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AN EVALUATION OF THE IMPLEMENTATION OF  
TOTAL QUALITY MANAGEMENT IN A SERVICE ORGANIZATION

by

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A Dissertation submitted to the Faculty of  
Old Dominion University in Partial Fulfillment of the  
Requirement for the Degree of

DOCTOR OF PHILOSOPHY  
ENGINEERING MANAGEMENT

OLD DOMINION UNIVERSITY  
October, 1993

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Frédéric Steier

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An Evaluation of the Implementation of  
Total Quality Management in a Service Organization

by Charles Stevens

ABSTRACT

This research consists of a formative evaluation designed to identify the steps necessary to revitalize a formerly successful Total Quality Management (TQM) process at a U. S. Navy engineering and logistics support organization. The research also developed a methodology to account for the fact that the investigator is a well-informed insider who served as one of the principle change agents for the TQM implementation.

The research is based on the researcher's observation that the major cause for the waning implementation was due to senior management and leadership issues and the organization-wide processes with which they interface. The investigation consisted of an extensive review of the literature to identify, from a leadership perspective and theory framework, an ideal implementation for this organization. Then a case study was conducted to identify the espoused and actual implementation processes, again from a leadership viewpoint.

The gaps or differences between ideal and espoused and espoused and actual were analyzed to identify conditions and relationships which must be addressed as part of the formative evaluation. Significant concerns were identified in leadership actions, TQM processes, allocation of assets and cultural issues which hindered the adoption of the principles of TQM. Each of these was addressed by the development of specific recommendations which, if followed, would result in actions to revitalize the

implementation. of TQM.

The researcher recognized that much of the discovery and mutually agreed understanding of the incidences associated with TQM had occurred during the actual implementation. The challenge was to develop methods of obtaining validity and insure a true mutual agreement on the occurrences in a manner to satisfy academic standards. This was accomplished through multiple techniques involving the researcher making statements which he believed accurate, frequently in writing, and then either finding substantiating documentation in the historical records or having multiple other insiders "correct" the understanding, either through interview or in writing response. This formed a method of "mutual mirroring" which insured multiple viewpoints and shared understanding.

This research developed a systematic revitalization process which may have application to other similar organizations and improved methods of implementing TQM, especially for planning and developing improvements in quality of daily work. The literature research provided an improved integration of TQM principles with the underlying theories of organizational change and leadership. Specific leadership actions to implement TQM were identified.

To my wife of 31 years, Ann Coble Stevens, in  
recognition and gratitude for her support and love.

## **ACKNOWLEDGEMENTS**

No research of this nature can be accomplished without the support of a large number of people. Perhaps the most influential person in this research has been the chairman of my committee, Dr. Barry Clemson. His sage advice, support and enthusiasm for the research has been invaluable. I especially appreciate his availability and encouragement. Dr. Scott Sink of Virginia Polytechnic Institute was instrumental in getting me started on my journey in TQM.

I would also like to acknowledge the top managers of the Naval Sea Support Center, Atlantic for providing the tangible support for this research. A case study always needs those willing to serve as reciprocators and many filled this role. The support of Jim Boyette, Jim Upham, Glenda McRary and Ray McGrady is acknowledged, with appreciation. Captain Bill Pitt, a former Commanding Officer of Naval Sea Support Center, provided valuable insight into the thought processes of senior military management and much encouragement.

I would also like to acknowledge the graphics support provided by Aubrey Schmitt and the proofreading of my wife, Ann Coble Stevens. There were many others, too numerous to list, but equally deserving of my gratitude. I thank you.

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## CHAPTER 1

### INTRODUCTION

#### BACKGROUND AND MOTIVATION

The Naval Sea Support Center, Atlantic (NSCL) is a United States Navy maintenance engineering and logistics support organization which provides assistance to all Atlantic Fleet and some foreign navy ships and to navy-wide logistics programs. The organization, in response to Presidential Executive Order 12552 of 1987, established a quality improvement process in 1988. The process, which is titled Total Quality Leadership (TQL), is based on the more universal Total Quality Management (TQM) process. For the purpose of this dissertation, the more universal term of TQM will be used, except when specifically referring to the NSCL process.

NSCL exhibited significant progress in organizational improvement during the first four years of adoption of TQM. During this period, the command grew by about 200 employees and approximately \$30,000,000 per year in business and won the 1991 United States Senate Public Sector Productivity Award for Virginia.

It is the consensus of the organization's management that TQM implementation and execution have lost momentum over the past eighteen months and is in need of revitalization, if NSCL

is to move to a higher level of productivity and value to the Navy. It has been noted that the loss of momentum within change programs such as TQM is a normal phenomenon. According to Deming, significant improvement can be expected for the first few years of an improvement program, however, if it is not based on principles such as his, it will grind to a halt, or at best, level off (Deming 1986, 323-324).

### **PROBLEM IDENTIFICATION**

The literature abounds with references to the importance of active leadership to the successful adoption and execution of organizational improvement such as the TQM process. It is for this reason that the U. S. Navy elected to title their process TQL. According to Deming, the aim of leadership is to improve performance and quality, increase output and bring pride of workmanship to people. They have the responsibility to improve the organization, on a continuing basis, and it is a responsibility that cannot be delegated (Deming 1986, 248 and 21). Tenner and DeToro quote Juran as having said: "... every successful quality revolution has included the participation of upper management -- WITH NO EXCEPTIONS." They indicated that senior management "bears ultimate responsibility for the success of their organization (Tenner and DeToro 1992, 159)." Juran also states that quality initiatives typically fail because leadership attempts to

delegate these change efforts rather than get involved themselves (Savage 1992, 194). This implies that upper management, by virtue of their position and associated authority to set direction, establishes policy, sets priorities and allocates resources and is ultimately responsible for any lack of success of their organization's programs -- including TQM.

During discussions with the faculty in the development of the proposal for this dissertation, concern was expressed over the general lack of systematic research methodology associated with qualitative, problem-solution oriented research as is being proposed. This situation is especially true in situations in which the researcher has a major management role in the issues under investigation.

### **SIGNIFICANCE OF THE PROBLEMS**

#### **A Waning TQM Program**

It is proposed that the current status of TQM implementation at NSCL can be traced to leadership and management issues and to the underlying principles and procedures followed as part of the program implementation. This has significance, if valid, because any revitalization of TQM must address these issues to have lasting success. Further, TQM implementation techniques and procedures being followed by NSCL are widely used within the U. S. Navy and findings may have impact beyond this particular organization.

The research also has significance to the long-term survival of NSCL and other Navy organizations using the same processes. The current political and economic realities within the United States as a whole, and the U. S. Navy in particular, are such that increased efficiency is mandatory for survival. The Navy has significant excess capability, which must be adjusted to meet the declining size of the fleet. In general, less productive organizations are being replaced by their more efficient competitors, from both the public and private sectors. Thus, NSCL and other similar organizations must increase productivity or face the potential of being part of the downsizing.

#### **Research Methodology**

An obvious observation regarding the revitalization of NSCL's TQM, or any other established process or program, is that this is normally within the domain of the responsible manager, not the research community. Each manager, as part of his/her normal duties, is responsible for reflecting on the success of her/his efforts, with the intention of continuous improvement. This continuous improvement, as will be shown, is a key element of TQM. Thus, why should the revitalization of implementation of TQM be the subject of a doctoral dissertation?

The answer to this question is that the manager does not have, within his domain, adequate tools to efficiently or effectively evaluate large and complex issues, such as

adopting an organization-wide TQM process. Further, the literature review, reported later, reveals that the research community does not have adequate methodology available to address participative, case-study based research when the investigator is an insider, intimately familiar with the issues being studied.

This lack of adequate research methodology to evaluate the successful adoption of the implementation of any long-term organizational changes, such as TQM, has a significant impact on the ability to manage change. This is an important issue to TQM because its processes are based on continuous improvement -- which, by definition, would also apply to the adoption of TQM processes within the organization.

A second justification for this dissertation is that the current body of TQM knowledge does not address the issues associated with revitalizing a formally successful process -- especially from the viewpoint of top management and their actions. A final justification is that the researcher was the principle change agent for much of the adoption of TQM at NSCL and the literature does not include a rigorous study from this perspective.

## **THE RESEARCH**

### **An Overview**

The dissertation will consist of two concurrent efforts:  
(1) a formative evaluation of the implementation of TQM and

(2) a case study of the methodology issues addressed and resolved during the research.

Both research efforts will be based on four steps: (1) a literature review to identify salient issues, (2) a case study, (3) an analysis of issues identified during the case study and (4) the formulation of recommendations to resolve the issues. In the case of TQM, the research will result in identifying steps which the top leaders should take to revitalize the implementation of the process. For the methodology issue, the results will be a proposed approach for future similar research that will support managers' efforts in evaluating their adoption of major organizational changes. A major issue of the methodology proposal will be to insure validity and acceptability to others reviewing the findings. As noted earlier, the TQM literature does not currently address the systematic revitalization of a formerly effective implementation and this research will partially fill that void.

### **The TQM Approach**

The literature review step will be focused on identifying the ideal approach, from a leadership perspective, to implementing TQM. A case study, step two, will identify the espoused and actual results of implementing TQM at NSCL, again from a top leadership viewpoint. The differences or gaps between ideal, espoused and actual performance will be analyzed as part of step three in order to identify, on a

cause and effect basis, the roadblocks which must be removed to obtain the desired level of performance. This evaluation will support identifying or formulating the necessary corrective actions.

### **The Methodology Issue**

The literature review will consider the researcher's role, especially when he/she is an informed insider. It will focus on methods of obtaining validity in such a manner that the research community and other managers are able to accept the results. This is a critical issue, for research based on the personal observations of a participant is normally suspected to be too biased to be accepted by the research community. Adequate safeguards must be adopted to allow the results of this dissertation to be accepted by others.

During the research, a log or diary was maintained of research methodology issues and the associated decisions. This material will serve as the data for the case study on the research and will be analyzed and reported, as "lessons learned". The resultant analysis will support the development of a more systematic methodology for this type of research.

### **The Research Hypotheses**

The following hypotheses are proposed:

- (1) The degree of success in implementing TQM is directly tied to the actions of an organization's leadership and management and the methods and procedures followed by them.
- (2) A methodology for conducting a systematic formative evaluation by an informed insider can be developed.

### **The Research Questions**

The detailed research questions will be provided in Chapter 10 of this dissertation, however, they will be directed toward three major issues or questions:

- (1) What changes are necessary to align senior management's espoused theory with the ideal implementation of TQM?
- (2) What measures should NSCL put in place to remove roadblocks to senior management's execution of their espoused theory of TQM implementation?
- (3) How can the efforts of insiders conducting qualitative-based, case-study research be facilitated so that they are acceptable to the research community and other managers within the organization?

**PART I**  
**LITERATURE REVIEW**

## CHAPTER 2

### LITERATURE REVIEW

#### INTRODUCTION

Inherent to the research, is an understanding of the principles of TQM and leadership and how they are inter-related. To obtain this understanding, a literature review was conducted, with an emphasis on understanding the concepts of TQM and the roles, procedures, mechanism and other actions which an organization's leadership must take to adopt and sustain TQM.

As indicated earlier, concern has been expressed over using qualitative, case-study based research for doctoral dissertations. A literature review of this method of research was conducted to better develop the methodology.

#### TOTAL QUALITY MANAGEMENT - AN OVERVIEW

There are numerous definitions of TQM, one of which is provided by the former Secretary of the Navy, Lawrence Garrett, who indicated that:

"... TQM is a systems approach to managing work and leading people. It requires top-down leadership focusing on quality, user needs and requirements and improvement and innovation of strategically important processes through fact-based decision-making and management of team participation (Garrett 1991, 1-2)".

This definition is important to this research, by focusing on both leadership and management (ie., top-down leadership and managing work and team participation).

TQM has been further defined as a process of continuous organizational improvement based on three quality principles: (1) customer focus, (2) process improvement and (3) total involvement and a number of supporting elements, including: leadership, education and training, support structures, communications, reward and recognition and measures (Tenner and DeToro 1992, 31-34). Both of these definitions stress continuous improvement of the quality of an organization's processes and goods and services as perceived by the customer and are based on the Deming Chain Reaction shown in Figure one (Deming 1986, 3 and Walton 1986, 25).

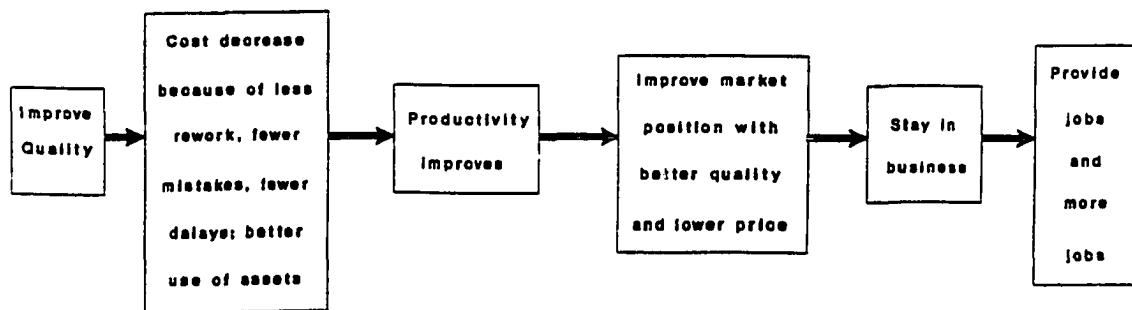


Fig. 1. The Deming Chain Reaction for Quality Improvement.

Thus, TQM is about systematic, continuous improvement of the quality of an organization's goods and services by

focusing on customer's requirements, processes, fact-based decisions and involving everyone in the improvement, with the objective of continuing survival of the organization in a competitive environment.

### **QUALITY LEADERS AND THEIR APPROACHES**

The movement towards total quality as a management system started with Frederick Taylor. This movement's evolution has been supported by numerous key individuals (Tenner and DeToro 1992, 15). Important participants in this development and a brief summary of their contributions are provided below.

#### **Frederick Taylor**

Frederick Taylor (1856-1915) has been credited with the development of a series of concepts that laid the foundation for work improvement, using a systematic approach of analysis. Taylor, in his book The Principles of Scientific Management, indicates the following salient elements of his management theory (Tenner and DeToro 1992, 15):

1. Each person should have a clearly defined, large task which should take one day to complete.
2. The worker should have standard tools and conditions of work to complete the assigned task.
3. Significant rewards should be paid for successful completion of the task.
4. Significant, personally-costly, penalties should be levied for failure to complete the assigned task.

5. Tasks in large, sophisticated organizations should be difficult so as to require skilled, accomplished workers.

Ishikawa (1985, 25) indicates that Taylor's system became one of "management by specialist", which Juran says, resulted in planning for operations and quality being moved from operational managers and put in the hands of specialists. These specialists have done much to evolve the concepts and tools for the management of quality, but these concepts have frequently not been adopted by line managers due to the separation of planning from execution (Juran 1988, 106). In fact, the responsibility for quality was seen to be moved from the operational managers and personnel to the quality engineers in the Industrial Engineering Department and quality inspectors in the Quality Assurance Department (Tenner and DeToro 1992, 16).

#### **Walter A. Shewhart**

Shewhart (1891-1967) demonstrated that variation exists in every facet of manufacturing and that the variation could be understood by simple statistical methods. His methods were based on the use of control charts which track manufacturing performance over time. From this data, control limits are computed, which are used to indicate when intervention is necessary to correct problems (Tenner and DeToro 1992, 16). Deming (1986, 88) attributes his Plan-Do-Check-Act Cycle, (this cycle will be discussed later) to Shewhart.

## **W. Edward Deming**

W. Edward Deming (1900- ) has served as the focal point for the quality movement in the United States after being featured on the NBC white paper entitled "If Japan Can, Why Can't We?", a 90-minute television program first broadcast in June, 1980 (Conway 1992a, 17). During WWII, Deming led a team which was credited with teaching statistical techniques to over thirty thousand engineers involved in the production of war material. In 1947, he began assisting Japan in the planning for their 1951 census and, in 1950, he was asked by the Union of Japanese Scientists and Engineers, to deliver a series of lectures on quality which had a profound impact (Tenner and DeToro 1992, 17). Ishikawa (1992, 17) reported that his seminars consisted of:

1. How to use the plan-do-check-act (PDCA) cycle, relating it to design, production, sales, service and redesign to enhance quality.
2. The importance of having an understanding of dispersion in statistics.
3. Process control through the use of control charts and how to use them.

Deming's management method is based on three key elements: (1) his 14 points or management obligations, (2) a system of profound knowledge and (3) the PDCA cycle (Navy Postgraduate School Seminar Workbook, viewgraph 4, lesson 2).

### **Deming's 14 Points.**

Deming's 14 points are constantly evolving and one version, dated January, 1989 and reported by Scholtes (1988,

cover page) is shown in Table one. These points are applicable throughout the TQM process and rather than provide a narrative expansion of each, they will be individually discussed, as applicable, in this proposal and the dissertation. Deming expands on these in his Out of the Crisis (1986, ch. 2) and Walton (1986, chapters 5-20) and Scherkenbach (1992) provide excellent discussions of applications of these points.

#### **Deming's System of Profound Knowledge.**

In addition to these 14 points, Deming's approach to quality management requires that leaders acquire what he called his "System of Profound Knowledge". This represents an understanding of the entire management systems (Deming Video Library, Vol. XIV) and is based on four sets of knowledge: (1) systems theory, (2) statistical theory, (3) psychology of individuals and society, learning and change and (4) theory of knowledge.

Systems theory is based on the requirement that a leader understand the meaning of a system and how the work of the group supports these aims. Deming indicates that a system is a collection of parts that interact with each other to function as a whole. The collection of system parts, or subsystems, must support the larger system. He states that often the organization subunits attempts to optimize their own performance at the expense or suboptimization of the larger organization. By taking this narrow focus, the organization

Table 1. Deming's 14 "Obligations" of Management.

1. Create constancy of purpose toward improvement of product and service, with the aim to become competitive and to stay in business, and to provide jobs.
2. Adopt the new philosophy. We are in a new economic age. Western management must awaken to the challenge, must learn their responsibilities and take on leadership for change.
3. Cease dependency on inspection to achieve quality. Eliminate the need for inspection on a mass basis by building quality into the product in the first place.
4. End the practice of awarding business on the basis of price tag. Instead, minimize total cost.
5. Improve constantly and forever, the system of production and service, to improve quality and productivity, and thus constantly decrease costs.
6. Institute training on the job.
7. Institute leadership. The aim of leadership should be to help people and machines and gadgets to do a better job. Leadership of management is in need of overhaul, as well as leadership of production workers.
8. Drive out fear, so that everyone may work effectively for the company.
9. Break down barriers between departments. People in the research, design, sales, and production must work as a team, to foresee problems of production and in use that may be encountered with the product or service.
10. Eliminate slogans, exhortations, and the targets for the work force asking for zero defects and new levels of productivity. Such exhortations only create adversarial relationships, as the bulk of the causes of low quality and low productivity belong to the system and thus lie beyond the power of the work force.
11. (a) Eliminate work standards (quotas) on the factory floor. Substitute leadership. (b) Eliminate management by objective. Eliminate management by numbers, numerical goals. substitute leadership.
12. (a) Remove barriers that rob the hourly worker of his right to pride of workmanship. The responsibility of supervisors must be changed from sheer numbers to quality. (b) Remove barriers that rob people in management and in engineering, of their right to pride of workmanship. This means, inter alia, abolishment of the annual or merit rating and of management by objective.
13. Institute a vigorous program of education and self-improvement.
14. Put everybody in the company to work to accomplish the transformation. The transformation is everybody's job.

wastes resources, establishes adversarial internal relationships, exhibits short-term thinking and generally lacks the integration and coordination needed to optimize the organization's performance.<sup>1</sup>

Senger (1990, 234-238) has emphasized and illustrated the systems' theory concept through what he calls "alignment". He reports that in most groups, the energies of individual members work at cross purposes and are wasted. When the individual group members become aligned towards the same objectives, a commonality of direction emerges, and the energy of the individuals harmonizes and a resonance or synergy develops.

Statistical theory is based on the concept of variation. Every process has an average or mean and an associated spread or variation for each of the process variables. The mean and variation are inherent to the system's design. The process's performance, by statistical definition, will produce 50% of the results above the process mean and 50% below -- thus, for management to penalize workers with below average production and reward those with above average performance is to ignore the inherent system's capability and characteristics. Management must understand the concept of common and special causes associated with a stable system (Deming 1986, ch. 11).

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<sup>1</sup>This discussion is based on class notes from lesson two of the "Senior Leaders' Seminar Total Quality Leadership" presented by the U. S. Navy Postgraduate School, Monterey, California. January, 1992.

Every fault or variation from the mean is attributable to some cause(s) which is/are either inherent to the process over time, affecting everyone working in the process and affecting all outcomes of the process (common causes), or are special causes which do not affect everyone. Common causes are inherent to the system's design and capability (e.g., the designed degree of play [movement] of a part mounted on its holding fixture, while it is being fabricated, results in dimensions which are described by a mean and variation).

Special occurrences or causes are not in the process all of the time and only arise because of specific circumstances (ie., a tool that becomes defective, or a new, inexperienced employee).

Management must understand the difference between these and the fact that their reduction is based on entirely different actions. Variance due to common causes can only be reduced through redesign of the process, while variance due to special cause is reduced through removal of the special cause.

Deming (1986, 318) indicates that two kinds of mistakes can be made when attributing problems to cause. That is to attribute a problem to a common cause when it is a special cause and to a special cause when it is a common cause. The first mistake will result in trying to redesign the system based on a special cause, while the second attempts to remove the source of a failure, when the fault is inherent to the design.

The researcher has observed that a risk of following Peters and Austin's (1985, 8-33) philosophy of Managing by Walking Around (MBWA) is that problems are observed and solutions may be attempted, without understanding the underlying nature of the cause. The manager, in response to a problem, may direct a change to the system when the problem is due to a special cause or may "beat up" an individual (trying to remove a special cause) when the problem is inherent to the system and the individual's performance, to a large part, is due to chance.

