 3.3

The relative distribution of MCON projects from 1990 through 1992 can be seen on figure 3.4. The MCON relative distribution indicates that for years 1990 through 1992 LANTDIV has the most work in place with 20.3 percent, while WESTDIV and SOUTHDIV have had 18.9 percent and 18.8 percent respectively. Surprisingly, PACDIV with only 9.0 percent of the MCON work in place has maintained a higher relative percentage of partnered projects.

One of the basic requirements for partnering's success is the use of a champion. The champion may be at the EFD or the field office level and would be away from the day-to-day details of each project. This would not only allow the champion to look at situations objectively, but would give him the authority to make things happen. This person should also be a proponent and supporter for the extensive use of partnering. (Cowan, 1991)

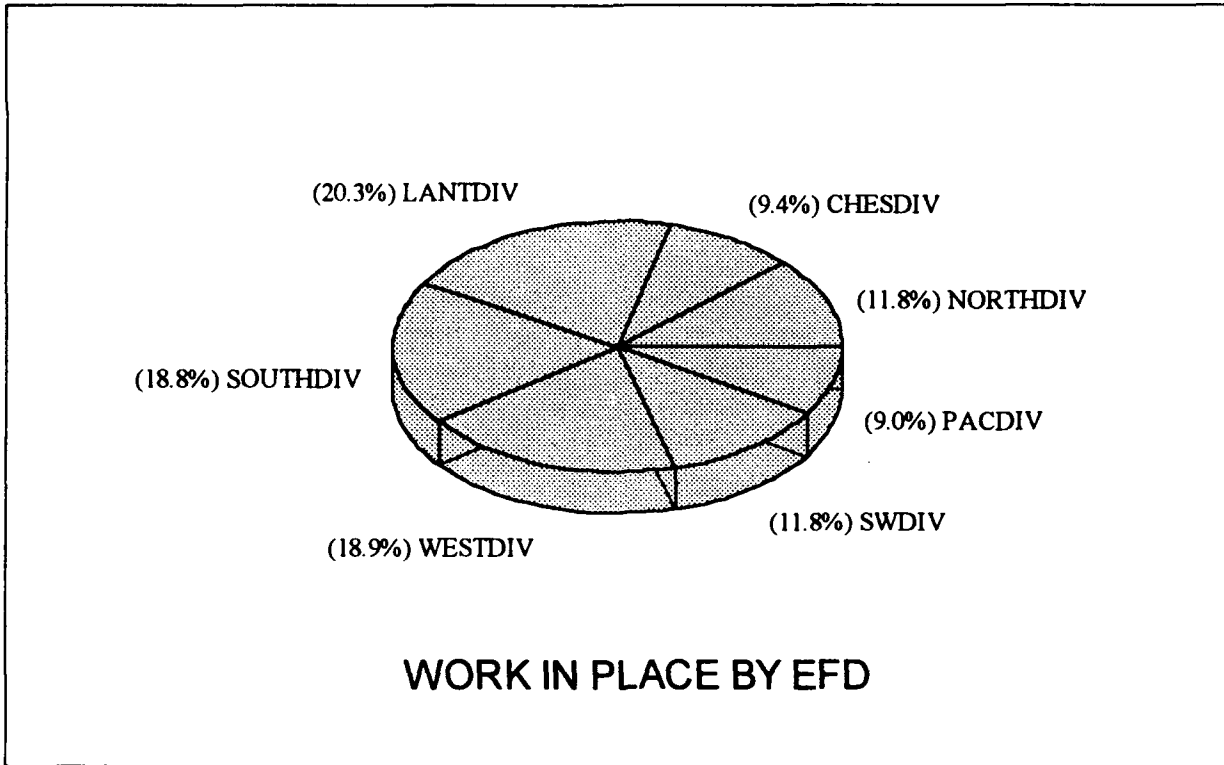


Figure 3.4

CHAPTER 4

CONCLUSION

Partnering at NAVFAC is accomplishing what it was intended to. It has made significant improvements in the traditional adversarial relationship that exists between owner and contractor. It brings the customer closer to the project and the construction process. Contracts are more enjoyable to administer and quality is also improved. Contract administrators feel that there is better control over the contract schedule due to partnering. In the areas of cost growth and claims there are not enough data to draw valid conclusions pertaining to partnering.

