An evaluation of DoD unit costing as a control system.

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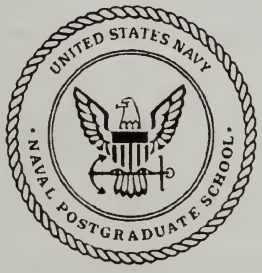

THESIS

AN EVALUATION OF DOD UNIT COSTING
AS A
CONTROL SYSTEM

by

Cynthia O. Ringwall

March, 1992

Thesis Co-Advisors: Professor William R. Gates
Professor Richard A. Harshman

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The Department of Defense (DoD) is in the process of implementing changes to the financial control system in order to reduce costs. Among the changes are the establishment of a Defense Base Operations Fund and the use of unit costing by support activities involved in the Fund. DoD expects unit costing to be a "business-like" tool which will support resourcing, planning, and the measurement of performance.

The purpose of this thesis is to evaluate the current financial control system, and, by using a control system framework, determine strengths and weaknesses. The findings are used to indicate whether a new system was required due to the ineffectiveness of the old system or due to a changing DoD environment.

The same framework used to evaluate the current system is used to evaluate the new unit costing system. The ability of the system to be a resourcing, planning, and measurement tool is analyzed and appraised from the point of view of the control system designer.

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An Evaluation of DoD Unit Costing as a Control System

by

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of the requirements for the degree of

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ABSTRACT

The Department of Defense (DoD) is in the process of implementing changes to the financial control system in order to reduce costs. Among the changes are the establishment of a Defense Base Operations Fund and the use of unit costing by support activities involved in the Fund. DoD expects unit costing to be a "business-like" tool which will support resourcing, planning, and the measurement of performance.

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I. INTRODUCTION

A. OBJECTIVE OF THE STUDY

The objective of this thesis is to evaluate the effectiveness of the new Department of Defense (DoD) unit costing procedures as a financial control system. The first step of the evaluation involves analyzing the present DoD financial control system and determining the strengths and weaknesses. The second step involves analyzing the recommendations from the Deputy Secretary of Defense approved Defense Management Report Decision (DMRD) No. 971, dated February 1991, using the same framework. Lastly, the new system will be analyzed to determine if it provides better information and better tools to managers. The goal is to enhance the reader's knowledge of the importance and function of control systems and of basic control system analysis techniques. The thesis will provide information to Office of the Secretary of Defense (OSD) policy makers and field managers regarding the effectiveness of the changes proposed in DMRD No. 971. Identification of strengths and weaknesses in the system will enhance implementation of the new policy.

B. RESEARCH QUESTIONS

"Can the DoD financial management system provide better information for decision makers and better tools for

managers?" (DOD(C),1990, p.1). This is the issue question posed in Defense Management Report Decision No. 971. The answer depends on the response to two other questions: 1) What are the strengths and weaknesses of the current system that provides information to managers?, and 2) How has the DoD environment changed such that current information might be obsolete or ineffective for the managers' use?

One management reform that OSD approved and disseminated via DMRD No. 971 was the requirement to realign costs with outputs. The OSD has decided to accomplish this realignment through unit costing. How effective unit costing will become depends on how it addresses the issues resulting from the above two questions. The primary research question of this thesis is "Why will the recommendations included in DMRD No. 971 lead to better information and to better tools for managers?" A secondary question is "What are potential control weaknesses of the new system?"

C. THE IMPORTANCE OF CONTROL SYSTEMS

When one thinks of a financial system, images of accounting ledgers, reports, and reams of computer printouts may come to mind. However, the DoD financial management system is a process. The process involves strategic planning, justification of requirements, and budgeting. The system is not merely an accounting system; it is a system where planned requirements become a fiscal reality. In order to get

programs funded, i.e., in order for programs to reach their fiscal reality, managers must provide not only cost analyses, but also written justification of the requirements.

1. Ensure Reliable Flow of Information

Not all of the information managers use is necessarily numerical. Information for use in the DoD financial management system can be more than data; it can be information regarding the quality of service, the timeliness of response, or the effect a decision may have on the welfare of the industrial base. All of this information is used by the manager who needs to justify a requirement or make cost-benefit decisions.

Managers need to look beyond accounting systems when looking for a way to provide better management information or tools. An improved accounting system may provide more accurate and more technically reliable information. However, it is important to note that people are an integral part of the information-passing process. They may have the ability to change information, withhold information, and to influence the data to suit their needs. This may happen if the objectives of the personnel who handle and transfer the information do not match the objectives of the personnel who require the information. Management control systems help ensure that the information that passes both up and down the management

hierarchy is the required information, the information is accurate, and the information is broadly understood.

2. Ensure Accomplishment of Desired Actions

Control systems ensure that actions are carried out as prescribed or that they provide feedback when results are not within tolerable limits. Control systems accomplish this by influencing the behavior of people. Control systems should provide incentives that align the objectives of the individual and the organization. Therefore, any management system that deals with providing better information or better management tools is a management control system. Consequently, in order to analyze the strengths and weaknesses of the current system it is necessary to analyze it as a management control system, not as an accounting system.

D. CONTROL SYSTEM DEVELOPMENT IS DYNAMIC

The suggestion that there might be an alternate method of providing information or a method of providing alternative information does not imply that there is anything deficient with the current control system. One description of the management control function offered by Robert Anthony (1988, p.34) follows:

> The purpose of the management control process is to carry out the strategies arrived at in the strategic planning process and thereby to attain the organization's goals. The process involves the interaction of managers with other members of the organization, including other managers. Because these personal interactions are a

crucial part of the management control process, behavioral considerations are important in understanding the process.

By analyzing the present DoD management control system in light of the above description, one can see that a management control system might have to change due to a change in strategy. It also might have to change if the controls did not increase the probability of attaining the goals (or objectives) of the organization. In other words, a management control system is as dynamic as the environment in which it functions. There is no single system that is suitable for all organizations or for any organization at all points in time. Therefore, it should not be surprising that DoD may find it necessary to periodically reevaluate its various management control systems.

An effective management system uses controls only where they are needed and only where they will work. The DoD uses a variety of mechanisms to influence the behavior of people. It uses personal supervision, job descriptions, rules, standard operating procedures, performance appraisals, budgets, accounting information, and incentive systems. The way in which managers group these mechanisms determines the effectiveness of the control system. The use of more control mechanisms does not necessarily lead to better control. Too many controls can make employees feel stifled by restricting their autonomy and/or by making them feel distrusted.

E. THE CHANGING DOD ENVIRONMENT

The latest changes in the DoD environment have been due largely to three things: 1) the end of the Cold War, 2) the large deficit, and 3) the perceived mismanagement of DoD funds in the past. Why are these three things important? First, many people believe that the end of the Cold War represents a reduction of any major military threat to the United States. Some argue that the threat still exists, but one thing is for certain; there is no longer a need to participate in the rapid arms build-up, or "Arms Race," to counter the Soviet Union arms build-up, as in the 1980's. Secondly, the budget deficit is now a household topic and many believe that the deficit is due to excessive amounts of military expenditures in the past. Thirdly, when news items reveal acquisition problems resulting in purchases of inordinately expensive hammers and spare parts, the public forms a blanket opinion that all DoD funds must be mismanaged.

1. Defense Spending Decelerates

How exactly has the DoD environment changed? Because of the first two items listed above, defense spending will be decelerating as obligational authority decreases. The defense budget no longer grows at the rate of inflation each year because many in the public sector are anxious to see the "peace dividend." The budget chart below (Figure 1) depicts

the trend of DoD obligational authority over the past twenty five years.

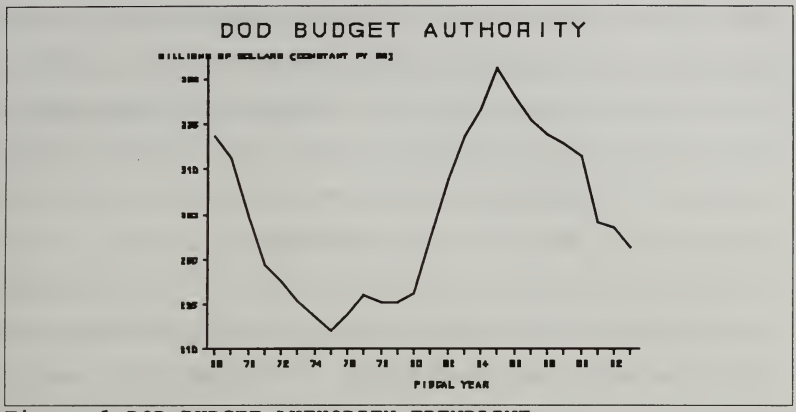

Figure 1 DOD BUDGET AUTHORITY TRENDLINE

2. Public Desires Increased Accountability

Because of the third item, perceived mismanagement of funds, there is increased pressure to ensure that defense spending can withstand public scrutiny should anyone charge a defense activity with waste, fraud, or abuse. Not only does DoD want to guard against the erosion of public confidence, but it also needs to ensure the taxpayer that it is executing its stewardship of public funds in the most efficient and effective way. It must constantly strive to get the most for the shrinking defense dollars.