Deming's (1986, 327-332) Monte Carlo experiments, with the funnel, illustrate this concept. He shows that a natural dispersion is found when a funnel is visually centered over a target, a marble dropped through the funnel and the contact point on the target is marked. The variation of the locations of the contact points are inherent to the process (funnel design, marble size, sighting method, etc.), thus the dispersion is due to common causes. If the experimenter attempts to move the funnel to compensate for the location of the last contact point, then the overall dispersion is much greater. Deming calls the moving of the funnel, without understanding the basic variation associated with the process and similar management actions for other processes, "tinkering" and he states that it results in even greater error rates (Deming Video Library, Volume IX).

Psychology of individuals and society, learning and change must be understood by leaders who serve as change agents. People are an inherent part of the production system (Deming 1986, 366) and their motivations and individual capacity to learn must be considered as part of a change process. They are not machines or a commodity and desire pride of workmanship (Deming 1986, 77). The leader must understand that people work in teams and are a part of a cultural system. This topic will be expanded later in this dissertation.

Scherkenbach (1991, 190-191) states that Dr. Deming has highlighted the following essentials regarding the theory of knowledge:

1. Any rational plan requires prediction.
2. Interpretation of data from a test or experiment is prediction.
3. A statement devoid of prediction conveys no knowledge.
4. Theory leads to questions. Without questions, experience and examples teach nothing.
5. Communication and negotiation require, for optimization, operational definitions.
6. There is no true value of any characteristic, state or condition that is only defined in terms of measurement or observation. It must also be placed in context of its surroundings.
7. There is no such thing as a fact, concerning empirical observation.

An advancement of knowledge requires that a belief or theory exists which is either proven or disproved by information gathered. If the data is consistent with that expected from the theory, it is validated until future events provide conflicting evidence. From a manager's viewpoint, it

is important to understand (have a theory about) the root causes in order to institute improvement.

To plan for the future, the manager must predict conditions as they are likely to exist at that time. For these predictions to be meaningful, they should be based on the knowledge of past events and expected trends<sup>2</sup>

#### **Plan-Do-Check-Act (PDCA) Cycle.**

The PDCA cycle, also known as the Shewhart Cycle and Deming Cycle, is a key element for Deming's concept of continuous improvement. This cycle is based on the elements contained in its name and has been presented in many forms within the literature. Figure two is one such illustration. The concept is that once an awareness of the need for change or improvement is identified, the change must be planned, including the identification of expected outcome. The change

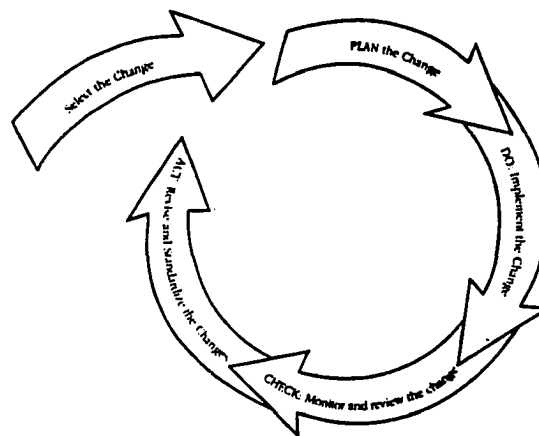


Fig. 2. Plan-Do-Check-Act Cycle (PDCA) (Scholtes, 5-47).

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<sup>2</sup>These comments are based on class notes from "Senior Leaders Seminar Total Quality Management", lesson 2.

is implemented on a trial basis, appropriate measures taken to change (do stage) and then compared with the expected results to determine the results (check stage). During the act stage, if the results are satisfactory, the change is standardized and adopted throughout the organization. If the results are not as expected, the plan is refined (new planning stage) and the cycle is repeated (Scholtes 1988, 5-46 and 5-47).

The process of continuous improvement requires that the PDCA cycle be continuously applied. Management should constantly strive to improve the mean and reduce the variance associated with their processes (reducing common cause) since the variance from mean (the design specification) represents waste and inefficiency (Conway 1992a, 47). Later in this literature review, the concept of the PDCA cycle will be expanded as part of the discussion on process improvement.

It is noted that the PDCA cycle is one mechanism that Deming uses to implement his first and fifth points -- the improvement of product and service, constantly and forever.

#### Deming in Overview.

Tenner and DeToro provide an excellent summary of Deming's views regarding roles of senior management in the constant improvement of their organization.

"Quality is primarily the result of senior management actions and decisions and not the result of actions taken by workers. Deming stresses that it is the 'system' of work that determines how work is performed and only managers can create the system. Only managers can allocate resources, provide training to workers, select the equipment and tools that workers use, and provide the plant and the environment necessary to

achieve quality. Only senior managers determine the market in which the firm will participate and what products or services will be sold (Tenner and DeToro 1992, 18-19)."

### **Joseph M Juran**

Juran (1900 - ) visited Japan in 1954 to assist them in their reconstruction. His contribution, like Deming's, was to help them adopt quality concepts and tools into a management process. His process is based on three elements which have been trademarked as the Juran trilogy (Tenner and DeToro 1992, 19). These elements are quality planning, quality control and quality improvement.

Quality planning is a process which identifies the customers and their requirement and expectations. Then the processes which produce the products and services, with the desired attributes (as identified), are designed or redesigned, as necessary, and provided to the production part of the organization (Tenner and DeToro 1992, 20).

Quality control is a process of examining and evaluating the attributes of a product against those expected and taking corrective actions if they do not meet expectations. Quality improvement is based on a process which achieves quality on a continuous basis. It includes allocating resources to pursue quality projects, training and generally establishing a permanent structure to pursue and maintain quality. Juran's approach is to establish project teams, which either target specific improvements (Tenner and DeToro 1992, 20) or review

projects on an individual basis, focusing on problem-solving (Federal Total Quality Management Handbook Appendix 1A 1991, 7).

Juran has provided ten steps to quality improvement which establish his methodology (Federal Total Quality Management Handbook Appendix 1A 1991, 7). These are reported later in the dissertation.

### **Philip B. Crosby**

Crosby is a quality advocate who developed, and made famous, the concept of "zero-defects". His approach is based on four fundamental beliefs which he calls absolutes and discusses in Chapters 6-9 of his book Quality Without Tears The Art of Hassle-Free Management (Crosby 1984). These beliefs are summarized as:

1. The definition of quality is conformance to requirements.
2. The system for providing quality must focus on doing it right the first time, not prevention by inspection.
3. The performance standard must be zero errors. That must be the performance goal.
4. The measure of quality is the cost of quality -- not the measure of defects.

According to Crosby, management " ... has three basic tasks to perform: (1) establish the requirements that employees are to meet, (2) supply the wherewithal that the employees need in order to meet those requirements, and (3) spend all its time encouraging and helping the employees meet those requirements (Crosby 1984, 59)".

He establishes the basic premise that quality improvement is built on getting everyone to do their job right the first time. A major problem occurs when management does not define "right" as a clear set of requirements or measures (Crosby 1984, ch. 6).

Crosby's second absolute is that the system for causing quality is prevention, not appraisal. Through the use of statistical quality control, a worker is able to identify if a system is going out of control and makes repairs immediately. Thus, errors will not continue which must be found in later inspection stations and the product reworked, discarded or shipped as poor quality (Crosby 1984, 71-72).

Crosby's third absolute, zero defects, is perhaps the least understood. According to him, the concept is one of management establishing a standard of performance -- telling people what is expected, which he believes is to produce no defects. However, it was picked up by industry as a "motivation" program and after several years of "hype" was discarded.

His critics indicate that statistical variation dictates that each process will have an error rate and, as such, it is impossible to achieve zero defects. His response is that if management is willing to accept "close enough", then "people will perform to the standard they are given (Crosby 1984, 84)". By establishing a zero tolerance for error, emphasizing that it must be done right the first time, the organization

will improve its quality, by improving its processes to satisfy this standard.

The cost of quality is divided into two areas, the price of conformance and nonconformance. The price of nonconformance is the cost associated with doing something wrong -- ie., rework, scrap, inspection, test, warranty work and customer dissatisfaction. The price of conformance is what is necessary to make things come out right (zero defects). It includes all manufacturing and preventive efforts and the concept is to invest in quality conformance, thereby reducing the cost of nonconformance (Crosby 1984, 85-86). In his book, Quality is Free, The Art of Making Quality Certain, Crosby points out that the cost of prevention is usually much less than the cost of nonconformance and profit increases of 5-10% of sales are realizable -- thus quality is not only free, it is profitable (Crosby 1979, 1).

#### **William E. Conway**

Conway was the first Fortune 500 Chief Executive in the United States to work directly with Dr. Deming. In 1979, Conway was the CEO of Nashua Corporation (a major paper manufacturer) and his company was facing significant competition from Japan. He was aware of the Deming Prize and what Deming had done for Japan and invited him to help them become more efficient and improve the quality of their products. Working with Deming, he realized significant

success at Nashua and after retiring in 1983, became a consultant for TQM.

Conway's (1992a, 5) central belief is that an organization consistently achieves high quality and pleases its customers through continuously improving all its work processes. He indicates that this belief can be satisfied through a management system which contains four major elements (Conway 1992b, 34):

1. The will to improve.
2. The belief that major improvements can be achieved.
3. Providing the wherewithal to improve.
4. Doing it.

The will to improve must be exhibited by management. They must follow the concepts of Juran (constant improvement) and Deming (continuity of management), relentless pursuing, on a daily basis, increased quality and productivity and involving all levels and all constituencies within the organization.

He stresses that achieving TQM is based on management having a thorough knowledge of principles, which must in part, be obtained from being personally involved in doing the work. Management has the responsibility to provide the tools and equipment necessary for efficient and effective production and, as importantly, providing the know-how and know-why necessary to achieve continuous improvement. The last step,

doing it, he believes, is the easiest part of all. If management creates the system, people will do it.<sup>3</sup>

Conway stresses that the core activity for continuous improvement is the continuous effort by everyone in the organization to identify, quantify, and eliminate the waste in all the work, through process improvement. His research shows that unnecessary work usually accounts for about 40% of all work and about 75% of this is due to rework (thus 30% of all work is rework). Additionally, 5-15% of work, while necessary, has no value added, and 25% of payroll hours is idle (not working) for a variety of reasons. This results in only about 30% of the worker's time spent on the job representing value-added efforts. The remaining 70% represents waste and the reduction of this waste should be the emphasis area for productivity improvement (Conway 1992a, 21-24).

#### **SUMMARY -- GUIDELINES FOR QUALITY**

Peter Scholtes and Heero Hacquebord (1988, 28-29) have provided an excellent set of guidelines for obtaining organizational quality which are quoted below. These guidelines will be provided to give an overview of the TQM philosophy, which will serve as the basis, or underpinning for

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<sup>3</sup>This discussion is based on a short course workbook titled, "The Right Way To Manage" presented April 29 and 30, 1992 by Conway Quality Inc: Nashua, New Hampshire.

the research. The researcher believes they capture the essence of the quality thinker's work discussed. Comments regarding these guidelines will be included in the detail research finding provided throughout the dissertation.

1. Quality begins with delighting the customer.
2. The quality organization must learn how to listen to customers and help customers identify and articulate their needs.
3. The quality organization leads customers into the future.
4. Flawless, customer-pleasing products and services result from well-planned systems and processes that function flawlessly.
5. In a quality organization, the vision, values, systems, and processes must be consistent with and complementary to, each other.
6. Everyone in the quality organization -- managers, supervisors and operators -- must work in concert.
7. Teamwork in a quality organization must be based on commitment to the customers and to constant improvement.
8. In a quality organization, everyone must know his or her job.
9. The quality organization uses data and a scientific approach to plan work, solve problems, make decisions and pursue improvements.
10. The quality organization develops a working partnership with suppliers.
11. The culture of the quality organization supports and nourishes the improvement efforts of each group and individual in the company.

#### **TQM THEMES FOR FOCUSING RESEARCH**

Throughout the TQM literature, a number of consistent principles can be identified. Ritter (1993, 19) indicates that there are nine core principles, which all of the quality thinkers seem to agree upon. Review of these shows that they can be categorized into four areas as shown in Table two.

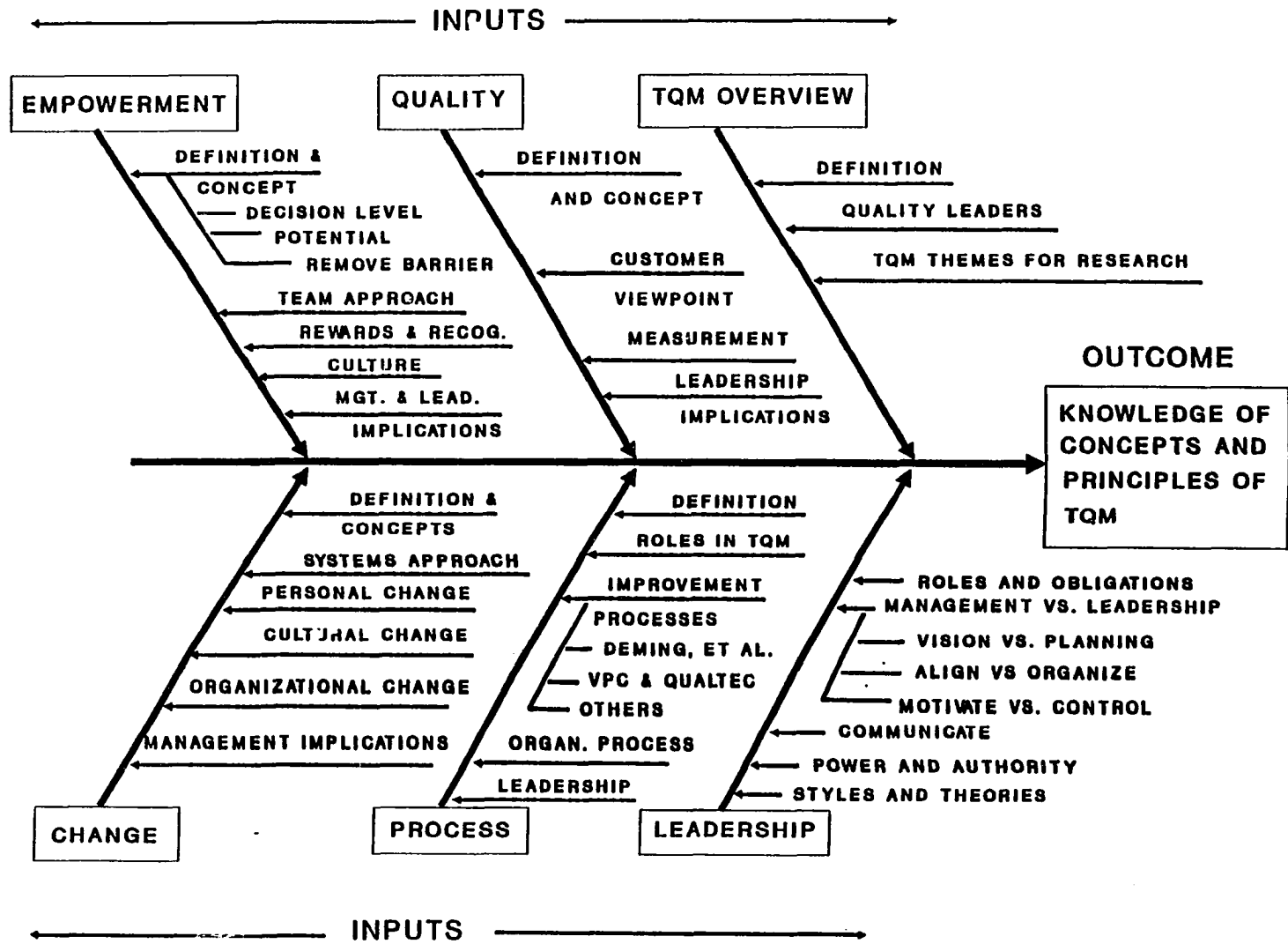
Each of these, and an additional category of the concept of change, will be researched within the dissertation. The research will be taken from the viewpoint of the leadership issue.

Table 2. Core TQM Principles, Categorized for Research Purposes.

<u>Core Principle</u>	<u>Research Category</u>
1. Leadership	Leadership
2. Customer driven	Quality
3. Process focused	Improvement of Process
4. Continuous improvement	Improvement of Process
5. Teamwork	Empowerment of employees
6. Empowerment of employees	Empowerment of Employees
7. Structured, disciplined system	Improvement of Process
8. Training	Empowerment and Leadership
9. Communications	Leadership

Figure three represents an overview of the TQM aspects of the research, based on these categories. Each of the five categories represents an individual chapter in part I of this dissertation.

Fig. 3. The Literature Research



### CHAPTER 3

#### LEADERSHIP

##### SENIOR MANAGEMENT'S ROLES AND OBLIGATIONS

Deming states that the role of senior management is to see that the organization achieves its purpose by improving quality, productivity and competitive position and by adding to their peoples' standard of living. He stated:

"the aim of leadership should be to improve the performance of man and machine, to improve quality, to increase output and simultaneously to bring pride of workmanship to people (Deming 1986, 248)".

The literature consistently reports that top management has the obligation to insure survival of their organization, which can best be achieved by the continuous improvement of the organization's processes and quality of its outputs. The earlier quote by Tenner and DeToro regarding Deming's philosophy explains why this obligation must belong to senior management, and is repeated here:

"Quality is primarily the result of senior management actions and decisions and not the result of actions taken by workers. Deming stresses that it is the 'system' of work that determines how work is performed and only managers can create the system. Only managers can allocate resources, provide training to workers, select the equipment and tools that workers use, and provide the plant and the environment necessary to achieve quality. Only senior managers determine the market in which the firm will participate and what products or services will be sold (Tenner and DeToro 1992, 18-19)."

Rosabeth Moss Kanter (1983, 210-212) compares the role of the senior manager to that of corporate entrepreneur and change master. They are people who test limits and create new possibilities by pushing and directing the innovation -- to motivate change by redirecting the organization's energies. John Betti (1985, 2), a former under-secretary of the U.S. Navy, stated that top leadership must be: (1) convinced that change is necessary, (2) dedicated to wanting change and (3) let their actions and words reflect their dedication.

### **MANAGEMENT VS. LEADERSHIP**

#### **Overview**

In order to satisfy their roles and obligations, managers must exhibit both leadership and management behavior. These terms are often used in common speech as synonyms, however, they are two distinct and complementary systems of action, each with their own functions and characteristic activities (Kotter 1990, 103). Savage (1992, 195) observes that:

"Leadership provides vision, values and purposes. The leader presents, through actions, appearance and articulated values, a model others will want to emulate. It is personal, and must be in order to affect the belief systems of other human beings, to appeal to a person's emotion. The successful leader is constantly entering into dialogues on the vision the organization seeks to follow. He uses this approach to draw the belief and involvement of others into the vision. Managers, on the other hand, turn these beliefs into actions (Savage 1992, 195)."

Thus, managers work to ensure plan accomplishment and problem solving, while leaders articulate visions, motivate and inspire (Kotter 1990, 104).

The practice of management is based on the work functions. Managers plan the execution of work to be done; organize and provide the assets necessary, including manpower staff, to accomplish the plan; provide direction to employees to accomplish the work; coordinate the work of the people and the organizational elements and control the work being accomplished (Tenner and DeToro 1992, 161). These functions (underlined above) are well-described in the literature and will not be expanded.

Kotter (1990, 104) reports that the practice of management is a necessary requirement for the operation of the large and complex organizations that have come into being in the twentieth century. Without good management, these complex enterprises tend to become chaotic, and the functions of management are needed to provide the degree of order and consistency necessary for quality and profitability. This can be summarized by observing that management is about coping with complexity.

There is good agreement in the literature that leadership is about coping with change. It involves developing a vision, aligning or motivating people to work toward this vision and providing continuous reinforcement to accomplish the vision

(Kotter, Joy, Tenner and DeToro, Savage). Kotter (1988 and 1990) summarizes leadership as consisting of the following steps:

1. Establishing a vision of the organization as it will appear in the future. Visions set the direction for the fundamental organizational changes.
2. Developing strategies to accomplish the vision.
3. Creating networks of people and relationships that are necessary to accomplish the vision.
4. Aligning the networks of people to accomplish the vision and the associated strategies.
5. Continuously motivating people to expend the energies necessary to accomplish the vision.

The first two steps are involved with creating an agenda for change. The steps include developing a vision of what can and should exist in the future, taking into account the legitimate long-term interests of everyone involved. A strategy to achieve this vision is developed, accounting for all of the relevant organizational and environmental forces which impact on the vision (Kotter 1988, 20).

The third step consists of building a strong implementation network, which includes developing supportive relationships with the key sources of power needed to implement the strategy. These relationships must be strong enough to elicit cooperation, compliance and teamwork. Usually, a core group of people, committed and highly motivated to accomplish the vision, must be established. This core, in turn, acts as leaders, in their own right (Kotter

1988, 20). The forth and fifth steps are addressed below in the contrasts between leadership and management actions.

Both management and leadership actions are necessary to accomplish the changes necessary to realize the vision. These actions are indicated below (Kotter 1990, 104-110).

#### **Setting Direction vs. Planning and Budgeting**

The leadership function is to produce change by setting the direction and vision of what is to be accomplished. This is an inductive process, based on broad understandings of the relations, environment and interest of the customers, stockholders and employees of the organization. Visioning is not a mystical process, but is based on gathering and analyzing information and the willingness to take risks (Kotter 1990, 105). The ultimate test of the leader or change agent is their ability to envision a new reality and translate it into concrete terms (Kanter 1983, 278).

Leadership involves deciding "what to do", while management involves "how to do" (Tenner and DeToro 1992, 160). This difference supports the distinction between developing visions and plans. The purpose of the leader's vision is to decide what to do (ie., a direction), while the manager's plan decides how to do what must be done. The plans should have operational, tactical and long-term elements and address both efforts to be accomplished and the necessary financial, and other assets needed to complete the undertaking (Kotter 1990, 105).