The area in which partnering appears to be most helpful is in establishing better working relationships with contractors. Of all administrators surveyed, 90 percent feel that they experience better working relationships as a result of partnering. Improved relationships is thought to be the most influential element in the successful completion of the \$22 million covered dry-dock project at Portsmouth Naval Shipyard, NH. (Cozier, 1993)

Partnering is also proving successful in getting the customers involved in the projects. Of all respondents 70 percent claim that partnering is helping in this area. Customers and their representatives involved with partnered projects frequently attend quality control meetings as well as all partnering meetings. By becoming more involved customers also are more willing to provide the support and responsiveness often needed for the success of a construction project. Due to their involvement customers are also able to anticipate potential problem areas and help find solutions. One customer has gone so far as to assign two full time representatives to act as liaisons between customer and contractor personnel.

Not all administrators have welcomed increased customer involvement. Some administrators believe that customers are requesting more changes as a result of their extensive involvement with projects. These administrators feel that it is partnering that allows customers to feel at liberty to request such changes.

The most noteworthy area not being affected by partnering is that of cost growth. Although there is very limited data, six completed projects, the average cost growth per contract was higher than the non-partnered average. One interviewee explained that this may be caused by the fact that only large and complex projects where problems are expected are being selected as candidates for partnering. He also indicated that there are many intangible benefits being provided by partnering that are not reflected in the change order log. He pointed out that on many occasions contractors are willing to provide suggestions that allow the government to better anticipate problems and avoid costly changes or possible claims later. The example provided concerned a project for a parking garage. The contractor was asked what areas he anticipated having problems. After some thought the contractor stated the problems were with signs and color schemes. He offered to paint one finished section completely, including signs, as called for by the contract documents. The customer and base representatives were invited to inspect the color scheme and rejected it. As a result, the contractor proposed and completed another color scheme. At the second inspection, all parties agreed that the new colors were acceptable and agreed to use them. The administrator subsequently processed a change compensating the contractor for six signs and paint for a total cost of \$120.00. The administrator pointed out "these types of benefits are hard to identify on a change order log and only come as a result of

good working relationships and open communication that are developed and promoted by partnering." (Specht, 1993)

Another possible reason for increased cost growth is that administrators may be more lenient and possibly liberal with changes due to partnering itself. One engineering field division supervisor pointed out that some of the newer contract administrators may not be as vigilant in the area of containing cost growth. He believed that some administrators may be taking partnering "too" literally and it is a mistake to lose objectivity as a result of partnering.

Although the survey results indicate that only 23 percent of the administrators feel that partnering has a positive effect on the value engineering program, one must realize that not all projects are going to have a value engineering proposal submission. Only in the contracts where a value engineering proposal is actually submitted can it be determined whether or not partnering had any effect on its submission. In only one project was partnering said to have directly affected a value engineering submission. In that project, the value engineering proposal saved \$270,000.00, an amount that could quite possibly cover all the partnering related costs for the projects under this survey.

In the area of quality, only 48 percent of the survey respondents feel that partnering is increasing project quality. However, the other 52 percent of the respondents did not necessarily feel partnering has a negative impact on quality. Two respondents based their comments on projects that had not started construction or where it was too early to form an opinion. Three respondents feel they were already experiencing high standards of quality due to the good Construction Quality Control(CQC) program. They did not credit partnering for that high quality. Although only 48 percent of those surveyed responded favorably to higher quality, the

results are considered to be positive since in only one case was quality thought to be worse. Of all survey respondents, 68 percent believe that partnering is having a favorable effect on contractors' ability to stay on schedule. Some administrators feel that partnering is having an indirect impact on scheduling. Due to having an open line of communication between all parties, partners now understand and have an appreciation for the impact of their delays on other partners. Some of the favorable responses indicate that staying on schedule is usually one of the charter items that all parties agree to at the onset of the project. Other favorable responses to the schedule question indicate that because of partnering some contractors are able to fax advanced copies of requests for information and submittals directly to the architect/engineers. Responses are then faxed to the contracting office. This is believed to be saving considerable time and helping contractors to stay on schedule.