F. A HISTORY OF CONTROL PROBLEMS IN THE FEDERAL GOVERNMENT

The federal government initially addressed the problem of wasteful spending and poor fiscal management when it enacted the Federal Managers' Financial Integrity Act of 1982 (31 U.S.C. 3512 (b) and (c)). The act requires department and agency managers to identify, report, and correct internal control and accounting system weaknesses that can lead to fraud, waste, and abuse in government operations. A 1985 Government Accounting Office (GAO) report entitled Financial Integrity Act: The Government Faces Serious Internal Control and Accounting Systems Problems, identified eight areas in which there were weaknesses: 1) the financial management and accounting systems, 2) procurement, 3) property management, 4) cash management, 5)grant, loan, and debt collection management, 6) automated data processing (ADP), 7) personnel and organizational management, and 8) eligibility and entitlement determinations (GAO, 1985, p.14). GAO emphasized the need for each agency to develop comprehensive plans of action to strengthen the areas where there are weaknesses.

Specifically, GAO stressed a plan which should emphasize 1)strengthened accounting, auditing, and reporting, 2) improved planning and programming, 3) streamlined budgeting, and 4) systematic measurement of performance. The first and fourth items are items that are included within a management control system (GAO,1985, p.31). In their 1985 report, GAO noted that DoD was "having difficulty identifying systematic

internal control problems and little testing of accounting systems had taken place." (GAO, 1985, p.35)

In GAO's 1989 report on federal efforts to improve control and accounting systems, Financial Integrity Act: Inadequate Controls Result in Ineffective Federal Programs and Billions in Losses, GAO placed much emphasis on the need for top level management to be involved in the improvements. Among its specific recommendations were 1) to link the Financial Integrity Act internal control review and reporting process to the budget, and 2) to provide for and promote senior management involvement in the internal control process (GAO, 1989, p.5).

G. UNIQUENESS OF A NONPROFIT ORGANIZATION

Designing or analyzing a control system for use by an agency of the federal government leads to some peculiar problems. These make the process distinct from designing or analyzing a control system in a for-profit agency. There are many different definitions of nonprofit and not-for-profit agencies and it would be incorrect to state that the federal government fits totally into either group. However, the Anthony and Young definition of a nonprofit organization, from their book Management Control in Nonprofit Organizations, does apply to DoD. Their descriptions of characteristics of nonprofit organizations are useful for this analysis. The authors conclude that the goal of a nonprofit organization is

usually to provide services to others rather than to provide profits to its owners. They further state that it is difficult to measure performance because the "decisions made by management are intended to result in providing the best possible service with the available resources; success is measured primarily by how much service the organizations provide and by how well the services are rendered." (Anthony and Young, 1988, p.50)

As mentioned before, there is no single ideal control system and the characteristics of each organization determine its unique system. According to the work of Anthony and Young, nonprofit organizations generally have particular characteristics that affect the control process:

1) The absence of a profit measure
2) Different tax and legal considerations
3) A tendency to be service organizations
4) Greater constraints on goals and strategies
5) Less dependence on clients for financial support
6) The dominance of professionals
7) Differences in governance
8) Differences in senior management
9) Importance of political influences
10) A tradition of inadequate management controls. (Anthony and Young, 1988, p.54)

Not all of the above characteristics apply to the DoD, but understanding the consequences of those that do apply is important when designing or analyzing a control system. The following characteristics seem to apply to DoD.

1. Absence of a Profit Measure

It is difficult for managers to agree on the relative importance of various objectives when analyzing proposals if a profit measure does not exist. For example, if the government is analyzing land use proposals it must rely on more subjective measures than profit to guide its decision. Without a profit measure, the other characteristics of a non-profit organization become dominant factors in the decision-making process.

Also, there is no accurate way of estimating the relationship between inputs and ability of the organization to reach its goal. This makes it difficult to determine what effect changing the mix of resources, such as number of employees or pieces of capital equipment, will have on the efficiency of the organization.

Without profit, performance with respect to goals is difficult and sometimes impossible to measure. Managers must then rely on less quantifiable measures, such as customer satisfaction and timeliness of response, to monitor the performance of an activity. This leads to another problem:

> If an organization has multiple goals and no good way of measuring performance in attaining these goals, it cannot delegate important decisions to lower level managers. For this reason, in government organizations many problems must be resolved in Washington... rather than in regional or local offices. The paperwork and related procedures involved in sending problems to senior management and in transmitting the decisions on these problems back to the field can be quite elaborate, and give rise to part of the criticism that is levied against bureaucracy. Such criticism is often unwarranted because, in the absence of

something corresponding to the profit measure, there is no feasible way of decentralizing. (Anthony and Young, 1988, p.57)

One last problem that arises due to a lack of profit measure is that there is no way to compare the performance of divisions that have dissimilar functions. Table I outlines why the absence of a profit measure is relevant to DoD. (Anthony and Young, 1988, p.57)

Table I TECHNICAL CHARACTERISTICS OF A NON-PROFIT ORGANIZATION THAT AFFECT THE CONTROL PROCESS

CHARACTERISTIC	RELEVANCE TO DOD
No Profit Measure	- difficult to measure relative importance of various objectives when analyzing proposals - difficult to estimate the relationship between inputs and ability of organization to reach its goals - difficult to measure performance toward goals - difficult to decentralize decision-making - difficult to compare the performance of divisions that have dissimilar functions

2. Predominantly Service-Oriented

The problem introduced by producing service related outputs is that work flow is controlled by client demand rather than by the pace of machinery, as would be the case in a production facility. If a service is not used or demanded

on a particular day, the potential revenue that the service would generate is lost.

3. Constraints on Goals and Strategies

Outside forces place many spending constraints on the DoD. The amount of funds that can be expended on each program is ultimately approved and appropriated outside of the DoD, thus limiting the flexibility of management to make various cost-benefit decisions. DoD must ensure that activities adhere to spending limits and this is one part of a management control system that one would not necessarily find in a for-profit organization. The spending constraints are based on the fact that the DoD receives its financial support from the taxpayers through the Congress. The role of Congress is to represent the public interest when voting on a defense budget. Consequently, Congress holds the DoD strictly accountable for the use of the funds.

4. High Concentration of Professionals

Another characteristic that makes nonprofit organizations different from for-profit organizations is the concentration of professionals in the management structure. Universities have professors, hospitals have physicians, and the DoD has military officers. Control problems appear when the motivations of the professionals differ from what would be required for good resource (fiscal) management. A military officer who is an excellent leader of a ship may not be an

excellent leader of a shore support facility. The professional warfare officer is concerned with and trained for winning the battle and not necessarily concerned with or trained for effective fiscal management. However, it is not unusual to see military warfare officers as commanding officers of shore establishments, even though a career civilian might be better suited for the position. Anthony and Young generalize this control problem with the following:

> Professionals tend to give inadequate weight to the financial implications of their decisions. Many physicians, for example, feel that no limit should be placed on the amount spent to save a human life, although in a world of limited resources such an attitude is unrealistic. (Anthony and Young, 1988, p.67)

Similarly, a military officer may think that his assigned mission should be accomplished at all costs. Although this may not be true in all cases, it is a control problem which management must guard against.

5. Political Influence

All federal government agencies are affected by the ninth characteristic, political influence. Examples of reasons why political influences can lead to unique control problems include the necessity for reelection, public visibility, pressures from various political action committees and special interest groups, legislative restrictions, frequent management turnover, and civil service regulations (Anthony and Young, 1988, p.71). Management turnover is particularly significant because it may motivate managers to concentrate on short-term

results so they can appear effective at their next performance reviews. For example, the military officer may be assigned to a billet for 36 months, but allowing for a learning curve, he may only effectively occupy the position for 30 months. Therefore, his prime interest for work performance ratings may be focused on actions affecting that 30 month period.