Vision and the long-range planning elements are not the same. They complement each other, with the direction setting activities of the plan serving as a reality check on the vision and the vision and associated strategies providing the constraints and guidelines for planning (Kotter 1990, 105).

#### **Aligning People vs. Organizing and Staffing**

A major characteristic of large organizations is the interdependence of people -- few have complete or even partial autonomy. Work processes, technology, management systems and organizational hierarchy all link the people together and the role of the manager is to organize or arrange the people into "human systems". The human systems must be supportive and consistent with the work processes, technology, etc. and in such a way that their efforts accomplish, in a coordinated and efficient manner, the work to be done. Likewise, the manager is responsible for staffing the human systems with suitably trained people who have been adequately instructed or directed in their duties (Kotter 1990, 105).

Leadership is needed to align these people (human systems) into working toward the vision. This represents a communication challenge. Leadership must involve, and obtain the support of everyone who can help implement the vision and strategies or who can block implementation. They must understand and accept the challenge and work towards implementing the vision (Kotter 1990, 107).

### **Motivating People vs. Controlling and Problem Solving**

Leadership is involved with motivating people, which is related to energizing. Motivated people generate the high energy behavior that is necessary to overcome the inevitable barriers to change (Kotter 1990, 107). Leaders must:

- (1) articulate the organization's vision in a manner that shows its values to, and is accepted, by the stakeholders;
- (2) involve others in deciding how to achieve the vision, especially for their part of the effort;
- (3) support their employees' efforts in achieving the vision by providing assets, coaching, feedback and being a role model;
- (4) recognize and reward success and
- (5) motivate others to become leaders (Kotter 1990, 109).

Managers, as implementors of the leaders' visions must solve the problems hindering change. They must follow-up to insure that the necessary actions are being taken and anticipated results achieved (basic control model). Managers stress with compliance with directions and process procedures while leaders motivate to achieve commitment -- minimizing the need for control.

### **Leadership and Management -- A Summary**

There is a good indication within the literature that the roles of managers and leaders include elements of both the management and leadership functions. This is illustrated by Tenner and DeToro, who describe the roles and associated functions as two circles in a Venn diagram, with a shared space. The size of the shared space depends on the manager's position within the organizational hierarchy. They also

provide a leadership framework for senior management, shown in figure four, which indicates that the four topics (e.g., developing a foundation, broad and specific intent and implementation) must be addressed to adequately arrive at a vision. As shown on figure four, each of these have both

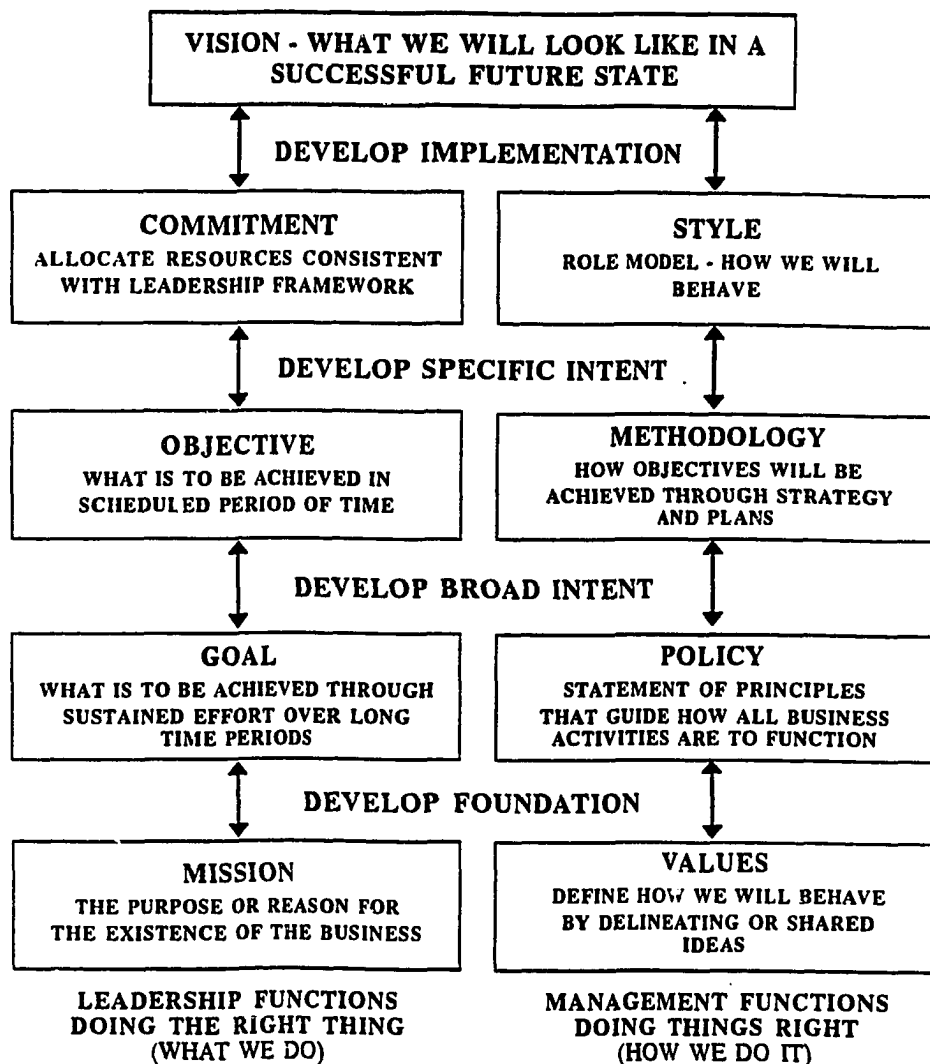


Fig. 4. Leadership Framework (Tenner and DeToro 1992, 160).

leadership and management elements. For example, in order to develop the foundation the leadership function of determining "what to do" (shown on the left side of the figure) requires that the mission or basic purpose of the business must be developed. From the "how to do" management viewpoint, the values (how we will behave) are be defined (Tenner and DeToro 1992, 160-161). Similar observations may be made about each of the other elements of the leadership framework.

All positions within the supervisory hierarchy of the organization have both management and leadership functions. As illustrated by figure five, the degree of each depends on the hierarchial level.

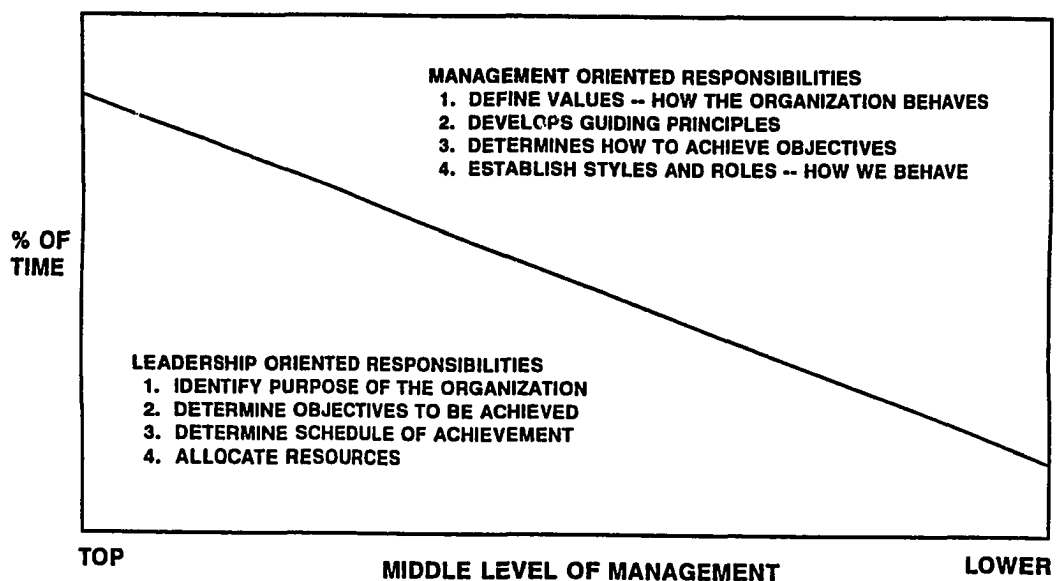


Fig. 5. Leadership and Management Roles within the Organizational Hierarchy.

As discussed above, one key element of leadership is coaching or employee support so that they can realize the vision to which they have been aligned. As illustrated by figure five, lower level managers frequently accomplish much of this effort. Further, an effective senior leader converts others, frequently more junior, to their vision. Thus, they become leaders with a complimentary vision. This implies that each manager or leader has elements of both roles. The higher in the hierarchy, the greater the degree of leadership, while lower levels have a greater degree of management roles.

#### CREATING THE SHARED VISION

Senge (1990, ch. 11) provides insight into the Kotter model discussed above for the development of and acceptance of the organization's vision. He indicates that visions are often developed by a few top leaders, frequently with the help of a consultant, and then imposed on the organization. This results in, at best, compliance -- not commitment (Senge 1990, 206). He states that commitment is only possible when the vision becomes shared. The shared vision " ... creates a sense of commonality [of purpose] that permeates the organization and gives coherence to diverse activities (ibid)". Bolman and Deal (1991, 326) indicated that commitment and the resultant motivation is important when successful performance depends on the efforts of the

individuals and the degree of their motivations or commitment is problematic.

The shared vision is analogous to alignment, which is the end result of Kotter's first four steps cited earlier: (1) establishing the vision, (2) developing implementation strategies, (3) creating networks and (4) aligning the people in the network to accomplish the vision. Senge helps operationalize this process. He indicates that the traditional notion that visions are developed by the top leaders' personal insight or through an institutionalized planning process and then announced from "on high" must be given up (Senge 1990, 213). Rather, he proposed that the vision should be based on the use of "reflection and inquiry" which takes into consideration, through appropriate dialogue, the opinions, personal visions and considerations of all of the stakeholders in order to arrive at a "harmonizing diversity" (Senge 1990, 228). The organization's vision should be built on the personal visions of the people.

Senge does not relieve top management of the responsibility for the organization's vision. Rather, leaders must recognize that their personal visions do not become **automatically** the organization's vision. They must be willing to place themselves in the vulnerable position of sharing the vision with their people in a manner of asking, "Will you follow me (Senge 1990, 215)?"

Senge indicates that management must allow visions to "bubble up" through interaction at many levels. He states that the process whereby the vision becomes shared is more important than the origin of the vision. He does not specify how the initial vision statement is developed, suggesting that it can be done through the personal vision of the top leader(s) or through an institutionalized planning process. The important issue is that it is recognized as the initial step in building the shared vision. He specifies that the process of building the shared vision is not glamorous. It involves talking about the vision as part of day-to-day life within the organization. Day-to-day issues and problems are resolved with the vision in mind (ibid). In effect, the leader is required to visibly exhibit actions which support the vision (walk-his-talk).

The process of building a shared vision is based on starting to talk about the vision and beginning to pursue it. From this dialogue and action a circular process begins. The vision becomes clearer and better defined in ways that take into consideration the personal visions of the individuals. This sharing results in individual and collective enthusiasm which, in turn, causes greater dialogue and use, thus the cycle is repeated, continuing to build the shared vision and creating greater enthusiasm and implementation.

The shared vision leads to commitment and what Senge calls enrolling into the vision. He differentiates this from

"buying into" the vision as the result of management selling. The selling has negative connotations, including manipulation, while the enrolling implies acceptance because it is something they believe in and want. Senge (1990, 219-220) provides a spectrum of seven possible attitudes toward the vision which may be exhibited by the employees. They include:

1. Commitment: They want it and are willing to make it happen.
2. Enrollment: They want it and are willing to do what is necessary to accomplish it within the "spirit of the law".
3. Genuine Compliance: Sees the benefits of the vision. Does everything expected and more within the "letter of the law".
4. Formal Compliance: On the whole, sees the benefits and does what is expected, but nothing more.
5. Grudging Compliance: Does not see the benefit of the vision, but goes along because he "has to". Does what is expected but lets it be known that he's not on board.
6. Non-Compliance: Does not see benefit of the vision and will not do what is expected.
7. Apathy: Does not care, not interested.

Another portion of the spectrum of attitudes not addressed by Senge are those who are against the change and actively work against or attack the vision. This end of the spectrum is reported in chapter seven of this dissertation and deals with the resistance to change and associated defenses discussed by Kanter (1985) and Argyris (1985). This additional spectrum is dependent on the belief that the vision is not correct and consists of various levels of resistance.

Senge (1990, 223) recognizes that sometimes managers need compliance. They cannot wait for the development of the ideal situation of enrollment or commitment, however, they need genuine or formal compliance to get started. This is seen by the researcher as the condition which exists in the initial stages of TQM implementation within most organizations. The change agent role of the top leaders discussed later in this dissertation necessitates instigating changes which are unlikely, according to Kanter and Argyris, to be accepted without some degree of resistance and change. Senge (1990, 223) states that, in this situation, the top leaders must level with the employees. They must tell them the way it is, what must be done and the need for their support. They need to answer three critical questions: "What?", "Why?" and "How?". This removes hypocrisy and may lead, over time, to enrollment.

Argyris (1985, 266-269) suggests seven actions which managers should take when dealing with situations such as these. They are reported in chapter seven. It is noted by the researcher that this appeal for compliance, if coupled with the earlier reported circular process of refinement and building of shared vision and enthusiasm, becomes a method of initiating the process. As compliance to the vision spreads it is reinforced, with increasing clarity, enthusiasm, communication and commitment. As people talk, the vision becomes clearer and its use and successes build reinforcement,

thus building more enthusiasm (Senge 1990, 227). The important issue is that the process of reflection and inquiry, to build a shared vision, is being followed.

Senge (1990, 228-230) provides four reasons why excellent visions do not become shared and die. These are seen as important to this research, since this formative evaluation is focused on revitalizing a waning TQM program. The reasons visions do not become shared or wane are:

1. People see the vision as "cast in concrete". The key to the reflection and inquiry process is that individuals are able to influence the nature of the vision and make it their own.
2. People become discouraged by the apparent difficulty in bring the vision into reality.
3. People have limitation on time and energy and get overwhelmed by the demands of the day-to-day work and lose their focus on the vision.
4. People forget their connection to each other in the sharing of the vision. The connections are seen as fragile and are undermined when people lose respect for each other or believe that others are not committed to the vision.

To summarize, the vision must become a living force within the organization, which can only occur when people truly believe that they can shape the vision and the future. Thus, it is the leadership's responsibility, when following the Kotter model, to accomplish their alignment by obtaining the commitment or enrollment of those within the network. This leads to a level of empowerment and participation that is not part of the top-down dictated vision - compliance process.

## LEADERSHIP AND COMMUNICATIONS

Communications is an inherent element of the leadership process. It involves translating the leader's organizational vision to those being led in such a manner that they accept it as their own -- it becomes shared in the sense previously discussed by Senge. "Success requires the capacity to relate [communicate] a compelling image of a desired state of affairs -- the kind of image that induces enthusiasm and commitment in others (Bennis and Nanus 1985, 33)". The leader defines reality to the group and the organization depends on this shared meaning and interpretation of reality in order to facilitate coordinated action. It is the leader's pivotal responsibility to communicate and interpret the organization's blueprint (vision) so that actions of the employees may be aligned to accomplish this vision (Bennis and Nanus 1985, 37-40).

In the earlier definition of leadership (Savage 1992, 195), it was indicated that the leader "presents through actions, appearance and articulated values, a model others will want to emulate" -- one that will affect others' belief systems and appeal to their emotion. This suggests that communications are not only verbal and written articulation, but also include providing a role model. Through actions and other visible means, the employees see the leader "walking his talk".

Covey (1991, 113) compares communications to an iceberg, in which the small, visible part, is the skill level of the communicator and the great mass of the iceberg, unseen beneath the surface, is the deeper, silent level reflecting their attitude and motivation -- those that are observed in the form of the communicator's actions. Actions truly speak louder than words!

### POWER AND AUTHORITY

Leaders must have power in order to lead (Bennis and Nanus 1985, 15). Power, in this context, is the ability to get things done, in the way that the leaders want them done (Ivancevich and Matteson 1987, 348) or to initiate and sustain actions which translate intentions into reality (Bennis and Nanus 1985, 15).

Everyone, managers and non-managers, use power as a normal part of their accomplishments, however, managers have the legal right, called authority, to exercise power within the organization. In a hierarchial organization, a person in higher authority is said to have legal authority to direct or exercise power over a subordinate's actions (Ivancevich and Matteson 1987, 347).

Power is one of the most familiar forces in the universe. It is the push and pull that everyone experiences and exercises, from birth to death. It is also one of the most

necessary elements for human progress (Bennis and Nanus 1985, 16), for, without the exercise of power, visions would not be realized and there would be no planned changes.

The literature provides examples of the leader's authority. Table three shows a number of "power rights" which have been identified as being invested in the organization's leaders (Deming, Tenner and DeToro, Kanter, Bennis and Nanus, Ivancevich and Matteson).

Table 3. Leadership Authority.

1. Establish the organization's visions and goals.
2. Create the organization's systems
3. Allocate resources, including funds, material, space, time and manpower.
4. Disseminate information.
5. Provide training and employee development.
6. Select equipment, tools and work processes.
7. Provide the work environment.
8. Decide on products and services to be provided.
9. Decide on the markets in which to operate.
10. Provide recognition and reward for positive work performance.
11. Provide punishment or coercion for negative work performance.
12. Delegate authority or formally back subordinates by endorsement, approval and establishing legitimacy.

Power is an emotion-laden term, especially in the Western culture which emphasizes individuality and equality (Mondy, Sharplin and Premeaux 1991, 422), and often brings up

" ... the connotation of avarice, insensitivity, cruelty and corruption which has led to a disregard and disintegration of power across the board. It is often the most distrusted, as well as the most necessary of elements for human progress (Bennis and Nanus 1985, 16)."

Kanter (1983, 47-48) indicates that the current changing corporate environment has resulted in a decline of management authority. The trend to empower employees has resulted in a reduction of the distinction between manager and worker, which in turn, has resulted in managers no longer having unquestionable authority to dictate actions -- they must negotiate and persuade, rather than to order. This is seen, by her, as unfortunate, for "what it takes to get the innovating organization up and running is essentially the same two things all vehicles need: a person in the driver's seat and a source of power (Kanter 1983, 209)". It is causing " ... our nation to suffer from a serious power blockage". Power is the reciprocal of leadership -- one must exist for the other to exist -- thus, the power blockage results in a leadership crisis (Bennis and Nanus 1985, 15-17). This not only affects the country, but also many organizations which are seen "to be over-managed and under-led (Bennis and Nanus 1985, 21)".

#### **OBSERVATIONS CONCERNING LEADERSHIP AND POWER**

It seems to the researcher that the concepts of TQM, which emphasize participation and empowerment, have taken into consideration the power blockage and leadership crisis referred to above. Many of the above

authors seem to be putting too much emphasis on the ability of senior managers to dictate actions to obtain the desired results, which as was shown above, leads, at best, to compliance. Senge's comments concerning commitment and enrollment are seen as more current and applicable to TQM implementation. As will be shown below, there are numerous leadership styles which senior managers may exercise, other than autocratic dictation of actions -- however, the leader and those led, must be prepared to accept these styles. The below discussion on Tannenbaum and Schmidt's Leadership Continuum provides insight into the conditions which must exist in order for those led to accept more participative styles.

The researcher speculates that an organization's movement, from an authoritarian to an empowerment power base, coupled with inadequate leadership and employee preparation (training and experience) in the new leadership/participative style, may be a prime cause for problems of implementing and sustaining TQM. This issue is believed to be central to this dissertation and will be investigated during the case study. Of special interest, will be the training received and observed abilities exercised by the individual senior leaders in their attempts to align their employees to adopt the TQM principles as part of their culture.

## **STYLES AND THEORIES OF LEADERSHIP**

The literature abounds with different theories of leadership. Mondy, Sharplin and Premeaux (1991, 330-348) provide an excellent overview of these different styles. Four of these theories are believed to apply to this research: (1) the type of worker, (2) the Managerial Grid, (3) Tannenbaum and Schmid's Leadership Continuum and (4) Hersey and Blanchard's Situational Leadership.

### **The Type of Worker**

Mondy, Sharplin and Premeaux report that McGregor has shown that workers fall along a continuum between two conflicting theories, which he calls X and Y. Theory X is based on the assumption that people dislike work and responsibility, lack ambition and creative ability, and mainly want security and money. Employees falling into this category must be coerced, controlled and generally threatened in order to make them work. Theory Y is based on the assumption that physical and mental effort is natural, that people can be self-directed if achievement brings rewards, and that most can exercise imagination, ingenuity, and creativity and learn to seek responsibility. These employees do not require coercion or excessive control (Mondy, Sharplin and Premeaux 1991, 293 and McGregor 1960). Most

employees fall somewhere between these two extremes. The leadership style to be used falls into the categories shown on Table four (Mondy, Sharplin and Mondy 1991, table 11-1): The participative and democratic styles, in which the employee is empowered to be a part of the decision process, follows the concepts of TQM.

Table 4. Leadership Styles Related to Type of Worker.

<u>Leadership Style</u>	<u>Type of Worker</u>
1. Autocratic style in which workers are told what to do.	Theory X Workers
2. Participative style in which leaders allow and expect worker participation.	Theory Y Workers
3. Democratic style in which the leader seeks majority rule from workers.	Theory Y Workers
4. Laissez-Faire style in which leaders let group members make all decisions.	Neither. Only applicable when workers are expert-specialists

### **Management Grid**

Robert Blake and Jane Mouton have developed a two-dimensional matrix that show leadership concern for people on the vertical axis and concern for production on the horizontal axis. They show that there are five management styles that result from the degree of concern expressed for people and production. The most effective style is when leaders express a high concern for both people and production. They call this

team membership and results when "the manager seeks high output through committed people, which is achieved through mutual trust, respect and a realization of their interdependence (Mondy, Sharplin and Premeaux 1991, 338)."

This management style closely reflects the style recommended in the TQM literature.