It was the original intent of this survey to compare schedule and cost growth of partnered projects to that of non partnered projects. After reviewing the progress of ongoing contracts I feel it is too early to draw a valid quantitative conclusion as to whether or not partnering has a positive effect on project schedules.

Of the respondents, 29 percent believe that partnering has a positive impact on the number of modifications when compared to non partnered projects. The majority do not believe that modification rates are reduced as a result of partnering. Of the few that believe that partnering favorably helps the modification rate, many believe that if it were not for additional customer requested changes they would have a much lower change order rate. Others believe that although the modification rates are not being improved, the rate at which they are processed is improving and the contractor's estimates are not being unduly inflated, which allows for more expedient

resolutions. It is safe to conclude that in the area of modifications, the number of requests is not being reduced as a result of partnering. However, as just mentioned, there is again an intangible benefit which partnering provides.

Although it may be too early to directly attribute to partnering the recent reduced litigation trends within NAVFAC, it appears partnering is making a contribution. Figure 4.1 shows the trends for NAVFAC Contracting Officers final decision requests and the number of appeals to the Armed Services Board of Contract Appeals or Federal Claims Courts.

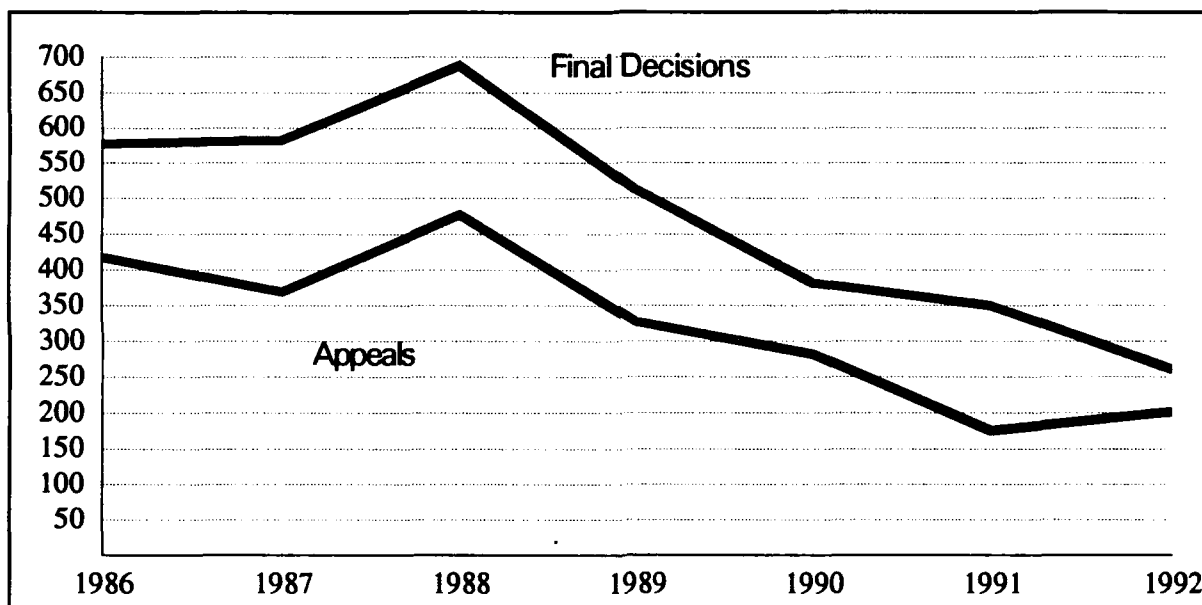


Figure 4.1

Of the four contracts for which claims are anticipated or where unresolved issues are at hand, administrators feel the contractors are not taking the partnering concept to heart. Since contractors on these troubled contracts were not provided the opportunity to voice their opinions on the survey, it would be unfair to conclude that it is they who are not taking the partnering concept seriously.

Partnering on the areas covered appears to be having an overall positive impact on the construction program within NAVFAC. After considering that one value engineering proposal, in which partnering was a catalyst, would roughly cover costs for twenty seven partnered projects (\$270,000 VECP), it is easy to conclude that partnering is extremely cost effective. Although partnering has many benefits, the survey results show that it does not solve everyone's problems. It does however, provide a more solid foundation of trust and understanding for the very fragile relationship that has too often turned sour. Without question, it is clear that NAVFAC should continue to utilize partnering in not only fixed price lump sum type contracts but also in interdepartmental agreements and indefinite quantity delivery contracts.