6. Tradition of Poor Management Controls

The last characteristic is the tradition of poor management controls in nonprofit organizations. One reason for this is that many nonprofit agencies, including the federal government, concentrate on the obligational concept of accounting rather than on the accrual concept. A good control system provides for the transfer of <u>useful</u> information between managers. With the case of an accounting control system, the information is primarily numerical. Obligational accounting provides information regarding resources purchased and accrual accounting can provide information on the cost of resources consumed. If there is an emphasis on controlling costs, the accrual concept may provide the more useful information.

There are also three other explanations as to why the government lags in good management controls:

> First, for many years, there was a prevalent attitude to the effect that the differences between government and business were such that government could not use the management control techniques developed by business....Second, the Congress, and particularly the House Committee on Appropriations, having become thoroughly accustomed to a certain budget format, is reluctant to shift to a new format. Because of the

> importance of the budget, this affects the whole management control system....Third, many career officials appreciate the fact that a good management control system is two-edged: it provides new information for outside agencies - the Office of Management and Budget and the Congress. Sometimes, these officials are not anxious that outside agencies have access to the new and better information. (Anthony and Young, 1988, p.73)

Table II summarizes the common characteristics of a non-profit organization and their relevance to DoD management control system design. Table I summarized the absence of a profit measure, so this characteristic is omitted from Table II.

H. NEED TO ADDRESS BOTH TECHNICAL AND BEHAVIORAL ASPECTS

As mentioned previously, for the financial management system to function well, it is necessary to not only gather accurate and useful information but also to disseminate information throughout the management hierarchy without concern of it being filtered or changed along the way. It can be said that the gathering of accurate and useful information is the technical side of the financial management process while the passing of information to others is the behavioral side. Similarly, the above ten characteristics either affect the performance of the technical or the behavioral side of the system. The absence of a profit measure affects the technical side and all of the other characteristics affect the behavioral side. Improvements can be made to the system so that the relationship between inputs and outputs can be better

TABLE II BEHAVIORAL CHARACTERISTICS OF A NONPROFIT ORGANIZATION THAT AFFECT THE CONTROL PROCESS

CHARACTERISTIC	RELEVANCE TO DOD
Tendency to be Service Organizations	- workflow is customer controlled and output is more difficult to standardize
Constraints on Goals and Strategies Differences in Governance	- limits the flexibility of managers to make various cost-benefit decisions - DoD is not motivated by market forces
Less Dependence on Clients for Financial Support	- DoD activities request annual appropriations from Congress
Dominance of Professionals Differences in Senior Management	- military professionals may have motivations that conflict with good fiscal management
Importance of Political Influences	- priorities may change due to political climate or short-term goals of those in a particular billet or political office
Tradition of Inadequate Management Controls	- current accounting system does measure the cost of all resources required to provide an output Lack of desire to improve because: - belief that Congress would never accept alternate system - belief that DoD could never be "business-like" - DoD management may not want outside agencies to have access to cost information

measured; however, no matter how comprehensive the improvements to the technical side, without improving the behavioral side, managers can not be certain that the

information remains accurate and useful as it passes from person to person in the workforce.

Behavioral characteristics are significant in two ways. First, management can overcome the behavioral factors that impede good management control by understanding them better and by educating themselves about ways to circumvent the problems. Second, unless management is able to overcome the behavioral problems, improvements in the technical area (measuring inputs and outputs) are likely to have little impact on the management control process. (Anthony and Young, 1988, p.74)

Part of effective control system design involves understanding how the environment influences the behavior of people. If the characteristics of the environment, like those listed above, motivate people to make decisions that are not congruent with the goals of management, then it is the function of the control system to offset the environmental influences.

II. THE PRESENT SYSTEM

A. DESCRIPTION OF THE FUNDING PROCESS

1. Appropriations Budgeting System

Currently, most naval shore support activities obtain funding from the Congress through annual appropriations for Operations and Maintenance, Navy (O&M,N), Military Personnel, Navy (MPN), and Research, Development, Test and Evaluation, Navy (RDT&E, N). These appropriations are considered expense-type appropriations since they finance the cost of ongoing operations.

Budget formulation and execution is the last step in the Planning, Programming, and Budgeting System (PPBS). It is an integral part of the strategic planning process since it provides the link between planning and control. "The Planning, Programming, and Budgeting System can be summarized in a few words. Based on the anticipated Threat, a Strategy is developed. Requirements of the strategy are then estimated and Programs are developed to package and execute the strategy. Finally the costs of approved programs are Budgeted." (Practical Comptrollership, 1990, p.C-3)

During budget formulation, the package of programs to be included in the final budget is dynamic and changes according to strategic considerations. Depending on where the

perceived threats are in the world, what military requirements are needed for the national security of the United States, and economic influences, individual appropriation funding will increase or decrease. Until the budget execution year, managers at the activity level cannot be sure how much operations funding they will be allowed to obligate.

2. Funding Uncertainties and Competition

Predicting the obligational authority of an activity is even more uncertain due to the organizational structure of the Navy. The Secretary of the Navy and the Chief of Naval Operations have transferred all Navy fiscal responsibility to the Comptroller of the Navy (NAVCOMPT). This responsibility is subsequently delegated to 23 major claimants. Claimants then pass resources to the Navy field activities for obligation and expenditure as they each carry out their respective missions. As funds pass down the hierarchy, there is some competition for funding between the different activities at each level. Although activities within the same claimancy may have similar functions, each activity is independent of the others. With no profit measure by which to compare the need of each activity for funds or to determine where to best spend the funds, the claimancies must make allocation decisions based on the funding request provided by each activity.

It might be said that the OSD goal for the DoD financial system is to ensure funds are appropriated for planned requirements and that the funds are allocated within the scope of approval and intent of the appropriation process. Consequently, the goal of the control system should be to ensure that the above actions occur. Understanding the way in which the current control system works when funds are appropriated (including its weaknesses as well as strengths) will help when analyzing the new system.

3. Key Objectives and Key Actions

The framework that will be used to evaluate the control system will be one introduced by Kenneth A. Merchant in his book Control in Business Organizations. According to Merchant, evaluation of control systems begins with an understanding of key objectives and key actions. Key objectives are those things which an organization must achieve in order to consider itself successful. Key actions, on the other hand, are those actions which must be carried out to make the probability of achieving the objectives more likely.

In a multi-level organization like the DoD, each level may have different key objectives. If the key objectives at all levels were the same, control problems would not exist and there would not be a need for a management control system. The reason that the objectives differ is that every key action generates a new objective and a new set of actions for the

activity responsible for carrying out the original key action. Top-level management has two choices when faced with the problem of differing objectives at lower levels. First, it can try to motivate activities at all levels to have the same objective. Second, top-level management can use controls to ensure that whatever the objective is at the lowest level of activity, the key actions it chooses to take are at least congruent with the higher level objectives.

Currently, from a financial standpoint, the key objective for each major claimant is to obtain adequate funds to meet the planned operational requirements. OSD is also concerned with obtaining adequate funding from Congress and it would seem that perhaps the objectives of the activity and OSD were congruent. However, the scope of this thesis is to evaluate the control system within DOD. The objective of OSD for internal financial control is for managers to use funds efficiently and effectively because it must allocate resources among many different activities. OSD would like activities with the greatest need and the best capability to benefit DOD to receive those funds. However, the activity is concerned with not only receiving enough funding for planned requirements but also with using it in such a way that it increases the probability of receiving adequate funding in the next budget cycle. The activity is therefore primarily concerned with obligating all available funds. If there is any excess at the end of the year, headquarters may take it

back (recoup it). This could lead to a reduction in funding for the next year if headquarters perceives that the activity either overstated requirements or overstated costs. A control system is therefore necessary because of the differing objectives between OSD and the activity level commands.