#### **Tannenbaum and Schmidt's Leadership Continuum**

This theory is based on the belief that a continuum exists between boss-centered leadership (autocratic) and subordinate-centered leadership. Table five reflects this

Table 5. Continuum of Leadership Behavior (Mondy, Sharplin and Premeaux 1991, fig. 11-3).

1. Leader makes decisions and announces it.
2. Leader "sells" decision.
3. Leader presents ideas and invites questions.
4. Leader presents tentative decisions, subject to change.
5. Leader defines limits; asks group to make decision.
6. Leader permits subordinates to function within limits defined by superior.

continuum, starting at the boss-centered leadership behavior and continuing to the subordinate-centered leadership behavior.

The appropriate style is based on the characteristics of the leader and employee and the requirements of the situation. The leaders' and employees' background, education, experience, values, knowledge, objectives and expectations and the situation requirements, such as size, complexity, objectives, nature, climate of the

organization, and time pressure dictate the leadership style (Mondy, Sharplin and Premeaux 1991, 341-342).

According to Tannenbaum and Schmidt, the leader may engage in a more participative style when subordinates (Mondy, Sharplin and Premeaux 1991, 342):

1. Seek independence and freedom of action.
2. Are well-educated and experienced in performing the jobs.
3. Seek responsibility for decision making.
4. Expect a participative style of leadership.
5. Understand and are committed to the objectives of the organization.

This theory is consistent with the participative, empowerment leadership style proposed by TQM. It also helps explain why the literature consistently advocates emphasizing employee and leader training in their jobs and the concepts and tools of TQM and why it takes so long to implement TQM. Significant learning must occur and the organization's system of values, beliefs and habits (culture) associated with leadership expectations must evolve to change from a boss-centered to a subordinate-centered leadership style.

#### **Hersey and Blanchard's Situational Leadership Theory**

This theory indicates that the leadership style depends on the degree of readiness of the followers to assume greater responsibility and the nature of their work. It is very much like the Managerial Grid reported earlier, except that Hersey and Blanchard argue that the degree of employee concern must be tempered by the leader's perception of their level of readiness. They define readiness as the employees' desire to

achieve at a high level; their willingness and ability to accept responsibilities; and the education and experience levels that they have relevant to the particular task (Mondy, Sharplin and Premeaux 1991, 345-346).

This discussion also supports the earlier observations regarding the need for employee training and cultural changes necessary to implement TQM. The preparation of employees to accept the responsibilities for high achievement, if it is not currently part of their culture, is time-consuming and a significant leadership challenge.

### **U. S. Navy Leadership Style**

During interviews with Captain Bill Pitt, USN RET. and Captain Garland Skinner, USN RET., insight was provided into the leadership style currently employed within the United States Navy. Both captains have been Commanding Officers (COs) of predominately civilian engineering organizations similar to NSCL. They both were heavily involved with TQL/TQM while Commanding Officer and have continued to study and be involved with TQL. Captain Skinner is currently the senior instructor and senior civilian at the Navy's east coast TQL school at Little Creek, Virginia and Captain Pitt was a previous CO of NSCL and currently works as an engineering manager for one of the private companies which provide support to the Navy in the Tidewater, Virginia area.

Both Skinner and Pitt stated that the Navy's leadership style is based on the fact that a Commanding Officer is held absolutely accountable for his/her command's actions. With this accountability comes almost complete discretion or use of personal prerogatives as how he/she discharges this responsibility. From this accountability and associated prerogatives, it is natural that commanding officers are more comfortable making their own decisions -- they are personally accountable for all decisions and actions made by their subordinates which occur under their leadership.

Captain Skinner indicated that it was his experience that most senior officers were well able to understand and accept, intellectually, the concepts of TQM. However, most had real reservations as to their own and the Navy's ability to implement them. Both officers cited the tradition or culture of the Navy and its emphasis on an authoritarian style, which is contrary to the employee empowerment concepts of TQM. They noted that the COs have command for relatively short periods of time (2-3 years) which makes it very difficult for them to be concerned with long-range planning. Captain Pitt made the point that this frequent rotation of COs was, in part, to insure that they maintained their loyalty to the Navy at large, vice to their current command. Thus, alignments as discussed by Deming and Senge, are to the Navy and not to their own command.

Both officers made an issue of the current officer's promotion system and the fact that it does not support the concepts of TQL. The promotion system emphasizes the **difference** that the officer makes while in his current job. This causes the CO to place priority and assets into short-term issues, those that will make him and his command look good in the near-term. Thus, it makes it very difficult to establish a long-term policy planning program as required by TQM, especially if short-term investment is necessary to realize a long-term return. Likewise, the commanding officer cannot make a difference, without making changes, thus the system abounds with examples of the CO changing the policies of the previous CO. A senior civilian and principle TQM advocate at another Navy command expressed frustration that his new CO, after his organization had spent almost three years of TQM implementation using the VPC methodology under the previous CO, had unilaterally decided to go with another method.

It is normally stated that the motivating factor for change is that the CO must be comfortable with his command's policies if he is to be held totally accountable for them. However, in many situations it can be assumed that one of the motivating factors for change is that the CO desires to make a difference. In any case, the constant changes raise havoc with Deming's first principle -- constancy of purpose. Until the Navy's culture and promotion process changes, it will be

very difficult for the typical Navy Officer to fully accept and practice the long-term, constancy of purpose aspects required by TQM/TQL process.

### LEADERSHIP AND REFRAMING

Bolman and Deal (1991, 4) have proposed that leaders, to be effective change agents, must look at problems in a new light and attack challenges differently from normal. This is accomplished through a process which they call "reframing". This process allows senior managers to generate creative responses to the broad range of problems that they face.

They state that each decision-maker and change agent has a set of assumptions about how organizations work and what actions, or change methods, will make them work better. These assumptions represent frames or ways of looking at the organization and they are useful. They allow the manager to filter out conditions that are not important, however, they can also filter out important issues when conditions are not consistent with their framework or assumptions. Thus, the frame or assumptions can keep the change agent from focusing on both unimportant and important issues. These assumptions or frames made by managers fall into one of the following schools of thought (Bolman and Deal 1991, 9):

1. Rational System and Structural Theorist -- which emphasize organizational goals, roles and technology and look for ways to develop instructions that best fit the purposes of the organization and environmental demands.

2. Human Resource Theorist -- which focus on better ways to develop the peoples' skills and values, on one hand, and their formal roles and relationships on the other hand.

3. Political Theorist -- who see power, conflict and distribution of scarce resources as the central issue. They argue that organizations are like jungles, in which cooperation is achieved by managers who best understand the use of power, coalition, bargaining and conflict.

4. Symbolic Theorist -- who focus on problems of meaning and the underling culture and values of the organization.

Bolman and Deal (1991, 4) have observed that " ... most managers, when they don't know what to do, simply do more of what they do know". Thus, most mangers continue to apply their one frame of reference, no matter what the conditions.

Their belief is that each of these four assumptions or frames represents a different slice in the life of the organization and that all of these lives/slices are always present to some degree. It is important for the manager to have a broader perspective than a single frame, for "the inability to consider multiple perspectives continually undermines efforts to manage or change organizations (Bolman and Deal 1991, 309)".

Bolman and Deal (1991, 311-313), referring to the works of Kotter and Kanter, addressed elsewhere in this dissertation, indicate that they are operating in multiple frames. Kotter is said to be working in three frames: structural, human resources and political. These are analogous to Kotter's emphasis on top leadership establishing agendas and goals; developing relationships and alignment; and

establishing networks of supportive people and organizations.

Kanter is operating in all four frames when she recognizes the segmentation of the organization (structural or rational system frame), empowerment (human resources frame), management power (political frame) and culture (symbolic frame). The issues discussed by Kotter and Kanter are all germane to implementing TQM, thus, the change agent/leader must consider changes or reframing from all four perspectives.

Bolman and Deal have listed a number of organizational processes common to top management and the activities or interpretations which are made from the four frames. These are reproduced in table six. Conflicts occur when participants view processes from different perspectives or frames. For example, in the areas of meeting, if one participant views the process from a structural frame, they consider it an opportunity or formal occasion for making decisions while another participant, working from a political frame, views it as an occasion to compete and win points. From the viewpoint of the human resource frame, the meeting is an opportunity for involvement and sharing of feelings and information, and from the symbolic frame it is seen as an occasion to transform the culture. The last two frames discussed are especially important to the empowerment and cultural change elements of TQM when participants are asked to become involved and adopt a new viewpoint. Reframing is

Table 6. Four Interpretations of Organizational Processes (Bolman and Deal 1991, 323)

Process	Structural Frame	Human Resource Frame	Political Frame	Symbolic Frame
Planning	Strategies to set objectives and coordinate resources	Gathering to promote participation	Arenas to air conflict and realign power	Ritual to signal responsibility, produce symbols and negotiate meanings
Decision making	Rational sequence to produce right decisions	Open process to produce commitment	Opportunity to gain or exercise power	Ritual to provide comfort & support until decisions happens
Reorganizing	Realign roles & responsibilities to fit tasks and environment	Maintain a balance between human needs & formal roles	Redistribute power & form new coalitions	Maintain an image of accountability & responsiveness; negotiate new social order
Evaluating	Way to distribute rewards or penalties & control performance	Process for helping individuals improve	Opportunity to exercise power	Occasion to play roles in shared ritual
Approaching conflict	Maintain organizational goals by having authorities resolve conflict	Develop relationships by having individual confront conflict	Develop power by bargaining, forcing, or manipulating others to win	Develop shared values and use conflict to negotiate meaning
Goal setting	Keep organization headed in the right direction	Keep people involved & communications open	Provide opportunity for individuals and groups to make interest known	Develop symbols and shared values
Communication	Transmit facts and information	Exchange information, needs and feelings	Vehicles for influencing or manipulating others	Telling stories
Meetings	Formal occasions for making decisions	Informal occasions for involvement, sharing feelings	Competitive occasions to win points	Sacred occasions to celebrate and transform the culture
Motivation	Economic incentives	Growth and self-actualization	Coercion, manipulation, & seduction	Symbols and celebrations

necessary if meetings are normally considered from the structural framework.

Bolman and Deal (1991, 332-333) have adapted, in table seven, the concepts of frames to the characteristics of

Table 7. Frames and Characteristics of High-Performing Companies (Bolman and Deal 1991, 333)

Characteristics	Related Frames
1. Bias for Action	Structural, symbolic
2. Close to the Customer	Human resource
3. Autonomy and entrepreneurship	Human resources, structural
4. Productivity through people	Human resources, symbolic
5. Hands-on, value driven	Symbolic
6. Stick to the knitting	Structural, human resource, symbolic
7. Simple form, lean staff	Structural
8. Simultaneous loose/tight properties	Structural, symbolic

high-performing companies as identified by Peters and Waterman (1985). These characteristics are consistent with the concepts of TQM and often more than one frame is applicable.

Kotter has been involved in identifying the characteristics of highly successful managers. These, and the relevant frames used by the managers to address the challenges which frequently occur when making organizational change, are shown in table eight.

Table 8. Frames Relevant to Challenges in General Manager's Jobs (Bolman and Deal, 1991, 337)

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Set goals and policies under conditions of uncertainty	Structural and symbolic
Achieve "delicate balance" in allocating scarce resources across different businesses or functions	Structural and political
Keep on top of a large, complex set of activities	Structural and human resources
Get support from bosses	Human resources and political
Get support from corporate staff and other constituents	Human resources and political
Motivate, coordinate, and control large, diverse group of subordinates.	Structural and human resources

It is seen that high achieving organizations and managers view situations through multiple frames. However, Bolman and Deal (1991, 332) state that many managers see only through one or two frames and reject all others. These managers see their preferred frames as useful, and the others as superficial, unrealistic, or repellent. Thus, when conditions satisfy the predictions inherent to their frame, they are happy, but when their frame is challenged they deny or attack it. This has application to the defenses that organizations and people set up when confronted by change as defined by Argyris and others. These defenses are discussed in chapter seven below.

Table nine is a suggested application of the concepts of framing and reframing to TQM and is based on the work by

Table 9. Reframing to Implement TQM.

<u>Frame</u>	<u>Impact of Change and Associated Issues</u>
<b><u>Structural</u></b>	-- Changes alter the clarity and stability of roles and relationships, create confusion and chaos. Framing issues and detail changes include: <ol style="list-style-type: none"><li>(1) Policy planning and deployment.</li><li>(2) Optimization of processes, from a quality viewpoint.</li><li>(3) Changing the organization to become more supportive of TQM.</li><li>(4) Redefining hierarchial roles.</li><li>(5) Redefining relationships between the organization and its customers, sponsors, providers and other stakeholders.</li></ol>
<b><u>Human Relations</u></b>	-- Change causes people to feel incomplete, needy and powerless. Developing new skills, creating opportunities for involvement, and providing psychological support are essential. Framing issues include: <ol style="list-style-type: none"><li>(1) Improving employee work skills, allocating better task variety and keeping abreast to changes.</li><li>(2) Preparing everyone for the new management and leadership styles associated with TQM.</li><li>(3) Changing attitudes at all levels to support participation and empowerment.</li><li>(4) Improving team work and group dynamics within the organization.</li><li>(5) Redefining hierarchial roles.</li></ol>
<b><u>Political</u></b>	-- Change generates conflict and creates winners and losers. Avoiding or smoothing over those issues drives conflict underground. Managing change effectively requires the creation of arenas where issues can be negotiated. Framing issues include: <ol style="list-style-type: none"><li>(1) Redefining hierarchial roles.</li><li>(2) Changing emphasis on allocation of resources to recognize longer time frames.</li><li>(3) Emphasizing team-work between and within hierarchial levels.</li><li>(4) Emphasizing empowerment at all levels.</li><li>(5) Developing alignment of vision.</li><li>(6) Redefining relationships between the organization and its customers and providers.</li><li>(7) Developing methods to resolve conflicts.</li></ol>
<b><u>Symbolic</u></b>	-- Changes create loss of meaning and purpose. People form attachments to symbols and symbolic activities. When the attachments are severed, they experience difficulty in letting go. Existential wounds require symbolic healing. Framing issues include: <ol style="list-style-type: none"><li>(1) Building a cohesive and common purpose in the face of cultural differences.</li><li>(2) Redefining and changing the culture to be supportive of all the concepts of TQM.</li><li>(3) Making changes in a manner to minimize defenses.</li><li>(4) Moving with compassion and at a pace to allow grieving as old comfortable patterns are broken.</li></ol>

Bolman and Deal (1991, table 8 and exhibit 6) and many of the findings within this dissertation. The impact of the change, within each frame, has been identified and the associated reframing actions and issues suggested. It is noted that many of the issues appear under more than one frame.

In summary, for different times and different situations, one perspective may be more important than others. Choosing the appropriate frame(s) requires understanding and a combination of analysis, intuition and artistry that will come about through application of the concepts. The senior managers must understand and work with the fact that most events or processes serve multiple purposes and that different participants are often operating on different frames. In order to be most effective, they must reframe themselves and the other participants into the most productive frames associated with the specific situations.

#### **CONCLUDING OBSERVATIONS REGARDING LEADERSHIP**

The above discussion makes it clear that senior management is responsible for improving their organization's quality, productivity and competitive position and increasing their employees' standard of living. This is based on the fact that these leaders own the assets, information and rewards system and have the authority to allocate them, thus,

they are able to control the quality and productivity of their organization.

The discussion shows that senior management must exhibit both leadership and management behavior. Leadership consisting of developing visions, establishing and aligning the people networks necessary to accomplishing the vision and providing them with continuing motivation, support and coaching. The alignment was seen as building a vision that was shared by the people and was obtained by involving them in the vision development and/or refinement and the development of the associated implementation steps.

The leadership function identifies the "what to do", which serves as the basis for the management functions of planning, organizing, staffing, coordinating and controlling the organization. Thus, management functions are concerned with "how to do" the output of leadership's "what to do". One key statement was that top leadership must be (1) convinced that change is necessary, (2) dedicated to making change and (3) let their actions and words reflect this dedication.

Current social and cultural trends have reduced the ability of the leader to dictate action through an autocratic style, and require that the leaders accomplish their responsibilities by empowering their employees to become enrolled or committed to the desired actions. This is seen as a more powerful tool than the compliance resulting from dictating actions. This is seen as an inherent element to TQM

and requires the use of employee-based leadership styles and an emphasis on communications.

It was seen that the senior leadership must have a broad perspective or viewpoint -- he/she must be able to work in multiple frames and recognize that others do not. This is seen as a challenge to the senior leadership, for they must view change as a re-framing of both their own and other viewpoints.

It was recognized that key elements of this discussion have profound impact on the research questions -- especially as they involve the readiness of the managers and employees for this translation in management style. Another leadership issue is, do the leaders exhibit Deming's first management obligation (consistency of purpose) in a manner to continue these participative management style changes in the face of the extended time for rewards and effort necessary to make the cultural and personal changes?

## CHAPTER 4

### QUALITY

#### DEFINITION OF QUALITY

The literature shows a broad spectrum of definitions of quality, ranging from subjective (it's like good plum pudding, we know it when we taste it -- [source unknown]) to the very objective, ie., Crosby's "conformance to specification" (Crosby 1979, 111 and 1984, 69). Tenner and DeToro (1992, 28) report that the conventional definition has two elements:

1. "A quality item is one that wears well, is well-constructed and lasts a long time."
2. A product or service which " ... conveys the image of excellence, first rate, the best."

Garvin (1988, 41-45) indicates that quality can be defined from the five viewpoints discussed below:

1. Transcendent -- Quality is synonymous with innate excellence. It is something that is timeless, enduring and cannot be precisely defined.
2. Product based -- A precise measurable variable. A product is defined by its variable, which can be ranked by some vertical or hierarchial dimension to quality. The higher the rank, the greater the quality.
3. User based -- Based on the premise that "quality lies in the eyes of the beholder (Garvin 1988, 43)". It states that quality is defined by customer preference.
4. Manufacturing based -- Based on "conformance to requirements" as defined by engineering and manufacturing practices. Poor quality is any deviation from design or manufacturing specification.

5. Value based -- Quality is defined in terms of cost and price, ie., a quality product provides performance or conformance to specification at an acceptable price and quality.

There is good agreement in the literature that TQM follows the user-based definition of quality, ie., quality is the degree of customer or user acceptance of a product or service -- the greater the acceptance, the greater the quality (Stevens and Unal 1992, 170). "Quality is a judgement by customers or users of a product or service, it is the extent to which the customer or user believes the product or service surpasses their needs and expectations (Gitlow et al. 1989, 3)." ."

It is noted that quality is defined on a comparability basis. Quality is dependant on the offering from the competition and is based on the customer's judgement as to which offering best satisfies their personal criteria. It is based on a composite of the item's attributes, each of which is viewed by the individual customer on a somewhat different basis (Hagan 1980, 54) .

There are a number of models defining quality dimensions and attributes which Tenner and DeToro have summarized to fall into three levels: implicit, explicit and latent requirements. The base expectations, or implicit requirements, are the lowest level. The user or customer has the right to assume, implicitly, that a product meets a minimum level of performance, ie., it does what it is supposed to do, in a safe manner.

The explicit level of customer expectation represents the specifications and requirements that are visible and known to the customer and are used in the trade-offs that are made when choosing a particular product. It is expected that products will perform or exhibit characteristics as specified, or promised, by the manufacturer.

The latent requirements are value-added characteristics and features which the customers did not expect. They represent a "delight" level, such as the way an automobile feels on the road or the way a service department goes the "extra mile" to provide service beyond that expected. Performance, at this level, includes full compliance to specifications and requirements, as well as other value-added features.<sup>4</sup>

There are three types of quality -- the qualities of design, conformance and performance (Gitlow et al. 1989, 4). The quality of design is based on consumer research and customer feedback and is used to design and improve the product. It is developed during the design as manufacturing specifications. Juran discusses this quality concept in his "spiral of progress in quality". A product starts with a customer's needs, which drives the product development and

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<sup>4</sup> This discussion is based on Tenner and DeToro 1992, 60-75. They also provide an excellent overview of Garvin's eight dimensions of Quality (Garvin 1988, ch. 4) and Berry, Parasuraman and Zeithaml's ten determinations of quality service and five "rater" criteria (Berry, Zeithaml and Parasuraman 1985).

operational or manufacturing processes. The product is marketed, used by the customers, and provides feedback as to its performance and acceptability. This feedback starts a repeat of the spiral, by causing further product development or design. The spiral continues until the customer's feedback is satisfactory (Juran 1988, 6).

Quality of conformance is the extent to which the design specifications are met or surpassed during manufacturing or provision of the service. This is the quality associated with the manufacturing phase of the Juran spiral and Tenner and DeToro's explicit quality discussed above.

Quality of performance is the way the customer views their use of the product or service. When coupled with market research, it represents the customer's initial defined need and their feedback, as discussed by Juran.

The importance of quality is highlighted by the selection criteria of the Malcolm Baldrige National Quality Award Model. The criteria provides 300 of the 1000 possible points for customer satisfaction (Edosomman 1991, 25). Harrington (1987, 7) sums up quality by noting that "good enough is not good enough". Competition and expectations of the customer are such that, a "good enough" product will not derive the degree of customer satisfaction and loyalty that is necessary in today's economy.

To summarize, from a TQM perspective, quality of a product or service is defined by the user or customer. The

customer's needs and wants are recognized and/or anticipated and serve as the basis for the design of the product or service. Success is measured by the degree of acceptance of the customer for the product. Deming states:

"It will not suffice to have customers that are merely satisfied. An unhappy customer will switch. Unfortunately, a satisfied customer may also switch, on the theory that he could not lose much, and might gain. Profit in business comes from repeat customers, customers that boast about your product and service, and bring friends with them (Deming 1986, 141)".

From this quote, it can be said that a company should provide a product or service whose quality is so high that the customer will feel fervently and passionately about it. To a level that they brag about it to their friends, become personally involved and identify with the product or service and would feel guilty if they used a competitor's product or service.