APPENDIX A

SURVEY

Date

Partnering Performance Evaluation

Contract Title and Location: _____

Navy Point of Contact regarding Project: _____

Tel. _____

Contract award amount: _____

Contract award date: _____

Initial contract completion date: _____

Actual or anticipated completion date: _____

Work completed to date (WIP) %. _____

Has partnering had any influence on the project schedule? In what areas?

Did the contractor propose any value engineering change proposals? If so, did partnering influence the contractor's decision? Please explain.

Were the contractor's value engineering change proposals accepted more as a result of partnering? Please list value engineering change proposals and subsequent acceptance or rejection.

Has partnering had any impact on working relationships? Please explain.

Did partnering affect the time required to administer the contract? If so, please explain.

Was less time required for submittal processing, processing of modifications, payments, and requests for information?

Please give your assessment on the number, value and type of modifications that occurred on this project, compared with a conventionally administered contract.

In your opinion, has partnering had any affect on quality of construction?

Is customer involvement in this contract noticeably different?

Were there any claims on this project? Are there any pending?

Please send a copy of the final report to the following address:

APPENDIX B

SURVEY RESPONSES

<u>Contract Title and Location</u>	<u>Contract Award Amount</u>	<u>Work In Place</u>
Explosive Handling Wharf, No 2. Kings Gay, GA	\$37,777,000.00	85.00%
Repairs to Power Plant, San Clemente Island, CA	\$4,491,950.00	0.00%
Urban Trainng Facility, MCB Camp Pendleton, CA	\$6,568,494.00	100.00%
Water Treatment Plant, Cherry Point, NC	\$7,458,630.00	47.00%
Upgrade Wastewater Treatment Plant, Cherry Point, NC	\$9,035,000.00	51.00%
Naval Hospital, Cherry Point, NC	\$22,392,000.00	30.00%
LCAC Complex-Increment III Norfolk, VA	\$6,190,000.00	50.00%
Repairs to Barnum Hall, Little Creek, VA	\$1,978,000.00	35.00%
Replacement Hospital Phase III, Naval Hospital, Portsmouth, VA	\$1,978,872.00	99.00%
Repair Hangar 296, MCAS, El Toro, CA	\$28,369,292.00	10.00%
Reroof Wherry Housing, MCAS, El Toro, CA	\$2,769,000.00	5.00%
Meteorological Bldg. Monterey, CA	\$3,943,099.00	40.00%
King Hall Upgrade, Monterey, CA	\$2,191,066.00	99.00%
Engineering Building, NPGS, Moneterey, CA	\$8,688,403.00	15%
Dry Dock # 2 Modernization, Portsmouth Naval Shipyard, Portsmouth, NH	\$26,050,689.00	99.00%

Naval Hospital & Dental Clinic, Twentynine Palms, CA	\$37,200,000.00	99.00%
Repair Airfield Drainage, San Nicholas Island, CA	\$5,021,355.00	0.00%
Fleet Logistic Support Center, Port Hueneme, CA	\$5,836,092.00	89.00%
Weapon System Integration Lab, Port Hueneme, CA	\$6,498,000.00	72.00%
Bachelors Enlisted Quarters, Port Hueneme, CA	\$6,180,209.00	10.00%
Fuel Maint. & Corrosion Hangar, ANGB Channel Island, CA	\$2,924,000.00	70.00%
POL Complex, ANGB Channel Island, CA	\$2,679,000.00	5.00%
Propulsion Training Facility, Charleston, SC	\$15,763,000.00	98.00%
T45TS Maintenance Complex, Charleston, SC	\$14,046,000.00	10.00%
P-454 INADS Facility, NAWS China Lake, CA	\$12,486,345.00	20.00%
Electrical Distribution Upgrade P-120R San Diego, CA	\$6,539,000.00	57.00%
Advanced Weapons Laboratory, NAWS China Lake, CA	\$12,398,000.00	50.00%
Bachelor Enlisted Quarters, MCB Camp Pendleton, CA	\$17,217,694.00	35.00%
Industrial Waste Treatment Plant, North Island, San Diego, CA	\$5,977,000.00	44.00%

APPENDIX C

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