The activity must also obligate funds within certain legal constraints. Because of the requirement to remain accountable for the use of public funds, there are regulations that restrict the use of DoD funds. Because there is legislation preventing the use of funds in an unauthorized manner, the primary motivator here is the avoidance of a fine or federal prison sentence. However, if there were no legislation, misuse of funds would lead to a loss of activity credibility by headquarters top management, and the real potential of reduced funding for the future. It is critical for the activity comptroller to accomplish the following key actions since they are the only financial resource for the major claimant:

- obtain through the budget formulation process, sufficient funding required to support the assigned missions and objectives

- once funding is obtained, use financial resources efficiently and effectively to preclude recoupment by higher authority

- use funds properly, consistent with legal constraints. (Practical Comptrollership, 1990, p.A-5)

B. FEASIBILITY ANALYSIS

1. Purpose of Analysis

The results of a feasibility analysis indicate the ideal control system to be used by an organization with certain key actions. Managers can still benefit from conducting a control feasibility analysis even if there is a control system already in place because the analysis will help indicate where managers can make improvements to the system. In other words, since managers already know the key actions and they know how difficult it is to measure performance, it is possible to determine which types of controls are feasible (or most appropriate) for each action. The feasible controls can be compared to the actual controls that are currently in place. This comparison should identify the existence of any "gaps" or misplaced controls. These "gaps" or misplaced controls may cause dysfunctional behavior.

2. Description of Controls

Merchant proposes that management can either establish control through control-problem avoidance or through implementation of control tactics. Control-problem avoidance is the most indirect form of control. Management can achieve control-problem avoidance in three ways: elimination, automation, or risk sharing. Elimination means that management decides to eliminate the particular action from its business through such mechanisms as subcontracts, licensing

agreements, and/or divestment. Automation includes the use of computers and robots. Risk sharing is a form of partial avoidance. "Sharing risks with outside activities can bound the losses (or foregone opportunities) that could be incurred by inappropriate employee behaviors." (Merchant, 1985, p.10) Buying insurance and participating in joint ventures are methods of risk sharing.

Managers need to note that with elimination and risk sharing, not only do the control problems leave the organization, but the organization also loses control over the actions. If the actions are important in determining the future of the organization, then it would be more desirable to maintain control and to deal with the control problems. However, automating a task or action does not mean that the organization loses control over the action. Instead, it just reduces exposure to control problems.

Control tactics are classified according to what object they seek to control: specific actions, results, or personnel. Table III, "A Control Classification Framework," summarizes the various controls.

a. Actions Controls

Action controls are the most direct form of controls. They "are used to ensure that individuals perform (or do not perform) certain actions that are known to be beneficial (or harmful) to the organization." (Merchant, 1985,

Table III A CONTROL CLASSIFICATION FRAMEWORK

Object of Control		
Specific Actions	**Results**	**Personnel**
Behavioral Constraint - Physical - Administrative Action Accountability - Work Rules - Policies and Procedures Preaction Review - Direct Supervision - Approval limits - Budget Reviews	Results Accountability - Standards - Budgets - Mgmt. by Objective	Upgrade Capabilities - Selection - Training - Assignment Improve Communication - Clarify Expectations - Provide Information Encourage Peer Control - Work Groups - Shared Goals

p.29) Merchant describes four actions controls: behavioral constraint, action accountability, preaction review, and redundancy. Action controls are ideal for the situation where things need to be done right the first time and for jobs that are highly routinized. However, there are a number of disadvantages. For example, "most people react to action controls by developing their habits around following the rules, and this adaptation may be so complete that they begin to depend on the rules, cease to think how the processes could be improved, and become very resistant to change." (Merchant, 1985, p.128) Also, some people do not like working in an environment where there is a high degree of action controls because it does not allow for creativity, personal innovation, or achievement.

Another disadvantage occurs where action controls are used to control professionals. Because management requires that people who evaluate actions are as well, or more, qualified than the person conducting the action, action controls can become expensive when professionals monitor professionals.

Behavioral constraints exist in two forms: physical and administrative. Two types of administrative control are centralization and the separation of duties. One example of centralization in the DoD is the existence of a comptroller department at the lowest levels of an activity. Financial decisions are usually the product of this department. Since the comptroller is responsible to the commanding officer, this precludes subjecting the comptroller to undue influence as would be the case if he were subordinate to a department head. Separation of duties involves "dividing up the tasks necessary for the accomplishment of certain sensitive duties." (Merchant, 1985, p.30) For example, a good action control using the separation of duties concept would be to separate record keeping and report generating functions where it would be undesirable for one person to have access to both the inputs and outputs of the reporting function. This allows for a "checks and balances" system that can catch innocent mistakes and also prevent intentional reporting of misinformation.

Management achieves action accountability through the use of work rules, policies, and procedures. For example, DoD issues guidelines for how statistics should be grouped for reports. For this action control to work, evaluation of the command performance should be directly related to their observance of the guidelines and policies. The advantage of this type of control is that it helps with organizational coordination.

> They increase the predictability of actions and reduce the amount of interorganizational information flows required to achieve a coordinated effort. They are a key element in a *bureaucratic* form of organization (using this term in a positive sense) which makes the organization capable of attaining the highest degree of efficiency and is in this the most rational known means of carrying out the imperative of control over human beings. (Merchant, 1985, p.128)

Preaction reviews "involve observing the work or plans of the individuals being controlled before the activity is complete and making adjustments as necessary." (Merchant, 1985, p.31) Currently, activities can accomplish this by analyzing expenditure rates before the end of the quarter or the attainment of a formal review period and either recommending accelerating or decelerating obligations and expenditures to keep on target with the budget objective. Preaction reviews can be formal or informal. The typical formal review is the requirement for upper-management to specifically approve the amount of expenditures to be executed in the coming months/quarters. Informal reviews can be as basic as a supervisor walking around the office and discussing

obligational progress and status with his subordinates. Not only do preaction reviews prevent mistakes from occurring, but often just the knowledge of a possible formal/informal review occurring will cause an employee to take extra care in performing his duties.

Redundancy involves assigning more people to do a task than is necessary. Redundancy can also mean having a back-up system. This type of control can be expensive but it is common in installations dependent upon computer output or critical operations.

b. Results Controls

Results control "involves rewarding individuals (or otherwise holding them accountable) for accomplishing particular results or outcomes." (Merchant, 1985, p.17) According to Merchant, management must take three steps in order to implement results control. First, management must define the dimensions on which results are desired. Second, management must devise a way in which they can measure performance on these dimensions. Third, management must provide rewards in order to encourage the specific behavior that will lead to the desired results.

Results control is useful in many situations in organizations because most jobs are not highly routinized. Results controls also allow the autonomy of personnel even though management is controlling their behavior. Since

management is measuring results, personnel have latitude in the actions they choose to take in arriving at the desired results. One other advantage is that results control can be inexpensive. "Performance measures are often collected for reasons not directly related to management control, such as for financial reporting, tax reporting, or strategy formulation, and if these measures can be used or easily adapted for results control use, the incremental expense of the control can be relatively small." (Merchant, 1985, p.129)

One disadvantage of results control is that it can be difficult to find the right measurements of performance. Ideally, the way in which results are measured will indicate if personnel acted in a way that was congruent with the overall objectives of the organization. It is also necessary to be careful to ensure that the results measurements are based on factors over which the personnel have influence. The other main disadvantage is that when results targets are used, the targets can not be used for both motivating and communication. A plan is a type of communication because it informs others in the organization what to expect for the division or department. Thus, the targets in the plans can not be used for motivation. The target used for motivation should be slightly conservative so that the division has a reasonable chance at attaining it. Management must sacrifice one of the purposes if results control is used.

c. Personnel Controls

Personnel controls involve encouraging and facilitating desirable behaviors. Merchant proposes that two basic forces guide human behavior: individual self-control, which is naturally present in each person; and social control, which basically refers to peer pressure and the reaction of an individual to it. Merchant describes personnel controls in the following manner:

> Often individuals do, by themselves, what is best for the organization because they are self-directed or because they are influenced by social (group) pressure. Most managers rely on these positive, naturally occurring forces to some extent, and they also take steps to increase the chances that these forces are present and/or that they will produce the appropriate actions. These management actions can be called *personnel controls*. (Merchant, 1985, p.39)

Management tries to augment these forces in three ways: by upgrading capabilities, improving communications, and encouraging peer control. It is generally inexpensive to implement personnel controls and there are rarely any dysfunctional side effects.

Personnel controls are generally not sufficient to be used by themselves. It is seldom that management would be willing to rely solely on personnel controls without any other system of check and balances. Personnel controls are most likely to work in the small business environment where top management has more control over personnel selection. In a large organization, like the DoD, such a control system would not work even if there were poor knowledge of the steps

involved to accomplish the key action and low ability to measure the successful accomplishment of the key action (the situation where personnel controls are ideal).