#### **QUALITY FOCUSES ON THE CUSTOMER - WHO IS THE CUSTOMER?**

The literature, while emphasizing the consumer or customer external to the organization, also includes the concept of the internal customer (Juran 1988, ch 2). The customer is any user of the output of a process or process step. The output may be a product or service and the customer may be internal or external to the organization. They may be an end-user or intermediate receiver of the output.

Conway (1992a, 162) states that while pleasing the external customer may be the organization's foremost objective, most of the principles apply to suppliers and customers within the organization. A manager's customers may include his employees and conversely, an employee should view his boss as a customer. The employee would also include other employees further down the process line. Further, the external customers may not be the end user, but a distributor or retail organization which is providing the product to the ultimate user.

The key issue is that the customers, whether they are internal, external, intermediate or end user, are all stakeholders in the product or service and have the right to make evaluations regarding its quality. Quality planning, as defined earlier by Juran, requires that their needs, requirements and evaluations be taken into consideration during the product design and subsequent redesigns.

### **QUALITY AND MEASUREMENT**

The measurement of quality is an important aspect of TQM. The ultimate purpose of most TQM process improvement initiatives is to improve the quality of the product, thus initiating the Deming Chain previously reported. Sink and Rossler have indicated that if the quality attributes of the product or service are not understood and measured, then there

is no way to determine if attempts at improvement have been successful.

They provide an analogy of an airplane cockpit instrument panel to show the importance of the measurement of quality. Like an aircraft pilot, management must know the values of the various key performance indicators of their organization (Sink and Rossler 1987, 9). Stevens and Unal have reported a method of viewing measurement and quality within a system, based on the work of the Virginia Productivity Center (Stevens and Unal 1992, 171 and Coleman and Das 1988, 4). They state that a process can be seen as consisting of five distinct stages, each of which can serve as quality check points. Figure six illustrates this concept.

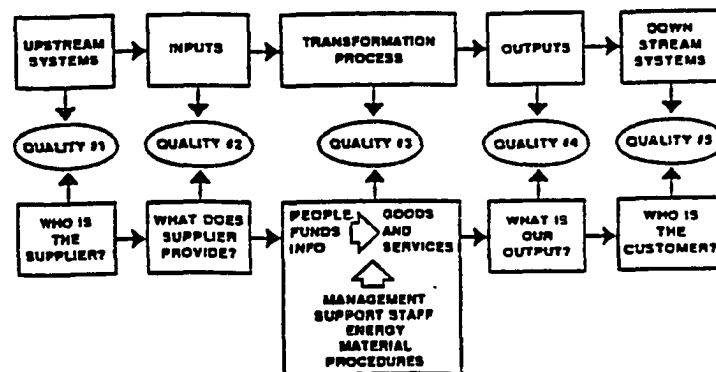


Fig. 6. Five Quality Check Points in Systems Analysis

Dr. Scott Sink, of the Virginia Productivity Center, as part of NSCL's initial TQM training (see Coleman and Das 1988), indicated that industry, prior to TQM, emphasizes measurements at quality check points two and four. Thus, they

are attempting to measure or inspect quality into the product, as it enters the manufacturing process or as it comes out. He stated that TQM involves real-time measurement, embedded as part of the individual process steps (quality check point 3). Thus, making the product correctly, negates the need for extensive quality check point four testing.

The process should be designed to satisfy the customers' needs and perceptions as indicated by quality check point five measures. Finally, the organization should work with their providers of resources to insure they understand what is required, and are caused to design high quality into their processes (quality check point one). If this is accomplished, inspection of the supplier's output is not required by the user organization. They are, as part of their quality checkpoint three, building it right the first time.

### **LEADERSHIP AND QUALITY**

Little was found in the literature which directly tied leadership to quality, other than a recognition that their TQM efforts were ultimately aimed at improving the quality of their products and the work life of their employees. The earlier summary of senior management's leadership and management functions can be restated in terms of quality.

Leaders develop visions, establish networks and align people to accomplish the vision and provide them with continuing motivation, support and coaching. From a quality

viewpoint, this implies that the leader must consider quality aspects and customer expectations as part of this vision. Crosby, in the Zero Defects discussion earlier, provides one such vision. A vision that goods and services received by internal and external customers meet the "delight level", naturally drives a customer focus and emphasizes constant improvement to keep pace with evolving customer desires and the market place. Obviously, this element of the vision must be fully communicated to the appropriate people networks.

The management functions of planning, organizing, staffing, coordinating and controlling must be focused on how to accomplish the organization's vision. Obviously, there are major elements of each of these functions involved with the constant improvement of quality. Juran's quality plan; continuing training of people in job skills and methods of implementing TQM; and the controlling aspects of the PDCA cycle are all functions that senior management must initiate and support to accomplish the visions of continuously improving quality.

## CHAPTER 5

### CONTINUOUS IMPROVEMENT OF PROCESSES

#### WHAT IS A PROCESS?

Quality leadership recognizes that work is not done haphazardly, rather it has structure. This structure, called a process, is made up of a grouping of all of the associated work elements or tasks, in the order that they must be accomplished, to arrive at a particular outcome (Scholtes 1988, 2-2). A process can be seen as a transformation of inputs (manpower-based services, material, equipment, energy, etc.) into outputs (manpower-based services, material, equipment, energy, etc.). The transformation involves the creation or addition of value to the inputs (Gitlow et al. 1989, 38).

Tenner and DeToro's (1992, 98) definition summarizes the above discussion by stating that the process is the "sequential integration of people, material, methods and machines into an environment to produce value-added outputs for customers".

The individual work elements or tasks can often be further divided into sub-elements or sub-tasks so that the term process, or perhaps more appropriately, micro- or sub-process, can also be applied to the individual work element

or task, if it produces an identified outcome. Thus, the term process can be applied at the macro-level, which includes all work steps that produce a final product or service, or it can be applied at the micro-level, with the associated steps that provide intermediate outcomes (Gitlow et al. 1989, 39). Further, the customer or recipient of the process output, need not be a person. It can be the next machine in the overall production process (Scherkenbach 1991, 10).

### THE ROLE OF PROCESS IN TQM

Tenner and DeToro (1992) indicate that TQM is based on three steps: customer focus, process improvement and total involvement. This is supported by the Deming chain which recognizes that continuing organizational existence depends on customer acceptance of its goods and services. The goods and services are produced by, and represent the outcomes of the micro and macro-level processes of transformation, thus the processes control the quality of the product and are an inherent part of the TQM methodology. This methodology requires the continuous improvement of the processes, with the goal of improved customer satisfaction.

It was reported earlier that only about 30% of the time spent on work represents value-added effort, so that 70% of the efforts embedded in the work design do not have value added. This 70% includes building or providing defective

parts or services which have to be reworked and doing non-value-added work and represents significant opportunity for improvement by improving processes to alleviate non-value-adding work.

### THE IMPROVEMENT PROCESS

The methodology of process improvement can be applied at the organizational level or at the work process level as will be shown below. The TQM improvement process is based on the PDCA cycle discussed earlier. The need for improvement is recognized and plans are developed to remove roadblocks to performance. The plan is tried on a prototype basis, the results measured and compared with expectations. If the results meet expectations, the planning is successful and the change adopted throughout the organization. If it is not successful, the PDCA cycle is repeated, starting at re-planning the change.

The literature has shown that there is not full agreement on the one best model for process improvement. Each author seems to have one. In Deming's case, his work is extremely conceptual in nature. He both establishes philosophies and principles, and provides specific tools, such as SPC. His process of improvement is based on the PDCA cycle, however, he does not give much detailed guidance on how to apply his philosophies and principles at the organizational level.

Juran has provided ten steps to quality improvement which establish his methodology (Federal Total Quality Management Handbook Appendix 1A 1991, 7):

1. Build awareness of need and opportunity for improvement.
2. Set goals for improvement.
3. Organize to reach the goals (establish a quality council, identify problems, select projects, appoint teams, designate facilitator).
4. Provide training.
5. Carry out projects to solve problems.
6. Report progress.
7. Give recognition.
8. Communicate results.
9. Keep score.
10. Maintain momentum by making annual improvement part of the regular systems and processes of the company.

Crosby's work is based on fundamental beliefs, which he calls absolutes and has provided a 14-step process for quality improvement which is quoted below (Federal Total Quality Management Handbook Appendix 1A 1991, 9-10):

1. Make it clear that management is committed to quality.
2. Form quality improvement teams with representatives for each department.
3. Determine where current and potential quality problems lie.
4. Evaluate the cost of quality and explain its use as a management tool.
5. Raise the quality awareness and personal concern of all employees.
6. Take actions to correct problems identified through previous steps.
7. Establish a committee for the zero defects programs.
8. Train supervisors to actively carry out their part of the quality improvement programs.
9. Hold a "zero defect day" to let all employees realize that there has been a change.
10. Encourage individuals to establish improvement goals for themselves and their groups.
11. Encourage employees to communicate to management the obstacles they face in attaining their improvement goals.
12. Recognize and appreciate those who participate.

13. Establish quality councils to communicate on a regular basis.
14. Do it all over again to emphasize the quality improvement programs never end.

Each of these quality thinkers, while providing a process, seems to be saying that if management will adopt and follow these basic principles and philosophies, they will have implemented TQM. Other authors and organizations have provided processes and procedures which perhaps more systematically applied Deming, Juran and Crosby's work to the organization. The discussion below addresses four TQM models.

#### **Virginia Productivity Center (VPC) Process**

VPC, under the direction of Dr. Scott Sink, provided NSCL with their TQM process. This process is based on the eight steps of figure seven (VPC workbook 1988, 4-1). It focuses on the top organizational level, however, the process can also be applied to every level within the organization, recognizing that the outputs of the higher level must serve as inputs to the lower level team.

Using the PDCA cycle as a reference, the first step, organizational systems analysis, establishes the vision for the organization and represents the leadership function. Steps two through four represent planning efforts; steps five and six, the "Doing"; step seven the "check" part of the

cycle. Step eight and the annual recycle the "act" part of the cycle.<sup>5</sup>

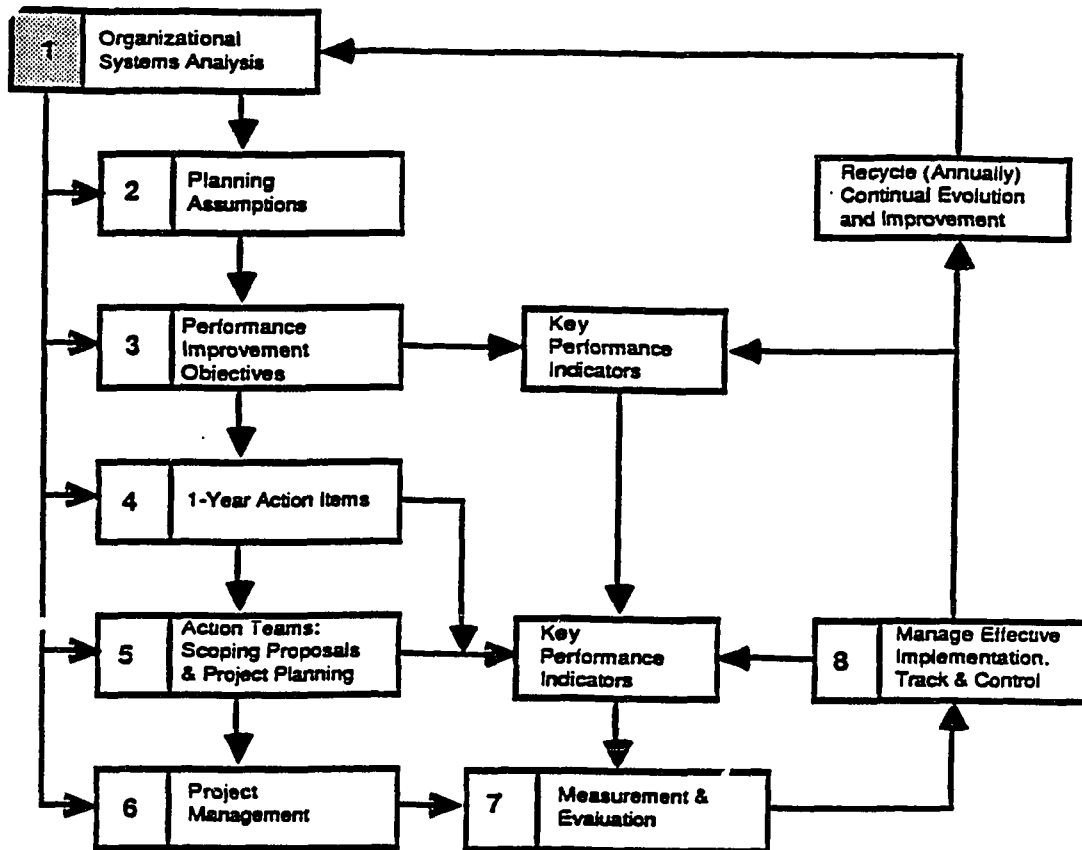


Fig. 7. VPC 8-Step Process for Continuing Improvement

<sup>5</sup>The below discussion on the VPC 8-Step process is based on the VPC Workbook and notes taken by the researcher during the initial TQM training provided on March 1-3, 1988.

### Organizational Systems Analysis.

The initial step assesses the organization in eight areas and serves as the basis for establishing long-range performance improvement objectives. These areas of assessment include (VPC workbook 1988, 4-1):

1. Vision
2. Guiding Principles
3. Charter, Mission and Purpose
4. Input/Output Analysis
5. Internal strategic analysis
6. Current system performance
7. Roadblocks to improvement
8. External strategic analysis.

The vision, guiding principles and statements of organizational charter, mission and purpose are reviewed, validated and updated as required. This effort represents the initial leadership step of "visioning" or developing "what to do" discussed earlier and provides the basis for the other steps, which are seen as management functions associated with implementing this vision.

The input/output analysis is a study or review of the organizational level processes. It identifies the inputs and suppliers to be transformed by the organization and the associated outputs, customers and outcomes resulted from the outputs. Figure eight illustrates this analysis for the Ships Systems Department of NSCL (Meeting report, 1988, 13). This process allows the organization to identify their inputs with the associated providers and their customers, with their related outputs and associated purposes or outcomes. Since TQM stresses up-line (quality check point 1) and down-stream

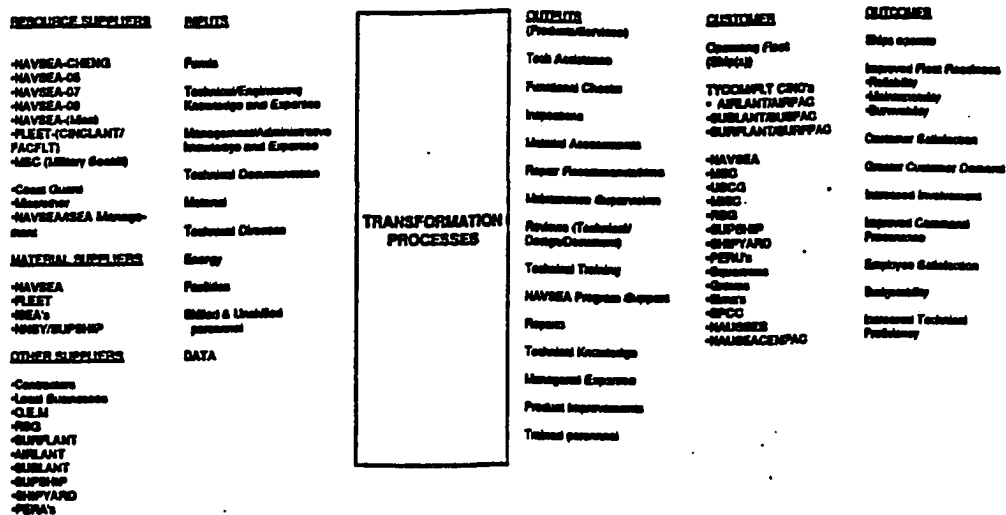


Fig. 8. Input/Output Analysis for NSCL Ships Systems Department.

(quality check point 5) measurement, the output from this assessment supports this effort.

Internal strategic analysis identifies and reviews the organizational structure, personnel staffing, adequacy of the facilities, technology employed and strengths and weaknesses associated with each of these internal variables. Recognition of these factors acts as a key indicator of strength and needed changes within internal infrastructure.

Current system's performance is an assessment of how well the organization is accomplishing its mission. It depends on customer (internal and external) feedback and analysis of processes. The assessment should be based on measured facts and highlights areas for improvement.

The VPC process then leads the managers through a group brain-storming and prioritization exercise called the nominal group technique (NGT) to identify key roadblocks which are hindering the organization's performance. The prioritization of the brain-storming output is based on a technique in which the participants vote on, and assign a score, to those they believe are most critical. A pre-determined number of votes is allowed and the roadblock considered most critical receives the highest score and the least critical of the votes the smallest numeric number. For example, if the participant was allowed five votes, she would assign a score of five to the most critical issue, a score of four to the next most critical, and scores of three, two and one to the remaining votes, in deciding order of criticality. The participants' scores are summed to form a group prioritization of issues. The high priority roadblocks represent opportunities for improvement by the management team.

The external strategic analysis focuses on environmental and marketplace threats and opportunities and identifies up-line requirements which must be resolved.

#### **The Planning Steps.**

Steps two, three and four of the VPC Eight-Step Process are involved with planning. Step two is closely aligned to the external strategic analysis, converting those findings into planning assumptions which serve as boundaries and constraints. The process attempts to identify critical issues

and determines their level of certainty. These assumptions, and the understandings developed during the organizational systems analysis, serve as the basis for step three of the Eight-Step Process.

Step three serves as the organization's strategic plan. It identifies performance improvement objectives which should be accomplished over the next 2-5 years and is arrived at by the nominal group technique discussed earlier. The managers brain-storm potential performance improvement objectives, using the organizational systems analysis and planning assumptions developed earlier. They then place them in priority order, to focus on the critical few, as defined by Pareto analysis techniques. The output of this step is a list of critical performance improvement objectives, which have been reached through a systematic process of gaining consensus from middle and top level management. It is based on moving towards the organization's vision -- taking current organizational and environmental factors into consideration.

Step four is the recognition of one-year actions which must be accomplished to move the organization toward satisfying the longer range objectives developed in step three. These actions are also developed using the nominal group technique and represent the inputs for step 5 of the 8-Step process.

Steps five and six are the "Do" portion of the PDCA cycle. Step five consists of developing an action team of

employees for each of the one-Year actions to plan and implement them. The VPC process requires that the team develop a scoping proposal, consisting of an expanded definition of the task and a list of individual action steps necessary to accomplish the requirement. This step can be seen as a continuation of the planning phase, however, in the big picture, this step is considered the front-end portion of the Do phase of the PDCA cycle.

The action team normally consists of members from the management group which identified the action items. It also frequently includes others who have knowledge and vested interest in the processes to be changed.

Step six is a continuation of step five, and consists of the project management efforts necessary to communicate and control the actual execution of the planning effort. It is the "Do" part of the cycle.

Steps five and seven are involved with measurement and evaluation. During step five of the eight-Step Process, the action team identified those key performance indicators, which would indicate success of their planned change. Step seven, which often runs concurrent with step six, collects the measurement and evaluates them against the success indicators. This is the check phase of the PDCA cycle and allows the team to determine the success of their efforts.

The "Manage Effective Implementation, Track and Control" step is similar to the Act part of the PDCA cycle, in that

evaluations in step seven are adopted or recycled as part of the continuous improvement portion of the process. This step also served as the project management phase for the entire Eight-Step Process. The management of yearly action items are compared to the expectations associated with the key performance indicators identified as part of step three and the results are provided to the management team as part of an annual recycle of the entire process. VPC recommended to NSCL that step eight be accomplished quarterly, as part of a meeting of the management team.

#### **The QUALTEC Improvement Process**

It was indicated earlier that, in addition to using the VPC process, NSCL also adopted the Team Problem Solving and Improvement Process provided by QUALTEC, a subsidiary of Florida Power and Light Company, a Deming Award winner. It was adopted to provide the tools and methodology for the action teams to use when trying to accomplish assigned improvements. While not adopted, QUALTEC also has an organizational level improvement process, called "Policy Management Deployment", which has value to this research and will be reported.