3. Primary Control for Each Action

Using the control object feasibility matrix (Table IV), one can determine which type of control would be most appropriate for each of the key actions. Control choice decisions are complex, but determining which type of control to emphasize is a good starting point. There are two main questions to ask when choosing appropriate controls for each action: (1) "Is there knowledge of the steps required to complete the action?" and (2) "Is there an ability to measure the success of the action?"

Table IV CONTROL OBJECT FEASIBILITY DETERMINANTS

Key Control Object Feasibility Determinants			
	Ability to Measure Results on Important Performance Dimensions		
		High	Low
Knowledge of Which Specific Actions Are Desirable	Excellent	1. Specific-Action and/or Results Control	2. Specific-Action Control
	Poor	3. Results Control	4. Personnel Control

a. Key Action #1: Obtaining Funding

Looking at the first key action, obtaining funding through the budget formulation process, there is knowledge of the steps involved to complete the action. In order to make an objective feasibility analysis, it is important to look at the actions in isolation from the environment that is familiar to those officers and civilians who work in the financial field. Therefore, ignoring for the time being the reports that must be submitted (because they are a type of control), at the most basic level the primary step involved is the communication of needs by the activity to the major claimant. The activity should be able to communicate their needs at the annual budget call. The activity should also be able to communicate their needs throughout the year on a timely basis whenever there may be extra funds available to allocate or there is an action to reduce available funding.

Measuring the success of the action is low because there is not a direct correlation between correct accomplishment of the above steps and the receipt of a budget that meets all of the stated requirements of the activity. Preparing a "good" budget request certainly does not decrease the chances of receiving the funds requested. However, if an activity does not receive all funds requested it does not mean that the comptroller did a poor job of preparing the request. If the overall budget climate is one of "tightening the belt," then actual Total Obligation Authority received by the

Department of the Navy (DON) may be less than expected. On the other hand, an activity may receive more than was budgeted if their type of mission responsibility receives a lot of attention in Congress due to world affairs, national security issues, or economic conditions.

b. Key Action #2: Using Resources to Preclude Recoupment

The steps are less defined with the second key action, using financial resources in a manner as to preclude recoupment. The goal is to ensure that there are no unoligated funds remaining at year-end that higher headquarters could recoup. The steps involved start from the very basic preparation of the requisition, to establishing an obligation, to receiving material, service, or canceling the request, to paying the bill, and finally to recording the expenditure. These transactions must all be performed accurately in order to accomplish the second key action, but personnel must make many decisions as they carry out the steps and it is not possible to routinize this type of action.

Success in accomplishing the second key action, using financial resources so as to preclude recoupment, can be measured by a number of indicators. Basic accounting reports are available within the DoD financial community to compare planned verses actual expenditures. But the reports are a form of control. For a feasibility analysis it is important

to separate preconceived ideas of how things work from the way things could work. What is important to note here is that there is an ability to determine the success of the execution phase because managers know what the numbers should be for excellent performance.

c. Key Action #3: Using Funds Properly

The steps involved to accomplish the third key action, using funds properly, are well-defined. Activities can only use funds for their designated purpose, total obligations for each appropriation must be within a set dollar limit, and the funds should be obligated before they expire.

Measuring the success of the third step is possible because managers can look at end of year figures to determine if the funds were obligated on time and within funding limits. It is more difficult to determine if funds were obligated for the correct purpose. What may be important later in the analysis, however, is the timeliness of measuring the results. If there is an overobligation, the violation has already occurred by the end of the fiscal year. Finding overobligations in the end of the year figures severely limits the ability of management to correct the situation. It is a fact which must be reviewed for corrective action and the citing of specific responsibility.

4. Supplemental Controls for Each Action

According to the matrix (Table IV), the primary emphasis should be on action controls for the first key action where there is high awareness of the steps required and low ability to measure the results. For the second key action there is limited knowledge of the steps involved and high ability to measure results. For this action, management should emphasize results control. For the third key action, where there is sufficient understanding of the steps involved and there is a high ability to measure results, one can use specific-action and/or results control. The results of the first step of the feasibility analysis indicate which controls should receive primary emphasis for control of each key action. It is important to realize, however, that Table IV is just a tool to help with finding where management should place their emphasis. A good control system will use different types of control to supplement the efforts of management on each key action. Well-designed multiple controls provide better results because of their ability to reinforce each other and their ability to address a broader set of problems. However, one disadvantage of multiple controls may be cost. Management would have to weigh the benefits of multiple controls with the costs of implementing them before reaching a conclusion on the final design of the control system.

The next step of the feasibility analysis will be to find out which supplemental controls would be useful for each

key action. Then, the information derived from the feasibility analysis (which would be the same information that one would use in designing a control system) will be used to evaluate the existing control system.

The decision tree in Figure II from Merchant (1985, p.48) outlines the entire feasibility analysis process and will be used to complete the analysis. Thus far, the feasibility analysis indicates that the key actions should be matched with the primary controls as indicated in Table V.

Table V KEY ACTIONS AND RESPESCTIVE PRIMARY CONTROLS

KEY ACTION	PRIMARY CONTROL
Key Action #1: Obtain funding	Action Controls
Key Action #2: Use of Funds to Preclude Recoupment	Results Control
Key Action #3: Using Funds Properly	Action and/or Results Control

The first question in the second step of the feasibility analysis asks: "Is there a capability to avoid reliance on other people?" Because all three key actions are important in determining the future of the organization, when considering control problem avoidance DoD managers should consider automation. For example, computers can do many tasks faster and with fewer mistakes than a human can do them. Consequently, control problem avoidance through automation

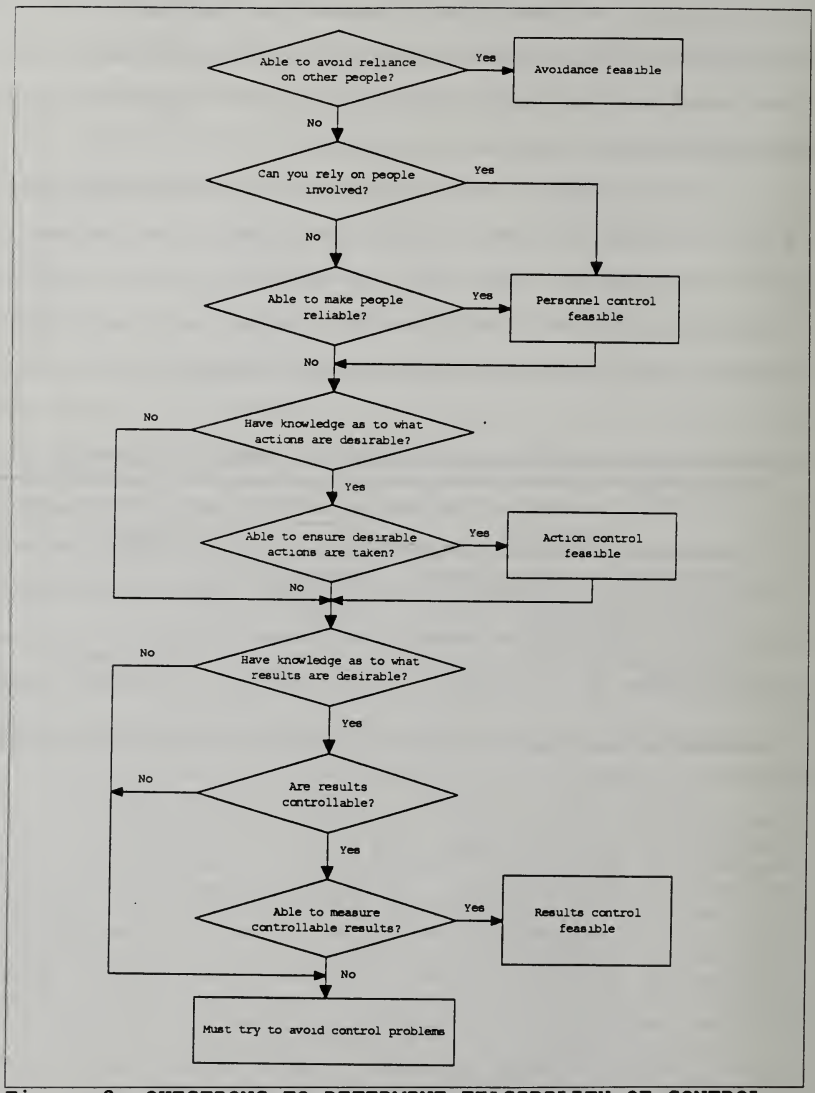

Figure 2 QUESTIONS TO DETERMINE FEASIBILITY OF CONTROL TYPES

would be a good control for actions that involve manipulation of numbers and generation of reports. Automation also has the advantage of reinforcing specific-actions control through the behavioral constraint. If a worker is assigned the duty of data input and the computer generates the reports (and no one is allowed to manipulate the reports) then management has achieved the separation of duties control.

The second and the third questions in the second step of the feasibility analysis are "Can you rely on the people involved?" and, "Is there a capability to make people reliable?" These are all ways that help make people more reliable. In the DoD environment, the answer to the question "Is there a capability to make people more reliable?" is usually "yes" in the long run. In the short run, unless management is able to control selection and placement (which is difficult in the DoD environment), it is more difficult to make people reliable. Tables VI, VII, and VIII indicate the results of the feasibility analysis.

C. CONTROL SYSTEM ANALYSIS

The purpose of this section is to compare the current control system with the most appropriate system as described in the feasibility analysis. Similarities between the two systems will indicate the strengths of the present system and dissimilarities may indicate weaknesses.

Table VI FEASIBILITY OF CONTROL ALTERNATIVES FOR KEY ACTION #2 - USING RESOURCES TO PRECLUDE RECOUPMENT

I. Able to avoid reliance on other people?	Yes, for reports	Partial automation feasible.
II. Able to rely on other people?	No	Personnel controls feasible for long-run benefits.
Able to make people reliable?	No (shortterm) Yes (longterm)	
III. Have knowledge as to what actions are desirable?	Yes	Action controls not feasible.
Able to ensure that desirable actions are taken?	No	
IV. Have knowledge as to what results are desirable?	Yes	Results control feasible.
Are results controllable?	Yes	
Able to measure results effectively?	Yes	

1. Personnel Controls for All Actions

All of the key actions called for personnel controls as supplemental controls. The DoD incorporates personnel controls into financial systems by using position descriptions (PDs) for civilian personnel and adding special experience/training requirement codes to military billets. PDs are mandatory for all federal civilian positions and they document the specific skilles the employee must possess. Since PDs indirectly ensure employees will have a basic level

Table VII FEASIBILITY OF CONTROL ALTERNATIVES FOR KEY ACTION #1 - OBTAINING FUNDING

I. Able to avoid reliance on other people?	Yes, for reports	Partial automation feasible.
II. Able to rely on other people?	No	Personnel controls feasible for long-run benefits.
Able to make people reliable?	No (shortterm) Yes (longterm)	
III. Have knowledge as to what actions are desirable?	Yes	Action controls not feasible.
Able to ensure that desirable actions are taken?	No	
IV. Have knowledge as to what results are desirable?	Yes	Results control feasible.
Are results controllable?	Yes	
Able to measure results effectively?	Yes	

of competence and also describe specific duties of the employee, they directly contribute to goal congruence.

Coding of military billets is a less reliable mechanism, as military personnel assignments are the product of a 'best fit' process. A "coded" military billet is one which is designated as requiring a person possessing certain skills or training. Difficulties arise in matching coded billet vacancies with the pool of service members available for assignment. Sometimes it is necessary to fill coded positions with personnel who do not have the recommended training. This accentuates the problem of having

Table VIII FEASIBILITY OF CONTROL ALTERNATIVES FOR KEY ACTION #3 - USING FUNDS PROPERLY

I. Able to avoid reliance on other people?	Yes, for reports	Partial automation feasible.
II. Able to rely on other people?	No	Personnel controls feasible for long-run benefits.
Able to make people reliable?	No (shortterm) Yes (longterm)	
III. Have knowledge as to what actions are desirable?	Yes	Action controls feasible.
Able to ensure that desirable actions are taken?	Yes	
IV. Have knowledge as to what results are desirable?	Yes	Results control may be feasible.
Are results controllable?	Yes	
Able to measure results effectively?	Yes, but may not be timely.	

professionals in the organization who may not have had the same training as their colleagues. Therefore, they may adversely affect goal congruency.

Training, both formal and on-the-job (OJT), is another facet of personnel controls. Formal training includes general budget and accounting courses offered to all federal employees (military and civilian). In addition, the military services offer DoD-targeted courses. Employees who work in the financial management arena get OJT through daily experience and formal, scheduled command/claimancy training. Training

contributes significantly to personnel controls as it upgrades employee capabilities and increases communications. This leads to increased understanding, which directly enhances goal congruence. (Merchant, 1982, p.45)

The personnel controls currently in place provide strong control for the long-term. Training and position descriptions help the organization successfully accomplish all three key actions by promoting goal congruency. Personnel controls are also important in the DoD organization because the budget process is dynamic and constant changes place employees on a perpetual learning curve.

2. Controls for Key Action #1

For the first key action, obtaining sufficient funds, the feasibility analysis indicated that the primary control should be actions control. The Navy uses both action accountability and preaction reviews. Action accountability controls hold people responsible for their actions and require: 1)defining what is (is not) acceptable, 2) tracking of what actually happens, and 3) rewarding or punishing deviations from the defined limits. (Merchant, 1985, p.31) However, this system only works if employees understand what is required of them and feel their actions will be significantly rewarded or punished. (Merchant, 1982, p.45)

For example, NAVCOMPT defined a broad set of budget guidelines for use in the preparation of Navy budgets. Major

claimants further customize these work rules for their subordinate field activities. Activities are expected to follow the directions of the claimant in the development of their budgets. Compliance is easily seen when the claimant receives the activity budget submission.

Major claimants also conduct preaction reviews of the budget requests for correctness and compliance whenever they desire to do a program review. This consolidation and review process occurs at each subsequent level in the DoD until the product is submitted to the OSD Comptroller for processing.

3. Controls for Key Action #2

The primary control for the second key action, use of funds to preclude recoupment, is results control. The Navy uses results accountability, in this case, standards or budgets, to control this action. Field activities commit to their execution plans when they provide the claimant with the quarterly/monthly execution profile included in their budget submission. This plan delineates the fund phasing required by the activity to effectively execute the funded mission requirements. The claimant then requests that NAVCOMPT mesh subsquent funding to support the subordinate execution plans. The execution plans become an unofficial contract on how the budget will be executed between the activity and the major claimant, and the claimant and NAVCOMPT.

This can be an effective control because "a budget prepared at the level at which it is to be implemented is more likely to evoke commitment than one imposed from on high." (Churchill, July-August 1977, p.6) Failure to follow the phasing plan or failure to obligate funds in a timely manner may imply that the activity is over-funded and can afford to absorb a budget cut.

4. Controls for Key Action #3

The best controls to use for the third key action, use funds properly and legally, could be either actions controls or results controls, although actions controls would be more feasible because of the lack of timeliness in measuring results. Behavioral constraints are the primary control DoD uses for this action. Legislation 10 U.S.C. Titles 1301 and 1517 place extremely stringent behavioral constraints on the field activities or any government agency having use of federal funds. The law prohibits use of funds for purposes other than specified in the appropriation; it also prohibits the over-obligation of funds. Over-obligation is the act of obligating more funds than approved and appropriated.

Results accountability also helps ensure the accomplishment of the third key action. Congress and DoD provide fiscal guidance for the services beyond what is written in the budget appropriations. For example, Congress designates a minimum or maximum amount of an appropriation to

be used for a specific purpose. These amounts are called "ceilings" or "floors" and they apply to certain areas such as civilian personnel and real property maintenance.

5. Beware of Behavioral Displacement

In general, the control system seems to match the appropriate controls with each key action. However, there is at least one weakness and that is a result of a negative side effect due to the control of the second key action. By using results accountability as a control it may produce a negative side effect called "behavioral displacement." This is most common with accountability-type controls. Displacement "occurs whenever the behaviors encouraged by the control system are not consistent with the organization's objectives." (Merchant, 1985, p.72) The objective of DoD is for the activity to use their funds efficiently and effectively and in ensuring the funds are all obligated by the end of the year. One DoD concern is that if, consistently, there are funds left unobligated, then Congress may suspect the DoD is "padding" its budget request in anticipation of budget cuts. Therefore, DoD applies a control to discourage unobligated funds. If there are funds left at the end of the year, DoD recoups the funds for higher priority items and may decrease the budget of the under-obligated activity in a future year.