#### **The QUALTEC Organizational Improvement Process.**

The QUALTEC process is shown on figure nine and represents their organizational level methodology for improvement. There are comparisons between this method and

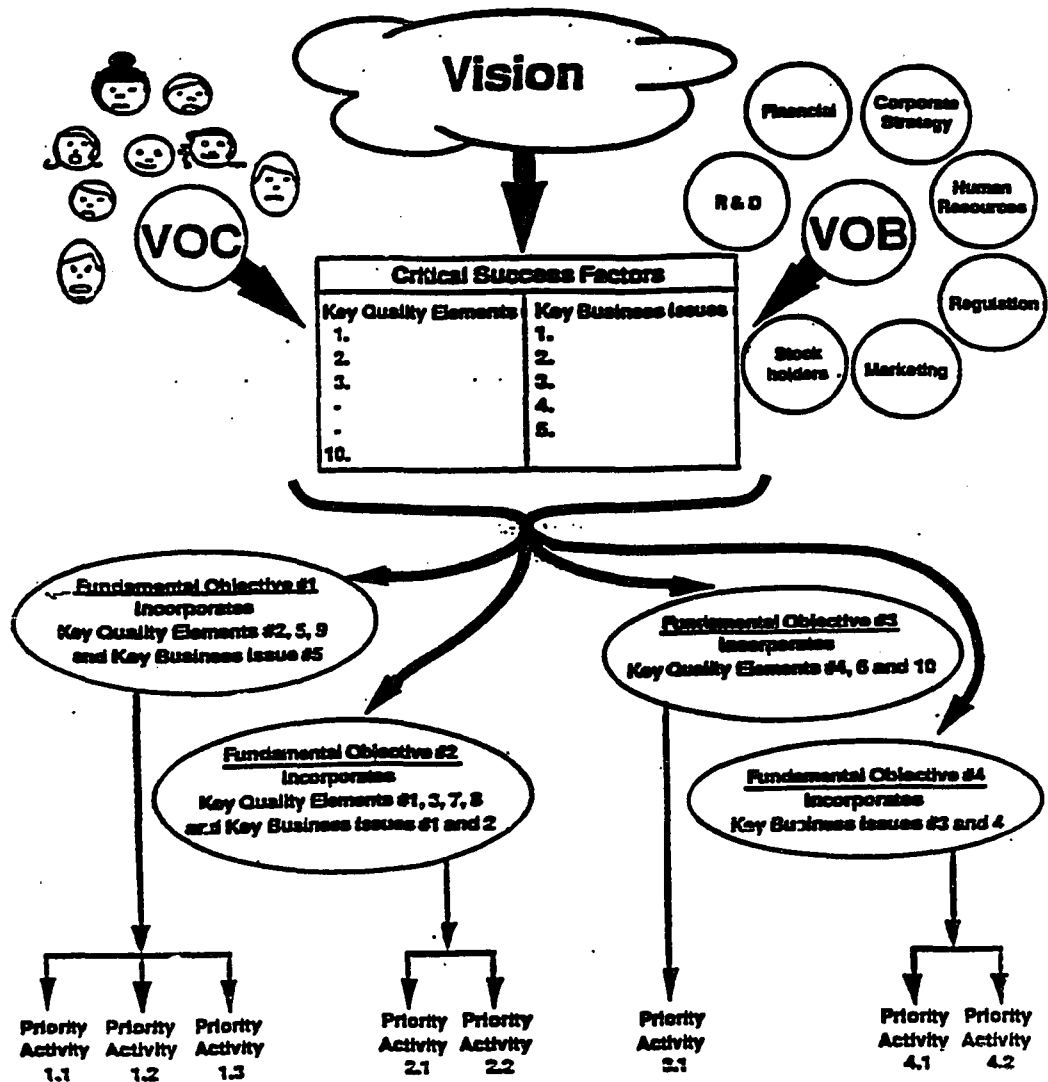


Fig. 9. QUALTEC Organizational Improvement Process<sup>6</sup>

<sup>6</sup> This figure is a reproduction of a QUALTEC handout provided informally during a Team instructor's Course.

the VPC method. An analysis shows that the QUALTEC corporate level process consists of the first four steps of the VPC eight-Step process. Critical success factors, involving key quality improvements and business issues are identified, much as the performance improvement objectives in VPC's third step. These key improvements, like the VPC method, are based on organizational requirements, which for QUALTEC are the organization's vision and their hearing of the voices of their customers of their business environment.

A major difference between VPC and QUALTEC is that, for QUALTEC, the long-range improvement objectives are divided into elements and issues instead of a single listing and these success factors are further divided into a series of fundamental objectives which address the resolution of multiple key quality elements and business issues. It is observed that the process is somewhat more systematic than the VPC process and leaves less to the chance that the management team, in a few hours, will brain-storm and prioritize a thorough set of fundamental objectives. During an informal interview with a QUALTEC sales representative, it was reported that the development of the success factors or fundamental objectives is normally accomplished by a team of management personnel, with a coordinating executive. The CEO has the final decision and the "Power of the CEO" was referenced.

A second major difference in the methodology is the manner in which one-year action items are established. The

fundamental objectives are developed by systematic study, while the VPC method uses the NGT to identify the methods. Again, there seems to be less left to chance and a higher degree of management direction (deciding what to do) to accomplish their objectives. It was interesting to note that each PAT established by management to address a priority activity has a "coordinating executive" assigned to represent top management.

#### **QUALTEC Team Problem Solving/Implementation Process.**

The VPC method uses action teams to develop scoping proposals and accomplish project plans. It was determined by NSCL's senior management that the scoping proposal and project management process, while valid, did not provide sufficient rigor, and that more training was required to provide tools for the working level action team to accomplish their tasks. The QUALTEC method, shown in figure ten, is a systematic, data-based approach. It uses the story board concept to help structure and illustrate the steps to be followed in their methodology

The team may be assigned a priority action improvement effort in a top-down directed manner or it may identify, and recommend to management, in a bottom-up manner, their own initiatives. This is similar to the VPC method which suggests that their process also be adopted at the lowest organizational level. Perhaps the biggest difference is the

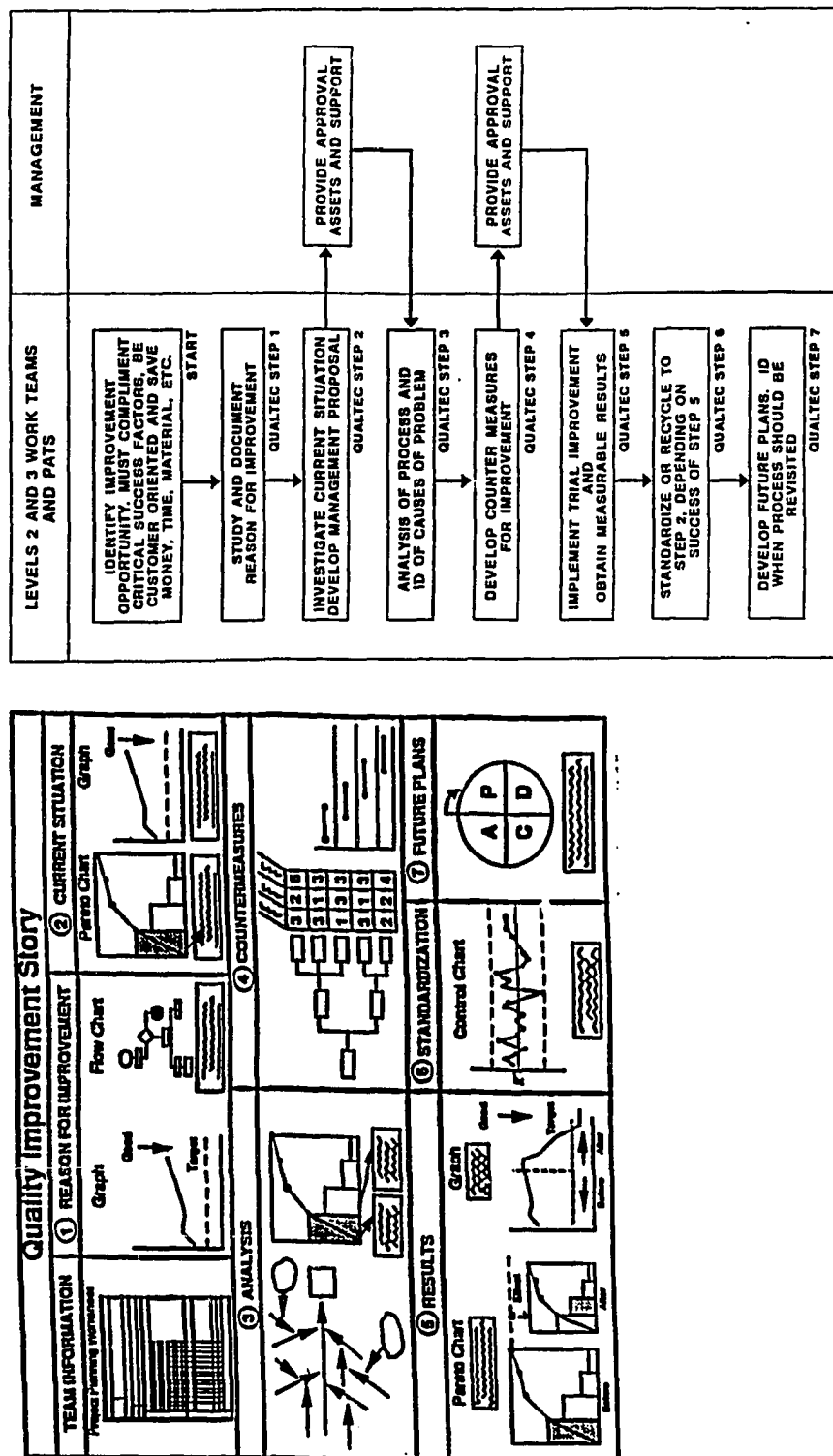


Fig. 10. QUALTEC Team Problem Solving and Improvement Process.

higher degree of control management provided in the QUALTEC method over that in the VPC method.

The first step is to select a problem to be addressed. This may be management-assigned or locally generated. If locally generated, the team must identify a theme or general problem area which they want to address. It must impact the customer and be consistent with the organization's fundamental objectives discussed earlier and result in savings. The team then refines, as part of step two, their understanding of the problem, reviews and selects quality indicators and illustrates the required degree of improvement. This step shows, in some detail, the nature of the problem, using graphics and flow charts to depict the current process, key quality indicators and the desired outcomes (QUALTEC Team Leader Training Course 1987, unit 1 pp. 20-34).

As shown on the process flow chart portion of figure 10, the improvement team briefs and obtains acceptance from management before they initiate further action. The primary purpose of this review is to obtain management's acceptance and buy-in, obtain needed resources, insure that the effort is not redundant to others within the organization and meets overall company objectives. This is somewhat different from the VPC method, in that formal approval is not addressed.

The analysis step uses the seven basic quality control tools which are well-described in the literature and include: (1) checksheet; (2) graph; (3) histogram; (4) Pareto chart;

(5) cause and effect diagrams; (6) scatter diagrams and (7) control charts. These will not be discussed, however, QUALTEC asserts that 80% of all problems can be solved by using just three of these tools: the checksheet, Pareto chart and cause and effect diagrams (QUALTEC Team Leader Training Course 1987, unit 1, p. 36). The purpose of the analysis step is to completely understand the process, including roadblocks to improvement, in order to support the development of countermeasures, which is the fourth step in the process.

Countermeasures to roadblocks, which are hindrances to performance, consist of identifying and choosing solutions to the root cause(s) of the identified problems. They must attack verified root causes, meet the customer's valid requirements and be cost beneficial. The step includes developing an action plan that answers who, what, when, where and how, and also reflects the barriers which must be removed and assistance necessary for success. Management cooperation and approvals are obtained, and the countermeasures are implemented (QUALTEC Team Leader Training Course 1987, unit 4 pp. 11-29).

Step five of the QUALTEC process is to confirm that the problem and its root causes have been decreased and the target for improvement has been met. The key activities include comparing the measured data or quality indicator before and after the "fix", comparing the results with the target and implementing additional countermeasures, if the results are

not satisfactory (QUALTEC Team Leader Training Course 1987, unit 5 pp. 13-14).

The standardization step has the objective of preventing the problem and root cause from recurring and to standardize the improvement within the organization's processes. The activities include assuring that the countermeasures become part of the daily work processes, creating or revising work process definitions and standards as necessary. Employees are trained in the new procedures and quality measurements with periodic checks and assigned responsibilities put in place to monitor the continuing success of the countermeasures. The improvement should also be considered for replication in other processes (QUALTEC Team Leader Training Course 1987, unit 5 p. 15).

The last step in the process is to support the concept of continuing improvement. Future plans should be drawn up to attack any remaining issues or problems and to determine when the process should be revisited for analysis and review. It is a time for the team to review lessons that can be learned relating to problem-solving skills and improve future team effectiveness (QUALTEC Team Leader Training Course 1987, unit 5 p. 17).

Inherent to the QUALTEC process is focusing on respect for people and improving team performance through group dynamics. The process focuses on both team member and leader training and, from a group prospective, stresses answering the

following questions (QUALTEC Team Leader Training Course 1987, unit 1 pp. 16-17):

1. PURPOSE: What is our goal?
2. BENEFITS: Why are we doing it?
3. ROLES: What is expected of us?
4. AGENDA: How do we get there?
5. SUPPORT: Who helps us?
6. PROBLEM SOLVING: What happens if things go wrong?

Showing respect for others is expressed in a number of ways. Meetings are run in an efficient and effective manner, following an agenda, in a specific time-frame and focusing on a declared purpose so as not to waste people's time. Strict rules of conduct are enforced, including being on time and coming prepared, criticizing ideas (not people), keeping an open mind and listening constructively. Issues, such as equal participation of all team members and individual's behavior during meetings are included in the group dynamics portion of the training. At the end of each meeting, a short feedback session is held, in which each member provides their view of both how well the meeting was conducted and how well the stated purpose of the meeting was met (QUALTEC Team Leader Training Course 1987, unit 1).

#### **U. S. Navy's Total Quality Leadership Process**

##### **Background.**

The U. S. Navy adopted a performance improvement program in response to Presidential Executive Order 12552 of 1987 which mandated that U. S. Government agencies become more productive. This program started in 1988 and evolved, from a performance and process improvement effort, to a total quality

program. In 1991, it was expanded to the Navy's operating forces (up to that time it was only applied to the shore activities) and the term Total Quality Leadership (TQL) was adopted to place a greater emphasis on command or leadership responsibilities.

The adoption of TQL within the operating forces represented a major challenge. The Navy's culture is primary autocratic, which makes it difficult to empower employees and embrace participation. In addition, personnel are frequently transferred, which for the senior leaders occur every 18-36 months, which makes it very difficult to maintain the consistency of purpose required by Deming (Doherty 1990, 2).

The Navy decided to adopt TQL in two phases.<sup>7</sup> The first was to develop a critical mass of knowledge and experience with the TQL process and the second, to apply this mass to organizational transformation. Development of the critical mass is based on four elements: (1) education of top management, (2) planning, (3) establishing an organizational structure and (4) focus on short-term process improvements. Once this critical mass was established, the strategic planning, innovation and changes associated with the transformation of the entire organization to a TQL culture would begin (Doherty, 1990, 2-6).

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<sup>7</sup>The following discussion is based on TQL Implementation Course, a short course text produced by the Navy Personnel Research and Development Center: San Diego.

### Elements of the TQL Approach.

The TQL approach is based on four key elements: Deming's philosophies, leadership, planning and structure. Figure 11 provides a cause-effect diagram which illustrates these key elements and the associated work issues or sub-elements. The TQL process recognizes that many Navy leaders are looking for a step-by-step checklist to provide specific implementation guidance to be followed. TQL does not lend itself to this approach. It recognizes continuous improvement in the adoption of TQL and that each organization is different and in a different level in their TQL implementation. The DON TQL approach requires that each organization develop their own method, using the four key elements as a model or guide (TQL Implementation 1992, Module 2, 2).

The Deming approach was discussed earlier and according to figure 11 consists of five major sub-elements: (1) the PDCA cycle, (2) Deming's 14 management obligations, (3) Deming chain reaction for quality, (4) his system of profound knowledge and (5) viewing the organization as a system. Each of these has been discussed elsewhere in this dissertation.

The Leadership issue is discussed in chapter three of the dissertation and according to the Navy TQL approach consists of four sub-elements:

1. Acquire knowledge of TQL.
2. Initiate commitment to continuous quality improvement.
3. Provide knowledge, guidance and resources for improvement.
4. Remove impediments to organizational changes.

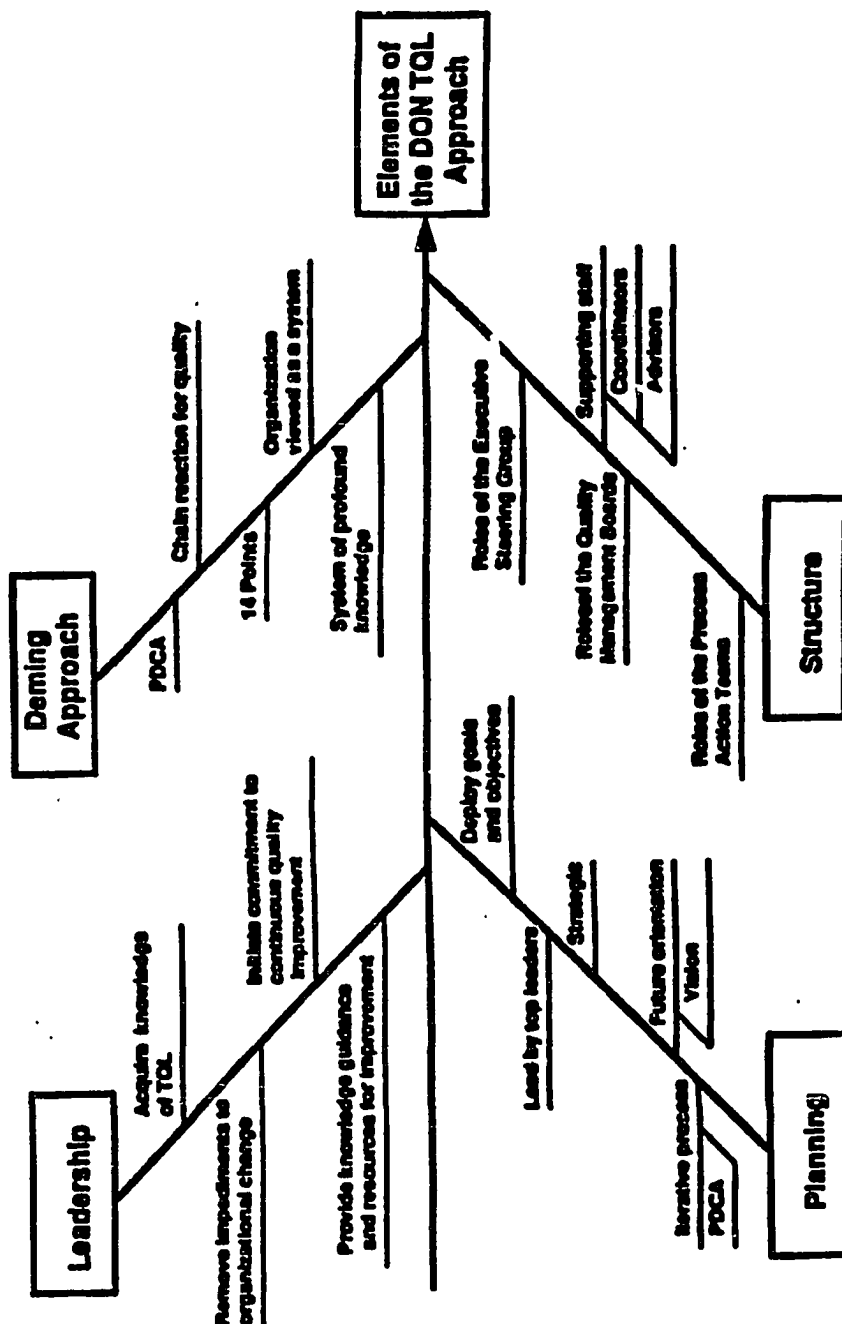


Fig. 11. Elements of DON TQL Approach (TQL Implementation 1992, Module 1, lesson 1, p.4)

The planning elements of TQL are based on the PDCA cycle and five sub-elements shown in figure 11. The leader's activities are key to the TQL element. The planning must be of a strategic nature, which has been defined as

" ... the process by which the guiding members of an organization envision its future and develop the necessary procedures and operations to achieve the future (TQL Implementation Course 1992, Module 5, Lesson 2, p. 2)." <sup>8</sup>

The structure of the TQL program is based on four key sub-elements, the: top leader, Executive Steering Committee (ESC), Quality Management Boards (QMBs), Process Action Teams (PATs) and TQL support staff. The roles and structural relationships for these elements will also be discussed later in this chapter.

#### **Top-Down Orientation of TQL.**

TQL is not an employee involvement approach to organizational improvement, it is top-down oriented. This orientation is based on the unique military-oriented culture, with its heavy reliance on chain-of-command and leadership responsibilities, and the Navy's finding that the number one failure in quality improvements is due to a lack of management and leadership commitment. The TQL Implementation Course (1992, Module 1, lesson 1, 6-9) teaches that the key to successful implementation of quality principles is based on the premise that:

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<sup>8</sup> This quote was attributed to Goodstein, Noland and Pfeiffer, Applied Strategic Planning. 1992. Page unknown.

"The top leader is formally responsible for the implementation of TQL; the leadership dimension extends to everyone in a management or supervisory capacity. Leadership here means leader of change. While leading change needs to be done at all levels in the organization, the ultimate responsibility is that of the organization's top leader and top management."

The top leader's new job under TQL is: (1) to acquire knowledge of TQL, (2) initiate top-down commitment to continuous quality improvement, (3) provide knowledge, guidance and resources for improvement and (4) remove impediments to organizational change (TQL Implementation, 1992, Module 1, lesson 1, 5-6).

#### **TQL Implementation Approach.**

The Navy's approach to implementing TQL at the unit or command level is based on the process shown in figure 12. Figure 12 represents the model for implementation. It is seen as a guideline, which according to the TQL Implementation Course (1992, Module 3, 2) is a paradigm shift for many Navy leaders. The culture of the Navy is to provide a step-by-step checklist of what is to be done, however TQL is different and each organization is expected to develop their own plan using Figure 13 as a model or guide. Each of the model elements will be briefly discussed below. This discussion is based on Module three of the TQL Implementation Course and individual citations, except for direct quotations, will not be provided.

**Element 1: Top Leader Trained and Committed.** TQL cannot be successfully executed without the commitment of the top

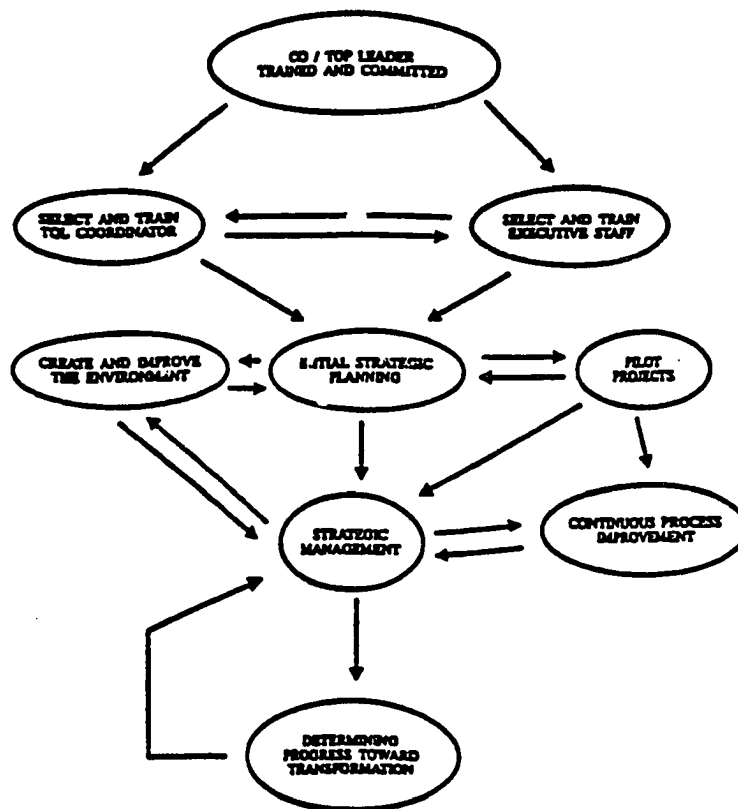


Fig. 12. The DON TQL Unit Implementation Approach (TQL Implementation 1992, fig. 3.0.1)

leader. This commitment is seen to be initially based on recognition by the top leader that her/his superiors have endorsed and directed the program. However, true commitment can only occur after the top leader has received sufficient training to understand what the commitment entails. The training and education of the top leader, as for everyone in the organization, is seen as a continuous, never-ending

process. The Navy has established a Senior Leadership Seminar (see the bibliography) to provide the initial leadership training.