The outcome of results accountability is that it motivates the activity to obligate all of its funds so it can

get more the following year. At the end of the year, the motivation to "use or lose" all of the funds may dominate the motivation to obligate funds efficiently and effectively. For example, even though it might be more prudent for the activity to request more estimates from vendors, or to examine alternatives, the activity might simply obligate the funds to increase the chances of receiving the budget requested the next year.

The behavioral displacement is not as significant during times of overall DoD budget growth as it would be during times of shrinking budgets. When the budget is growing, OSD is still able to attain its higher objective of obtaining adequate funds from Congress even if, internally, the funds are not allocated most efficiently and effectively.

III. THE PROPOSED SYSTEM

A. NEW KEY OBJECTIVE

Both top level management and lower level activity comptrollers could achieve their objectives while the budget was growing. While the objectives may not have been congruent, there was enough funding available that it may have seemed that both objectives were met. There were enough funds to cover the planned requirements of the activities even though OSD was trying to achieve effective and efficient allocation. However, with the shrinking budget, DoD should become increasingly concerned with how efficiently funds are used and less concerned about using them up. The new defense environment has made the objectivies of OSD and the activity incongruent. Because of the changes in the DoD environment described earlier, the Deputy Secretary of Defense has directed through the DMRD process specific actions which are designed to reduce the cost of doing business. This same key objective is required of all support activities. The Unit Cost Resourcing Guidance states that the "...goal of each support activity, as part of DoD should be to reduce what it costs to do its job, and thus to reduce its budget."

Because the objective of the organization has changed, the control system should also change. If DoD tries to reach the

new objective using the old control system, there may be dysfunctional side-effects since the wrong behaviors are encouraged. For example, DoD would find it difficult to motivate managers to reduce costs if the control system influences managers to concentrate on obligating all available funds. The emphasis under the old system was on executing while the emphasis under the new system should be on "saving" or reducing costs.

B. NEW KEY ACTIONS

In order to evaluate the control system, managers must be aware of not only the new key objective, but also of the new key actions most likely to lead to cost reductions. Two reasonable key actions would seem to be 1) improve operational efficiency, and 2) make cost-cutting decisions. Ensuring that these two actions get accomplished is the purpose of the control system.

1. Improve Operational Efficiency

The steps involved with improving operational efficiency are varied and can be highly complex. It is difficult to pinpoint which actions are most desirable. Therefore, actions control is not the most feasible type of control to use for this action. However, it is more likely that managers would be able to determine whether or not the action was accomplished successfully. Consequently, results

control would be the most feasible type of control to use for this action.

a. Results Control

Results control is only effective when results can be measured in a meaningful manner. DoD has chosen to use the unit cost as a measurement for results control (DOD(C), 1990). A unit cost is derived by dividing the total cost required to provide a certain function by the number of units provided. For example, if the function of an activity is to issue spare parts, then the unit cost is the total cost required to provide the spare parts divided by the number of spare parts issued.

One purpose for evaluating a unit cost is to "assist managers by giving them a tool that will allow them to identify target areas for improvement and measure the improved efficiency of their operation." (Unit Cost Resourcing Guidance,p.5) According to the Guidance, a unit cost for each activity would, in turn, be converted into many unit costs each covering a separate work area. These secondary unit costs would correspond to lower level outputs which contribute to the primary output. As each activity would be given a goal by which its unit cost should be reduced, the activity would subdivide the goal and assign a cost reduction goal to each division.

b. Personnel Control

Use of personnel controls, if used effectively, will help smooth the transition from the old system to the new system. Training provides information about what tasks are required and how they can be performed. An employee who understands what is required of him may be more interested in doing the job well. Group based awards, such as profit-sharing, also help communicate to employees what is required of them and provide incentives for the employees to work toward the objective of the activity.

2. Make Cost-Cutting Decisions

As for the second key action, make cost-cutting decisions, the steps involved are also varied. This indicates that actions control may not be the most suitable control for this action either. However, the successful accomplishment of this action may be even more difficult to measure. For example, if an activity requires a new warehouse facility because the existing one has deteriorated beyond repair, the choice may be either to construct warehouse A or warehouse B. The goal here is not to reduce costs because, chances are, the cost of any new warehouse will increase unit costs. However, the goal <u>is</u> to make the least costly decision. Measurement of results will not tell top-level managers if the activity made a cost-effective decision. If they build warehouse B and costs increase, then management does not know

whether they made a poor choice or a good choice (if warehouse A would have been even more expensive). Therefore, actions controls, like preaction reviews, may be the most feasible control choice.

a. Preaction Reviews

Unit costs will be used for preaction reviews. For example, unit cost data will provide information to the manager regarding the total cost to carry out a project before the project is actually approved. Unit costs will also identify functions that contribute little to the final project yet carry a disproportionate cost. Providing visibility to "cost drivers" helps managers make day-to-day resourcing and managing decisions.

b. Personnel Controls

The same personnel controls used to control the first key action would also apply here. Training and group-based awards would be the most feasible controls to use to ensure goal congruency.

C. WEAKNESSES IN THE PROPOSED SYSTEM

OSD differentiates between those activities that will participate in the Defense Base Operations Fund and those that will not participate based on how closely the activity operates like a for-profit organization. In particular, the approved DMRD 971 specifies that only the activities that satisfy the following three requirements will be included.

First, the activity must be able to identify the outputs of their business. Second, the activity must have a cost accounting system that relates their costs to those outputs. Third, the activity must be able to identify its customers. Unit costing satisfies the second requirement.

Even though an activity may be nonprofit, if it satisfies the three requirements needed to participate in the Fund, then some of the characteristics of a nonprofit organization no longer apply. In particular, three of the ten characteristics of a nonprofit agency that make it difficult to design a control system may not apply to Defense Business Operations Fund-eligible activites. Establishing a unit cost for measuring business operations is the first step in establishing a profit measure. Since the activities in the Fund would no longer receive annual funding from Headquarters, they will have to rely on financial revenues from their customers. Also, by requiring those activities in the Fund to have an identifiable and quantifiable output, OSD has removed some of the problems inherent to control system design of service activities that do not have a quantifiable output.

However, in order to design a control system, the manager needs to evaluate both the technical and behavioral characteristics of the organization. Establishing a unit cost to relate inputs to outputs does not necessarily make an organization "business-like." If the behavioral characteristics of a nonprofit organization dominate any

technical changes, then the technical changes can not be used to their full advantage.

1. Managers Bound by Constraints

Constraints that restrict the behavior of managers and employees affect the ability of result controls to work effectively. Managers must have control over the elements that contribute to the results measure (the unit cost). If they do not have control, then the managers will become frustrated and not support the system. "Activities must still be responsive to corporate policy, even if that policy increases the unit cost." (Unit Cost Resourcing Guidance, p.2) For example, if legislation requires that DoD purchase from small, disadvantaged businesses, even if it were possible to purchase the same part elsewhere at a reduced cost, then the activity is constrained from achieving the lowest possible unit-cost. Other examples include lack of control over the structure of the workforce and lack of control over the disposal of slack resources such as unused buildings and excess inventory.

One other constraint is that activity managers do not have control over the number of customers they must service. This is particularly important because with a typical U-shaped average total cost curve, unit costs are sensitive to the number of customers (or level of output). Managers cannot

determine their ultimate unit costs if they cannot control the level of output.

The Unit Costing Guidance addresses this issue by stating that "[T]he cost goals assigned to cost center managers should reflect only those costs within their control." However, because of the nature of the DoD environment and the number of constraints that do exist, the unit cost goals may not be applicable to very many functions. Unit-costs may be assigned, but a performance measure such as "achieving a unit-cost goal" would not be effective as a results control for the first key action, improve operational efficiency. This is because managers would not have control over all of the elements that contribute to unit cost.

2. Activities May Aim for Short-Term Results

Professionals dominate the DoD top-level management and they are often looking for ways to improve their short-term performance in order to move up to the next position. Thus, DoD employees are familiar with the importance of achieving short-term results. Artificially generated short-term results can be achieved through gamesmanship. Gamesmanship is a side effect of some types of controls. Two types of gamesmanship are the creation of slack resources and data manipulation. Both are common side effects of accountability types of controls. (Merchant, 1985, p.78)

Slack resources refer to assets that an activity does not need to perform a function, yet the activity says that they do need them. This provides a safety margin to protect the activity in the short-term future. For example, if employees perceive that unit-costing is going to be a short-lived management trend, they may "pad" their initial cost calculations. They could accomplish this by including extra employees, hours, or facility space into the total cost calculation. As top-level management demanded improvement each period, the activity could comply by merely reducing the reserve of slack resources. It would appear that the activity was improving its operational efficiency, but it would not be accurate. This could not continue forever, because the activity will have exhausted its slack resources at some point. Top-level managers should be aware of this and not place too much emphasis on information provided at the beginning of the transition process, but, instead, place more value on improvements made in the long-term.