**Element 2: Selection and Training of the TQL Coordinator.** The role of the TQL Coordinator is discussed in the organizational section of this chapter, however, he/she serves as the principle adviser, assistant, trainer and supporter for the senior leader and his senior managers for TQL. This position is considered essential for adequate execution of TQL and for organizations of 500 or more employees should be a full-time position. The TQL Coordinator should be sufficiently senior that he/she can have a special relationship with the senior leader and members of the ESC, and function comfortably at any level within the organization.

The TQL Coordinator receives a significant amount of training beyond that of the top leader and is responsible for educating and training the leader. As the senior technical expert with the organization, he/she is responsible for coordinating the efforts of all quality advisors and improvement teams.

**Elements 3: Select and Train Executive Staff.** The Executive Steering Committee is comprised of all senior leaders of the organization. Its actual composition varies between organizations and the top leaders decide who shall serve in this capacity. The TQL Coordinator provides the training for

this group so that they can develop the required true commitment to the process.

**The Remaining Elements: A Strategic Planning Model.**

The remaining elements of the implementation approach can be seen as an application of the PDCA cycle reported earlier. Figure 13 provides the strategic planning model, depicted as a part of the PDCA cycle. Comparison of figures 12 and 13 provides a clear understanding of implementation approach.

The initial strategic planning elements shown in figure 12 are the assessment and planning steps shown in figure 13.

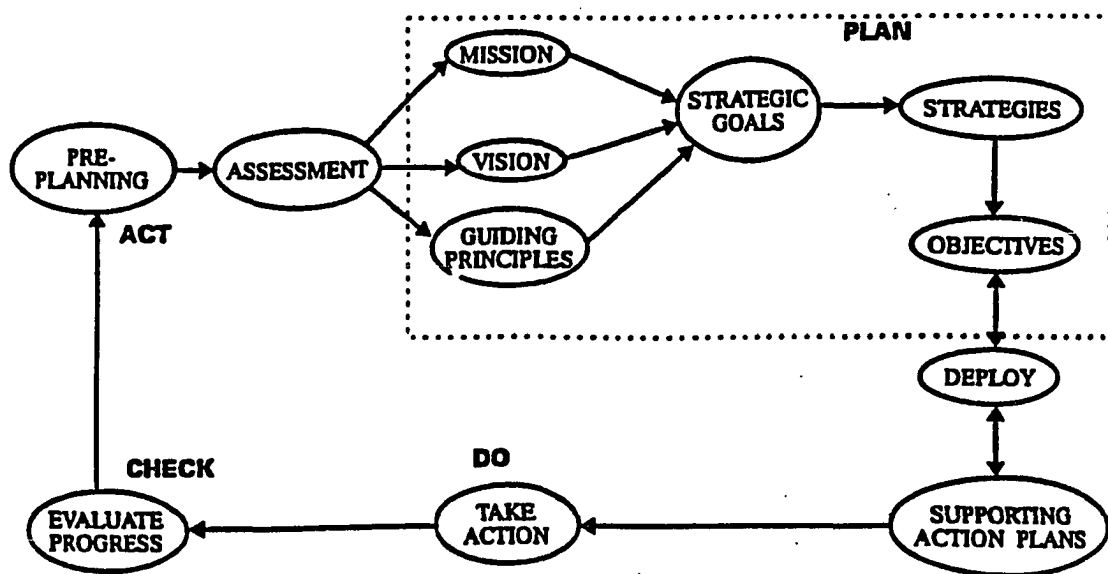


Fig. 13. The Navy's TQL Strategic Planning Model (TQL Implementation Course 1992, Module 5, Lesson 2, viewgraph 9).

The results of the planning steps are deployed, supportive actions initiated and actions taken (Do steps) and are

analogous to the pilot projects and "creating and improving the environment" elements shown in figure 12. The "strategic management" and "determine progress toward transformation" elements, shown in figure 12, are the check and act steps of figure 13. Repetition of the PDCA cycle represents the continuous process improvement element of figure 12.

#### **Creating and Improving the Environment.**

One of the key issues to implementing TQL is creating and constantly maintaining/improving an environment which will foster the change process. The TQL Implementation Course (1992, Module 3, p. 13 and Module 6, Lesson 4, viewgraph 5) provides guidance on this issue.

This element of the approach involves creating open and honest communications, building a trusting atmosphere throughout the organization, encouraging cooperation among divisions and functional areas, and being receptive to innovation and ideas for improvement. This is accomplished by the top leader and senior management providing a visible example of these sub-elements. The emphasis must be on applying Deming's 14 points, concern for his seven deadly sins, encouraging education and training, removing impediments to change and nurturing the process improvements.

#### **Five-Stage Plan for Process Improvement**

Scholtes has provided a process to be used by project teams to implement improvements. It is based on the following five stages or major steps:

### **Stage 1 -- Understand the Process.**

The first stage includes a formal description of the process as it currently operates and identifies what it is supposed to do -- in terms of customers' needs, expectations and concerns. A standard process is developed, which describes this understanding, supports communications, allows agreement between team members, eliminates inconsistencies between individual's execution and highlights obvious problems (Scholtes 1988, 5-19 through 5-21).

### **Stage 2 -- Eliminate Errors.**

This consists of identifying sources of errors which are built into the process and correcting the underlying cause through process redesign. This is called error-proofing the process (Scholtes 1988, 5-19 and 5-22).

### **Stage 3 -- Remove Slack or Streamline the Process.**

The concepts of Just-in-Time recognize that buffer inventories, and similar slack times, built into a process often hide or compensate for inefficient practices. The assets tied up in these inventories and slack times represent inefficient and non-value-adding conditions. The concept is to redesign the processes to remove this slack, thereby freeing up the assets, making more visible the process inefficiencies and forcing a more efficient process to be developed (Scholtes 1988, 5-19 and 5-23).

#### **Stage 4 -- Reducing Variance.**

As indicated in the discussion under Deming above, variance is the result of common and special causes. The concept is to design processes so that their outputs are centered on the exact specification or desired outcome and produce minimum variance due to common cause. Through statistical process control methods, special causes are identified immediately, so that they can be addressed and resolved as quickly as possible, thus reducing the cost associated with variance (Scholtes 1988, 5-19 and 5-23 to 5-25).

#### **Stage 5 -- Plan for Continuous Improvement.**

At this point, the source of most problems has been eliminated and the team must look for ways to make the improvements a permanent part of the process. This can include planning for measurement of key quality indicators and periodic revisits to the process to recycle the four earlier stages (Scholtes 1988, 5-19 and 5-25).

#### **Six Steps to Process Improvement**

Tenner and DeToro (1992, 109-121) have summarized the various methodologies for process improvement by the development of a six-step process. These are provided below without description. It will be seen that the terms are self-descriptive and, in most cases, are fully discussed above.

1. Define the problem in the context of the process.
  - 1.1 Identify the output.
  - 1.2 Identify the customers.
  - 1.3 Define the customers' requirements.

- 1.4 Identify the processes producing these outputs.
  - 1.5 Identify the owner(s) of the process.
2. Identify and document the process.
  - 2.1 Identify the participants in the process.
  - 2.2 Provide all participants with a common understanding of the process, and associated responsibilities.
  - 2.3 Identify inefficient, wasteful and redundant steps.
  - 2.4 Offer a framework for defining process measurements.
3. Measure performance.
4. Understanding why.
  - 3.1 What are the vital few? (Pareto analysis).
  - 3.2 What are the root causes? (cause and effect diagrams).
  - 3.3 What are the sources of variance?
5. Develop and test ideas.
6. Implement solutions and evaluate.

It is interesting to note that the four processes reported on -- VPC, QUALTEC, 5-Stage plan and 6-Step process are all based on the PDCA cycle proposed and followed by Deming.

### **ORGANIZING FOR IMPROVEMENT**

A cornerstone of Juran's improvement process is the appointment of multi-department teams, including suppliers and customers, with the responsibility to do the quality planning and initiate improvements (Juran 1988, 23 and 54). Crosby (1984, 106) also believes that the quality improvement team is a key part of the quality improvement process. He indicates that the purpose of the team is to guide the process, to help it along, to provide coordination and support. The team is

also inherent to the VPC, QUALTEC and the U. S. Navy's TQL processes.

The team has been defined as a group of individuals working together to reach a common goal. It is an inherent part of the TQM process, where the common goal is the continuing improvement of an organization's quality (Tenner and DeToro 1992, 183). The team is seen as a method of obtaining participation and empowerment and to obtain the inputs of all of the stakeholders. Most bureaucratic organizations see the teams as necessary to overcome the fragmentation that exists at organizational boundaries. The teams provide a structure to facilitate communications and deployment of improvements which cross organizational lines (Senior Leaders' Seminar Workbook 1992, module 4, lesson 2).

There is not a consistent methodology for integrating quality improvement teams into an organization. Some authors stress that the existing organizational vehicle should be used to implement TQM. They believe that "shadow" organizations, such as temporary project teams, are sending confusing signals about responsibility and the way TQM should be viewed within the organization. TQM should be embedded within the organization's behavior, customs, rules and structure (Pieters 1992, 29). Others, such as discussed below, suggest teams which cross organizational boundaries.

### **The Navy's Organizational Structure for TQM**

The Navy sees the TQM organization as consisting of the top leader and three hierarchial organizations paralleling the formal structure: (1) Executive Steering Committee (ESC), (2) Quality Management Boards (QMBs) and (3) Process Action Teams (PATs). The top leader is seen to have four sets of responsibilities, to: (1) lead the transformation, (2) create the environment, (3) provide strategic focus and (4) encourage process improvement and innovation. Figure 14 illustrates these responsibilities and the actions that must be taken to implement them.

The ESC is made up of the senior management of the organization and is responsible for implementing TQM. They assist the senior leader in the transformation, leading by example and acquiring profound knowledge. This committee also sets the direction of the organization by developing and deploying the strategic plan. They cultivate the TQL environment and guide processes improvement in the organization. Figure 15 illustrates these roles and responsibilities and shows how the ESC members implement them.

It is noted that the information contained on figures 14 and 15 have significant impact on this dissertation. They illustrate the actions that must be taken from the top leader and senior management prospective, which will be used to

<b>Roles and Responsibilities of the top leader</b>	<b>Lead the transformation</b>	<b>Acquire Profound Knowledge</b>	Continue self-education
			Use PDCA
			Increase accessibility
		<b>Role Model</b>	Walk the talk
			Apply the 14 Points
			Don't shoot messengers
			Take a systems approach
	<b>Create the environment</b>	<b>Education and Training</b>	Provide/Assist in formal E&T
			Have formal discussions
		<b>Remove Impediments to Organizational Change</b>	Promote cooperation vs competition
			Apply the 14 Points
			Allow cross functional communication
			Provide method and tools
	<b>Provide strategic focus</b>	<b>Initial Strategic Planning</b>	Open to input from ESC
			Understand SP process
			Allow process to work
			Provide initial quality focus
		<b>Strategic Management</b>	Don't micromanage
			Allow subordinate input in planning
	<b>Encourage process improvement and innovation</b>	<b>Provide Resources</b>	Lead update of SP
			Time
			People
			Money
			Space
		<b>Lead ESC</b>	Act as team leader
		<b>Personally Participate in Quality Improvement Efforts</b>	Show interest and support
			Act as a linking pin
			Observe TQ teams periodically
			Encourage innovation/risk at lower level

Fig. 14. Roles and Responsibilities of the Top Leader under TQL. (TQL Implementation Course 1992, Fig. 4.1.1)

Roles and Responsibilities of the ESC	Lead the transformation	Acquire profound knowledge	Continue self education
			Use PDCA
			Increase accessibility
		Role model	Walk the talk
			Apply the 14 Points
			Don't shoot the messengers
			Take a systems approach
	Set the direction for the organization	Develop the strategic plan	Mission
			Vision
			Guiding principles
			Strategic goals
		Deploy the strategic plan	Maintain long-term focus
			Participate in strategic management
	Cultivate a TQL environment	Education and training	Provide/Assist in formal E & T
			Have informal discussions
			Develop TQL E& T plan
		Remove impediments to organizational change	Allow cooperation
			Apply the 14 Points
			Use cross-functional communications
	Guide Process improvement in the organization	Determine TQL structure and method	Develop methods/tools
			Determine kinds of teams
			Determine layers of teams
		Process management	PDCA
			Select processes
			Assist in optimization
		Nurture teams	Act as a linking pin
			Provide resources
			Show interest and support
			Be receptive to innovation

Fig. 15. Roles and Responsibilities of the Executive Steering Committee under TQL (TQL Implementation Course 1992, fig. 4.3.1)

describe the ideal implementation methodology from a leadership viewpoint.

The relationship between the ESC, QMB and PAT team can be illustrated from the viewpoint of the management structure necessary to implement process improvement. The ESC is seen as the resource owner for the organization. They control the allocation of assets which are necessary to implement the organizations' processes. The QMB is seen as the process owners and consists of a team of managers who are jointly responsible for the processes and associated systems, products and services. Their role is to plan the changes to be made; develop a sense of ownership; and develop and deploy the improvement plan, using PATs for implementation.

The PAT is composed of the process workers, who have the task of implementing the process improvement. They collect data, identify impediments and problems, help establish the process change and remove special causes.

This particular organizational methodology is based on a unique aspect of the Navy. The Navy management system is recognized to be authoritarian and based on the requirement of unique war-time situations. Additionally, personnel at all levels transfer to other organizations frequently (tours of duty range from eighteen months to three years). It is recognized that many junior level employees (enlisted and officers) will leave the Navy at the end of their tour (Doherty 1990, 2). The organization is very large and

geographically dispersed and has the mandate to implement TQM as quickly as possible.

With this backdrop, the decision was made to minimize the role of junior personnel and the associated requirement for training all personnel. The process is for the very senior officers on the ship to form an ESG under the direction of the Commanding Officer to decide what to do -- usually focusing on what processes they feel should be improved immediately. They then form QMBs, made up of officers and senior enlisted, to accomplish the plan, check and act portion of the PDCA cycle. The implementation plan is turned over to the crew, for the Do portion of the PDCA Cycle.

One of the motivating factors for the Navy's methodology is the recognition of the concept of critical mass. There must be a sufficient number (a critical mass) of trained personnel in TQM methodology in order to execute the process within the organization. The large training requirement and constant turnover and loss of people negates the possibility of training everyone. In responses to this, the Navy's philosophy is to train a core group of leaders in the actual processes -- a critical mass and then allow non-trained persons to execute the improvement plans as part of their normal duties.<sup>9</sup>

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<sup>9</sup> This discussion is based on class notes for module four, lesson two of the "Senior Leaders Seminar Total Quality Leadership".

Key elements of the TQL implementation organization are the TQL Coordinator and TQL facilitator. As indicated earlier, the TQL coordinator serves as the principle adviser, assistant, trainer and supporter to the senior leader and ESC. The TQL facilitator provides similar functions for the QMBs and PATs. Figure 16 illustrates the responsibilities and roles of the TQL Coordinator. As can be seen from the above discussion, the rapid turn-over of personnel requires frequent training of new personnel and team building and development.

A final and very important element to the organizational aspects of TQL is the use of "link-pin" between the ESC, QMB and PAT. This "link-pin" is an individual who belongs to both the senior and junior organization, with the responsibility to represent one group, to the other. I.e., a member of the ESC will serve on the QMB to insure that the policies and guidance of the ESC is understood and followed and to serve as a representative back to the ESC to insure they understand the QMB's recommendations and actions.

#### **The VPC Organizational Structure of TQM**

The VPC method has similar organizational elements as the Navy method, but is executed differently. The ESC has similar responsibilities -- developing the vision, quality philosophy and other leadership functions and provides the continuing oversight and support necessary to insure continuity of purpose for the entire organization. The QMBs are established at organizational levels, to develop the strategic and

<b>Roles and Responsibilities of TQL Coordinator</b>	<b>Assist the transformation</b>	<b>Act as change agent</b>	<b>Role model</b>
			<b>Act as CO's conscience</b>
			<b>TQL proponent</b>
		<b>Acquire profound knowledge</b>	<b>Continuous self-education</b>
			<b>Use PDCA</b>
			<b>Networking</b>
	<b>Aid in building the environment</b>	<b>Education and training</b>	<b>Coordinate education &amp; training</b>
			<b>Assist ESC in developing education and training plan</b>
		<b>Coordinate resources</b>	<b>Library</b>
			<b>Lessons learned</b>
			<b>Administer for teams</b>
		<b>Publicize/ Document progress</b>	<b>Internal</b>
			<b>External</b>
	<b>Facilitate strategic planning</b>	<b>Assist ESC with ISP</b>	<b>Train/Educate ESC in ISP</b>
			<b>Guide ESC through ISP process</b>
		<b>Assist ESC with SM</b>	<b>Educate/Train organization in SM</b>
			<b>Guide organization through process</b>
	<b>Support process improvement efforts</b>	<b>Act as QA for ESC</b>	<b>Assist process implementation efforts</b>
			<b>Facilitate ESC</b>
			<b>Educate/Train ESC</b>
		<b>Assist TQL teams</b>	<b>Act as technical resource/consultant</b>
			<b>Coordinate for QAs</b>

Fig. 16. Roles and Responsibilities of the TQL Coordinator.  
(TQL Implementation Course 1992, Fig. 4.2.1).

tactical plans discussed above for their particular organizational level, using the organization's vision and upper-level QMB products as boundaries. Likewise, QMBs can be established to address processes and problems which cross organizational lines. The PATs are responsible for the detail planing and implementation, using the PDCA Cycle. These PATs are made up of members of the QMB and selected other employees within the organization who have unique knowledge or a stake in the change.<sup>10</sup>

#### **Other Organizational Support to TQM**

Juran recommends a second method for implementing TQM, the use of coordinators. They usually come from a specialty department, such as Industrial Engineering, and take the lead in planning and coordinating the implementation of improvements (Juran 1985, 154). QUALTEC, VPC and many others, find that project improvement teams work more effectively when they are assisted by people with extra training in project management, group processes, statistics and the quality tools (Scholtes 1988, 3-12). These people have a number of titles (facilitator, quality coordinator, quality advisor and statistician) and assist the team and team leader by coordinating their actions, maintaining networks within the organization to be aware of the actions of other teams,

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<sup>10</sup> This discussion is based on numerous lectures by the VPC consultants and the actual method adopted at NSCL.

providing technical and administrative support, providing advice on TQM processes and acting as trainers.

#### **Management's Role in Organizational Structure.**

Managers must actively support improvement teams. They must delegate (not abdicate) their responsibility to the teams, providing a clear charter in the form of descriptions of the problem, expected outcomes and boundaries they wish addressed. The managers must be "biased for action" in that they act on the teams' recommendations and requests in a timely manner. They work to accept the ideas and provide the required support, even if the ideas are not perfect and the requested support may not have been what the manager would have chosen. The employee's buy-in and support of the process, and the continuing refinement to ideas during execution will overcome many deficiencies (Tenner and DeToro 1992, 185 and 193).

#### **LEADERSHIP AND THE CHECK STEP OF THE PDCA CYCLE**

The VPC process recommends quarterly reviews to determine the progress of individual boards and teams. During interviews with Captain Bill Pitt, former CO of SEABAT, he observed that from his experience, these formally scheduled reviews of team performance were not productive and in fact sent the wrong message. Leadership involvement in the form of progress reviews and showing interest in tasks, including TQM

team efforts, should be a part of the normal management processes of the organization.

He suggested that management reviews of TQM team efforts be held when necessary, not at some predetermined time. He recommended that the sponsoring management level for a TQM team (QMB or PAT) be very explicit on what they expect, including time-frames and that a link-pin or coordinating manager be assigned. This set of expectations and the coordinating managers' efforts negate formally scheduled review processes. Rather, the coordinating manager should be briefing his peers when they are together as part of their normal conduct of business. The purpose of scheduled TQM meeting should be to review the overall process and progress toward meeting goals -- not to review individual teams status. He did recognize the need to have teams brief the next level up, sponsoring group, as a form of recognition of their accomplishments and a method of obtaining greater buy-in for what they were doing.

#### **PROCESS IMPLICATIONS FOR LEADERSHIP**

The above discussion on leadership specified that one functional element of leadership is to support the employee, as necessary, so that they can implement the organization's vision. One major element of this function is to establish a supporting organizational environment which stresses the

systematic process discussed, both at the organizational and process improvement level. The leadership must insist upon and support, through allocation of time, funds and training, a systematic PDCA cycle-based process of improvement.

All of the organization process improvement models stressed the development of visions and determination of "what to do" as a basis for the detail plan development and process improvement efforts. This function is inherent to leadership and is, for the organization, a part of the senior leaders' responsibility. The "how to do" basis also has senior level components associated with the strategic and tactical plan development and measurement and control procedures to insure that the organization is improving.

The senior TQM organizational unit (ESC or QMB) has the responsibility to oversee the actions of the junior unit (QMB or PAT) -- insuring that their efforts are consistent with the organization's plans.