Data manipulation involves making an activity "'look good' by fudging the control indicators, and it comes in two basic forms: falsification and smoothing." (Merchant, p.79) Falsification means providing false data while smoothing refers to reporting things, either results or actions, in the incorrect time period. Smoothing may be particularly applicable to this system because management is looking for a downward trend in unit-cost figures. Smoothing literally

helps "smooth" the trendline. If an activity legitimately achieves a twenty percent decrease in one year, but knows that top management would be satisfied with a ten percent decrease, then the incentive might be to report a ten percent decrease the first period and withhold the second ten percent for the next reporting period.

3. Too Many Uses for Unit Cost

DoD wants activity managers to be realistic when calculating unit costs for aid in making day-to-day cost-cutting decisions. However, if those same unit cost figures are used for results control, managers have an incentive to overstate the unit costs (or total costs) in their planning figures. Preaction reviews of how managers arrived at their planning figures will help reduce this problem. However, it is much more difficult and time-consuming to evaluate how well a manager did at correlating planning figures than it is to evaluate performance based on a results control figure. Managers may know this also and concentrate on trying to reduce the unit-cost figures rather than improving their cost-cutting decision-making skills.

4. Does Not Address Accountability Issues

Another goal (or it might be called a "sub-objective") of OSD is to become more accountable for the spending of funds. Accountability in the DoD environment generally means spending funds in such a way that Congress or the public will

not believe that they could do a better job of it. For example, if a news story exploits the fact that DoD spent $400 for a hammer, even if the following month DoD bought the same hammer for half that price, it would not improve accountability. The public wants to see each employee of the DoD spending or obligating funds as if the funds were personal funds of the employee.

One of the benefits of unit costing is that it increases the visibility of cost drivers. However, it also increases the visibility of all costs to Congress and the public. Because of the constraints placed on DoD by outside forces, particularly Congress, unit costs do not represent the lowest cost possibly achievable. Instead, what they represent is the lowest cost achievable within the constraints under which DoD must operate. Consequently, unit costs for functions that are also performed outside the DoD may appear to be higher in comparison to industry prices. This may appear unacceptable to taxpayers to whom the DoD must remain accountable.

Also, in the private sector, costs and prices are not necessarily equal. Specifically, prices are not constrained to equal average total costs (or unit costs). Prices in the private sector are determined by supply and demand and, if necessary, firms will sell at a price lower than unit cost as long as the price covers the marginal cost. If prices do not cover average total costs, then the firm may go out of

business in the long run. However, market prices are not constrained to equal average total costs in every period. Thus, unit costs and market prices are directly comparable.

5. Cannot Determine Optimal Efficiency

While unit costs may be useful for measuring incremental improvements in operational efficiency, they do not indicate the point of optimal efficiency. Optimal efficiency is achieved when the activity reaches the minimum unit cost possible given its constraints. More detailed knowledge of the cost curve of the organization would be required to determine the optimal efficiency point. The cost curve indicates how unit costs rise or fall given a certain level of output. At lower levels of output, unit costs decrease as the activity takes advantage of economies of scale. However, after a certain point, economies os scale are exploited and the unit cost increases as the level of output increases. If output increases, the activity's resources are over-burdened.

IV. CONCLUSION

Control systems are a necessary part of the managerial environment. Properly designed control systems help ensure the reliability of information that passes both up and down the management hierarchy. They also help ensure the accomplishment of desired actions. Control systems are particularly valuable where the objectives of top-level management and those of the lower level activities do not coincide.

One standard control system cannot meet the needs of all organizations nor can one system satisfy the needs of any organization at all points in time. As the organizational environment changes or as the objectives of top-management change, then so should the control system design.

Control system design within the federal government can be challenging. As previously noted, there has been a history of control problems within the federal agencies as reported by GAO and attempts to solve the problems have not been expedient. To compound the problem, control system design for the federal government differs from control system design for for-profit agencies. The main differences are that the government lacks a profit measure and that it survives under numerous constraints that prevent complete autonomy for government actions.

The current system must be analyzed before evaluating the proposed control system. There are two primary reasons why a control system might need to be changed. One reason is that the organizational environment might have changed and the other reason is that the existing controls may have been ineffective at motivating the desired actions in the existing environment.

Currently, one of the primary reasons for changing the control system definitely exists: the DoD environment has changed. Defense budget authority is decelerating due to both the political and economic climate, and world affairs. In addition, the public is demanding more accountability for government spending. However, until the current system is evaluated using a control system framework, it cannot be certain whether the system was ineffective (i.e. poorly designed) or whether it was effective at achieving an objective that is no longer valid.

Using a control framework introduced by K.A. Merchant, the present system is evaluated by identifying key objectives and key actions. The control system should be designed using control tactics such that personnel are motivated to accomplish the key actions and the activity reaches the key objective. The key objective of the financial management system under the current system is basically to obligate all operations funds allocated to an activity.

Consequently, the system concentrated on legally obligating all funds before they were recouped and supporting a budget request so the activity could meet all of its planned requirements.

Comparing the current system to the most feasible system that could exist, given the key objective, key actions, and the DoD environment, the current system matches favorably. It uses the right combination of personnel, results and actions control to reach the objective of the organization. The one weakness is that by using a results control to measure the net obligation of funds, it may encourage activities to make less than the optimal decision (with respect to getting the most benefit for the funding available) in order to obligate the funds before the end of the fiscal year.

The current system would not work in the new DoD environment. The current system rewards spending whereas the new key objective is for DoD to reduce costs. The new emphasis is particularly focused on reducing the costs at all support activities.

Part of the new control system design involves realigning costs with outputs so that managers can understand precisely the total cost of providing a service or product. Unit costing provides the mechanism for this cost realignment. The unit cost is a significant part of the control system because it is a tool managers can use for making day-to-day cost-

benefit decisions or for measuring operational efficiency improvements.

However, managers are still restricted and are not given complete autonomy to reduce costs because of the other policies and constraints placed on decision makers. Government decision makers are often forced not to take a cost-cutting avenue because legislation guidance requires them to accept a higher cost alternative. For example, the government must favor American-made products, American produced coal for heating, small businesses , and minority-owned businesses. Therefore, unit costs cannot be used as a results measure in all places because of the outside restrictions placed on managers.

Unit costing is also supposed to be used as a planning tool in order to evaluate potential costs of projects or policies. The more accurate the cost, the better the decision will be whether to choose project A or B. In this case, managers should reward the process of arriving at a realistic unit cost and the process of making a good decision.

Unit costs cannot be used effectively as both a results measure and a planning tool. As a results measure, unit costs have the potential to be victims of a control system side-effect called "gamesmanship." If activity managers believe that their performance rating is based on a trendline showing decreased unit costs period-to-period, then the motivation is to "skew" those numbers in the favor of the activity. By

artificially inflating the unit cost figures when the system starts, the manager has slack resources he can "use up" in order to decrease the unit cost in subsequent periods. An activity can also smooth data by timing information such that the trend indicates a constant, steady improvement rather than a large amount of improvement one period and none the next period.

The proposed system does not address the accountability issue. By increasing the visibility of unit costs, it also makes it more understandable to the public. While the public may not be able to identify with the aggregate operational cost for a fleet command, it may be able to identify with the unit cost of laundering, training, housing, or providing medical care for the servicemember. The public will be able to make many comparisons between the unit cost of an item for the DoD and a unit cost for the public. However, the unit cost does not reflect the decisions that went into arriving at the unit cost. The DOD places a premium value on having sufficient inventory on hand for an emergency. The DoD also places a premium value on keeping certain services within the government (in-house operations) so that DoD can demand a quick response. DoD will have to educate the public regarding these issues if the DoD wants to remain accountable.

The new unit cost system is in its infancy stage and changes will have to be made to the control system as it matures. It would be prudent for DoD to concentrate on the

personnel controls, because of the questionable effect that results control will have on motivating managers. DoD could increase the potential for a successful transition to the new system by communicating system changes (and desired actions) to employees and by providing training on implementation.

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