## CHAPTER 6

### EMPOWERMENT

#### CONCEPTS AND DEFINITIONS

Deming's fourteenth management obligation states that everybody in the company should be put to work to accomplish his "transformation" -- it is everybody's job. A past Director of Industrial Productivity for the Department of Defense supports this, by observing:

"The greatest strength of TQM is that it empowers everyone in the organization to seek continuous process improvement at both a personal and team level. It spurs creativity and gives employees a sense of pride of ownership in their process" (Strickland 1989, 20).

This leads to asking, what does the term empowerment mean? In common usage, it means to authorize, or grant the employees of the organization the responsibility for making many of the decisions formerly made by management only (Kiely 1992, 25). Conway (1992A, 143) indicates that empowerment involves establishing a new culture within the organization, which is referred to as the participative style of management. According to Kiely (1992, 25-30), empowerment can refer to a spectrum or continuum of degrees of participation -- from simple employee-involvement programs such as quality circles, worker-participation committees and development teams to completely self-managed teams, having the authority to make full decisions regarding their work center. He stresses that

true empowerment is a difficult task, requiring a major management commitment and long-term changes in most organizations. The empowerment must be embedded in the organization and provide both the skills and authority to make decisions. Risk must be encouraged.

Harrington provides a number of things which management must accomplish to empower employees (Harrington 1987, 63-64):

1. Managers must share their power and responsibility with employees.
2. Managers must trust their employees.
3. Training in problem solving and participation must be provided.
4. Work must be viewed as a cooperative effort between management and employees.
5. Management must be willing to accept a system that decentralizes decision making -- allowing decisions to be made at the lowest appropriate level.
6. Management must believe that everyone has good ideas.
7. Management must be willing to implement employees' suggestions.
8. Management must provide an environment conducive to developing employee loyalty.
9. Management must recognize the group's accomplishments.
10. Organized labor must become an active partner in developing the participative system.
11. Management must accept participative management as a long-term effort and not expect immediate results.

Thus, empowerment requires a basic change in the way managers view the roles of their employees -- which strikes at the very core of the culture of the organization. At the same time, Captain Garland Skinner, USN, RET., a senior TQL instructor stated, during an interview, that within the Navy empowerment can, in no way, be constructed as relieving the chain-of-command of their inherent responsibility, authority

and prerogatives. Likewise, during a QUALTEC user-group meeting, the "Power of the CEO" was frequently referenced. There is nothing about the empowerment aspect of TQM that relieves senior management of their full responsibility and authority to act for the good of their organization. Empowerment can be seen as the management of participation, in which the leader appropriately involves employees in the various processes which were previously reserved for the management.

### **DIMENSIONS OF EMPOWERMENT**

Tenner and DeToro (1992, 179-182) have provided three building blocks, or dimensions, which are necessary to empower employees: alignment, capability and trust.

#### **Alignment and Empowerment**

The first dimension is alignment. Employees must know, and accept the organization's mission, vision, values, policies, objectives and methodologies if they are to effectively exercise the responsibilities provided through empowerment (Tenner and DeToro 1992, 179). This, from the earlier discussion on leadership, was seen as one of the key functions of leadership. Both the knowledge and acceptance is extremely important for alignment to occur. Senger (1990, 235) has reinforced this requirement by observing that "empowering the individual, where there is a relatively low

level of alignment, worsens the chaos and makes managing the team even more difficult".

Alignment requires that employees both know and accept their role in the TQM-oriented organization. Alignment builds the bridge between compliance and commitment, in that employees will want, and become dedicated to accomplishing their empowered work (Tenner and DeToro 1990, 189).

#### **The Employee's Capability for Empowerment**

Capability refers to the employees having the ability, skills, assets and knowledge needed to do their job. This refers to both training and development of the skill level of employee(s) on an individual and group basis. The employees must be trained and developed in group dynamics and be provided, at the system level, with the assets and procedures necessary to accomplish their job. It is not true empowerment to authorize employees to make job-related changes and then not provide them the tools necessary to accomplish their new responsibilities (Tenner and DeToro 1992, 180).

#### **Mutual Trust and Empowerment**

Mutual trust is the third dimension to empowerment. It makes employees feel that they can trust their managers and that their managers trust them. This dimension is the key to unleashing the power, creativity and resourcefulness of the work force. Without trust in their bosses, employees will not take the risk to be creative (Tenner and DeToro 1991, 181).

From this discussion, it is observed that empowerment is a natural outcome or consequence of effective leadership. It is based on a concept of respect for people, or as Ishikawa (1985, 112) states it, a "work place where humanity is respected". It can be seen as a key element or method to implement Deming's twelfth "obligation" of management -- Removing barriers which rob people of their pride of workmanship.

### **THE HEART OF EMPOWERMENT**

Covey (1991, 214) has indicated that the framework, the very heart, of empowerment is based on four principle-centered conditions: (1) win-win agreements, (2) accountability, (3) self-supervision and (4) supportive systems and structures.

Win-win situations evolve from an atmosphere of mutual trust. Decisions and relationships are based on mutual support, instead of competition, and everyone strives for a win-by-all-participants situation (Covey 1991, 215). It is noted that the basic concept of the Deming Cycle is, for the organization, their customers and the employees, an exercise in win-win. Working, to better satisfy customer requirements at the lowest cost (improve quality), results in better customer satisfaction and support and greater market success, which in turn represents increased job security and rewards for the organization and the employees.

Covey (1991, 215) stresses that win-win situations require knowledge and skill in communications (to understand and be understood), to organize (plan, act and do) and to synergistically solve problems, to the benefit of all.

The concept of accountability is coupled with self-supervision. Employees are encouraged and empowered to work without direction from "bosses", however, they are held responsible or accountable for their actions. Each part of the organization is accountable to the other parts, employees and managers must answer to each other for their actions. This supports mutual alignment of work efforts and the need for trust. People need to feel responsible for, and trusted to accomplish their tasks (Covey, 1991, 213-214).

Richard Hackman has provided five behavioral signs which define and support self-management of an organization (VPC workbook 1988, 10-6):

1. Employees are personally responsible for their work outcomes.
2. Employees monitor their own work performance.
3. Employees manage their own work performance.
4. Employees seek from the organization assistance that they need for excellent performance.
5. People help people in other areas of the organization improve their performance.

Thus, empowering employees fosters personal involvement and responsibility for the employees' work outcomes and builds a synergism within the organization.

## EMPOWERMENT AND DECISION MAKING

Harrington, in his above list of items necessary to implement the empowerment aspects of TQM, indicated that management must be willing to decentralize decision. Managers must recognize that everyone within the organization has good ideas and their execution should be supported by management. A participative management style requires that workers be involved in the decision-making process. It must be recognized that involving employees in the decision-making process does not mean that managers lose control over the organization's decision -- rather it is seen as a continuum, between no and considerable (or total) input, in any (or all) of the decision-making steps (Mondy, Sharplin and Premeaux 1991, 125).

Vroom and Yetton's Normative Theory of Leadership and Decision-Making is based on the extent to which managers involve their employees in the decision-making process. They indicate that managers may choose one of five processes in involving subordinates, ranging from the manager making decisions, using information available at the time, to delegating the problem to others. Intermediate steps in the continuum include obtaining necessary information from others; sharing the problem and obtaining the ideas and information from others, but reserving the decision-making to the manager; and total participation or collaboration in ideas and

decisions. A major facet for making the decision on degree of participation is based on the need for commitment of the subordinates in executing the decision effectively (Mondy, Sharplin and Premeaux 1991, 344-345).

Sink, in various lectures to the management of NSCL, has stressed that decisions should be made by those who have the information. Quite frequently, lower-level employees have the most information about the subject, especially for process-oriented decisions, and should make the decisions. This leads to a basic philosophy that decisions should be made by the most informed and at the lowest possible level within the organization. Obviously, this philosophy must be tempered by the inherent risk and impact the decision has on the organization, and the need to coordinate and reach buy-in by those who allocate resources.

### **REWARDS AND RECOGNITION**

Inherent to the management and leadership functions and empowerment, is the concept of motivation. McGregor's Theory X employee, discussed earlier, is assumed to be motivated by positive rewards or the fear of adverse action. This theory has resulted in elaborate performance appraisal systems which are supposed to provide for both rewards and penalties depending on how the employee does his/her job. The Theory Y

employee can be seen as being intrinsically motivated by the sense of accomplishment.

Deming is opposed to reward systems based on performance evaluations. His "obligations" of management require that management drive fear out of the work place and eliminate work standards. He sees evaluation of performance and merit reward systems as devastating (Deming 1986, 102):

" ... Management by fear would be a better name, ... It nourishes short-term performance, annihilates long-term planning, builds fear, demolishes team-work, nourishes rivalry and politics.

It leaves people bitter, crushed, battered, desolate, despondent, dejected, feeling inferior, some even depressed, unfit for work for weeks after receipt of rating, unable to comprehend why they are inferior. It is unfair, as it ascribes to the people in a group differences that may be caused totally by the system that they work in."

Scholtes (1987) elaborates on Deming's teaching regarding performance evaluation. The reasons for rejecting performance evaluation fall into two categories:

1. Outcome of work is based on the work process. Most employees don't try to make errors, the errors are generally the result of inadequate tools, training and processes which are provided and controlled by management. Thus, errors are usually the results of common causes associated with the process.
2. Few employees are totally responsible for their work. Work output is generally the result of the collaborative effort of many employees.

One method that Deming advocates, has established to reward employee and build teamwork, without linking individual performance to financial rewards, is the concept of gainsharing (Walton 1990, 174). Gainsharing systems can be

traced back to the Roman civilization and in modern times are based on profit-sharing. Generally, all employees share the same percentage of base salary in the form of a bonus. The amount depends on the profitability of the company. The concept is used widely in Japan, where many companies give bonuses twice a year. In very profitable years, the bonuses have been known to almost equal the employee's salary, while in bad years the employees do not expect or receive a bonus (Harrington 1987, 194).

Leadership still has the responsibility to provide intrinsic feedback to employees, however, the concepts of coaching, with its intrinsic feedback and support, seem most applicable to TQM.

### **EMPOWERMENT AND LEADERSHIP**

The above discussion indicates that leadership must transfer some part of their authority to workers, in the form of empowerment, to release their ideas and gain their involvement in the organizational-wide improvements.

Covey (1991, 264), reporting on Deming's philosophy, indicates that western management must change fundamentally before TQM can become a reality. He believes current management and leadership paradigms are that people are a commodity, to be purchased by wages. TQM involves "empowering people in the deepest sense and removing the barriers and

obstacles ... [that have been] ... created that crush and defeat the inherent commitment, creativity, and quality service that people are otherwise prepared to offer. To receive joy and pride in one's work is the right of all)". .

## CHAPTER 7

### PERSONAL, ORGANIZATIONAL AND CULTURAL CHANGE

#### THE CONCEPT OF CHANGE

The continuing improvement aspects of TQM is really a study in change. As shown in the Calvin and Hobbes cartoon below (Waterson 1992), once a process of improvement occurs,



Fig. 17. A Calvin and Hobbes Cartoon.

problems are identified, which require changes -- both on an organizational and personal level.

The concept of change is straight forward. A need for change must be recognized and the method of change identified. Then the change process, called the Lewin Change Sequence occurs. It consists of three steps: (1) unfreezing the status quo, (2) moving to a new condition and (3) refreezing to create a new status quo (Mondy, Sharplin and Premeaux 1991, 464). Bridges (1991, 3-25) makes the point that the second step is the key issue in the change process. Moving to a new condition is really a transition, from an old situation to an intermediate or transitional stage before going to the new situation. For individuals and organizations, change means that something of value (the old status quo) must be given up and grieved upon -- he states that change is a paradox, transition starts with an ending. During the transition stage, the situation is ambiguous and results in considerable anxiety for the participants -- the old situation is no more and grief is expressed over the loss of previous familiar and rewarding conditions -- and the new situation and its rewards are not yet achieved.

Fishman provides a similar view of change and transition, indicating that change involves going from one stable stage, to a second stable stage, (Lewin's status quo states) with three phases during the transition stage. The first phase involves awareness versus ignorance and refers to management communicating answers to six very important questions:

1. Why is the change necessary?
2. Who is responsible for the change?
3. What will be the extent of the change?
4. When will it begin and end?
5. Where will it be located?
6. What's in it for me?

This phase is, from a TQM leadership basis, a means to communicate the visions, mission and a strategy for moving to the new state, so that people will know what to expect. It is the first step in the leadership alignment process.

The second phase, relevance versus resistance, includes creating the action plan to enable the change, working through resistance, providing training and helping people to create a bridge between the old and new way.

The third phase, acceptance and commitment versus denial, is involved with executing the second phase, building momentum of acceptance and working through individual problems (Fishman 1990, 55)

Change, viewed from a leadership perspective, has four elements -- systemic, personal, cultural and organizational. Each of these will be addressed briefly.

#### WORLD VIEW AND MODES OF CHANGE

Will McWhinney (1992) has provided an extremely insightful book about organizational change. His premise is that when change occurs, boundaries between perceived realities are transgressed. He argues that people hold some combination of four worldviews or realities: unitary, sensory,

mythic and social. Each worldview is based on a system of beliefs which lead to characteristic behaviors.

The beliefs associated with the worldviews are represented by a two-by-two matrix and are based on the extremes of two viewpoints, the degree of choice that is possible and the degree of likeness that exists. The degree of choice is based on a spectrum between freewill and a pre-determined world, while the degree of likeness has, at its extremes, the beliefs that the world is monistic (a single reality) or pluralistic (multiple realities). Changes occur when a boundary is crossed between one of these worldviews, which leads to six modes of transgression.

McWhinney's work is complex and based on an extensive language which must be developed. As such, it is beyond the scope of this dissertation, however, it should be considered as part of the change theory and researchers and change agents should investigate his concepts.

#### **CHANGE - A SYSTEMS PERSPECTIVE**

Calvin Pava, of Harvard Business School, has recognized that ill-defined complex problems require systemic changes, however, the uncertainty of such issues polarizes the different stakeholders and impedes collaboration. He indicates that change situations can be characterized on two dimensions -- complexity and conflict (Pava 1986, 616).

The social conflicts arise from contrasting values and diversity of viewpoints and different interests. The technical conflicts are based on the intertwined and/or unstable factors making up the situation and he uses the term "messy" to describe this situation. Both factors can be described as ranging from high to low on their impact or importance to other change situations. The combination of the high and low social and technical dimensions yields a two-by-two matrix with each situation representing a single niche for distinctive change strategies (Pava 1986, 617 and fig. 1). Each of these distinctive change strategies will be described in the following sections.

#### **Master Planning**

Low conflict and low task complexity results in a niche which Pava calls master planning. Low social conflict is characterized by relatively low interdependence and low divergence of opinion between participants and low complexity implies stable, clearly defined problems which allow rigorous analysis and detail planning based on this analysis. Change strategies in this niche rely on low contention and low uncertainty with the associated technical subsystems sheltered from quirky perturbations.

Pava (1986, fig. 1) indicates that change strategies in this niche include:

- \* Corporate strategic planning
- \* Budgeting
- \* Forecasting
- \* Operational research algorithms

- \* Computer simulations
- \* Delphi and other convergent techniques

The researcher notes that the QUALTEC and TQL policy planning and quality in daily work processes used within TQM and reported earlier seem to fall within this niche. This suggests that these processes are seen to be most applicable when there is good alignment between participants regarding vision, mission and guiding principles (ie., Senge's shared vision as discussed in chapter four above) and a degree of trust which minimizes divergence. Likewise, the process is applicable when the tasks (ie., implementation of the concepts of TQM) are seen as stable and clearly defined. Analysis of the data contained in the case study of this research must validate if these or other niche conditions exist in order to understand the change process.

#### **Incremental Non-Planning**

The change strategy niche associated with high conflict and low uncertainty is called "incremental non-planning" by Pava. The social conflicts and associated intense differences between participants are seen to be operating in Bolman and Deal's political frame and impedes purposeful changes. These differences give rise to suspicion and malice which greatly hinders implementing major changes, yet Pava indicates that the low complexity makes it possible to obtain acceptable outcomes. The outcomes are obtained through bargaining, voting and other forms of adjudication and result in marginal alterations or changes and partial solutions. These results

represent an imperfect equilibrium but are more viable than the master planning technique when divergence exists (Pava 1986, 618).

The niche is seen by the researcher as very close to the VPC process, where decisions are obtained through the Nominal Group Technique method of voting to reach group consensus. The above discussion suggests that it is most applicable to TQM implementation when there are ill-defined or non-shared visions between participants. Pava refers to this condition as an anarchistic organization and notes that the change strategies of voting and bargaining are viable, but suboptimum.

#### **Normative Systems Redesign**

Low conflict and high uncertainty leads to a strategy of normative system redesign. High uncertainty exists when problems are poorly defined or when rapidly changing situations occur. The change strategy emphasizes wide-spread participation of diverse interests to redesign the system to be changed. Approaches include normative and cybernetic systems planning of an idealized nature with iterative and possibly extensive modification as feedback from implementation occurs. This process supports the concepts of organizational learning and the participative aspects increases the commitment to changes when social conflict is low (Pava 1986, 619-620).

This process could be applicable to TQM if the condition of change is highly uncertain or if the desired changes to the organizational subsystems are poorly defined. The researcher believes that these conditions are not the norm when addressing TQM implementation. The subsystems to be changed within the organization are normally well-understood and the changes can be adequately defined.

### **Non-Synoptic Systems Change**

Simultaneous high levels of complexity and conflict require what Pava calls a non-synoptic system change. The process appears fragmented and disorderly (non-synoptic) and is intended to trigger some form of system-wide change. The method is based on incrementalism -- ie., changes are made on piecemeal steps which do not rely on detailed projections, explicit redesigns or prior consequences, rather they rely on an incremental step toward the desired state (Pava 1986, 620).

The processes involve three activities: theme, actions and reflective matching. The theme process consists of an unclear or "fuzzy" statement of desired outcome or change. From a TQM implementation viewpoint, themes might include: (1) improved quality, (2) customer focus, (3) empowerment of employees, (4) process improvement and (5) management-by-fact. The precise meaning and implications of the theme are initially unclear, even to the advocate, but the theme implies a shift in relations between groups inside the system, thus a change.

Bottom-up initiatives are mandated which must lead to implementing the theme. The initiatives are instituted by a cross-section of different groups who meet in committees. The theme is not precisely defined and they develop their own actions to move towards implementation.

Reflection matching must determine if their actions move towards the ambiguous theme. They determine if the changes make an improvement and at the same time clarify the theme. As Pava indicates, " ... slowly a reserve of shared experiences accumulate and the theme is appreciated in hindsight as something more than just a disembodied slogan (Pava 1986, 621)". From this hindsight, additional incremental actions can be initiated.

The high levels of complexity and conflict cited for this niche are not consistent with the TQM literature. From a TQM viewpoint, the niche is based on the inability to obtain a shared vision inherent to high conflict and, simultaneously, a poor definition of needed changes to implement TQM. To follow this niche a theme of "Implementing TQM" would have to be espoused, which would lead to a series of supportive themes such as the five listed above. The difficulty of making organization-wide changes to the extent necessary to implementing TQM by a series of ill-defined incremental steps and hindsight suggest that successful results in a realistic time-frame (as determined by the competition) would not occur. The researcher suggests it would be more productive to work on

changing the conditions that define this niche, ie., to reduce the level of conflict and complexity. In any case, the problems associated with implementing TQM are well-defined within the literature and this niche does not seem to apply.

### **CHANGE AT THE PERSONAL LEVEL**

TQM requires many personal changes, in the way tasks are performed, the way that individuals relate to others, including customers, peers and managers and the organizational climate. Each of these can be traumatic and are frequently resisted. Kanter indicates that change is not liked by employees and is often accompanied by "tension, stress, squabbling, sabotage, turnover, subtle undermining, behind-the-scenes foot dragging, work slow-downs, needless political battles and a drain on money and time (Kanter 1985, 52)". Kanter sees this resistance to change as rational, stemming from good and understandable concerns, which managers must analyze and do what they can to minimize and convert into commitment. She provides ten common reasons that employees resist change and suggests tactics which managers should take to address the resistance.

#### **Reasons for Resisting Change**

##### **Loss of Control**

"Changes can be exciting when it is done by us, but threatening when it is done to us (Kanter 1985, 52)". People

want and need to feel in control of the events around them. A cornerstone of participative management is that empowered employees, who have ownership in the change, have better control (the change is being done *by us, not to us*). This requires that managers empower employees as discussed earlier, involving them as early as possible in the change process. The greater the involvement, the less the feeling of out-of-control and powerless and the less the need for defensive and territorial protective behavior.

#### **Excessive Uncertainty**

People resist change when they do not have sufficient information about what will happen at every step in the change process. They want to be able to anticipate what will happen. Management must provide information, including step-by-step scenarios, with time tables and milestones. By dividing a big change into a number of small steps, the change can seem less risky and threatening.

Leaders must demonstrate their commitment to the change. They must be the first to "jump off the cliff". Change requires faith that the new way is right and resistance will occur if employees do not believe that managers believe it right and see them willing to take the first actions (Kanter 1985, 53).

#### **Surprise - Surprise**

Management must minimize surprising employees with unexpected changes. The first response to something new and

unexpected -- that has not been prepared for mentally, is resistance. Managers who wait until all decisions are made and then spring them on an unsuspecting work force will meet resistance. It is important to provide employees with information, in a timely and phased manner, so as to build commitment and reduce resistance (Kanter 1985, 54).

### **The Difference Effect**

Change requires people to become aware of, and question, familiar routines and habits. These habits and daily routines are important, for they minimize the need to expend physical and emotional energy on the mindless routine that is a part of everyone's day. The goal in designing change should be to minimize and reduce the number of differences being introduced, leaving as many habits and routines as possible (Kanter 1985, 54).

### **The Loss of Face**

Accepting change may mean admitting that the way things were done in the past was wrong -- which can cause embarrassment and loss of face -- and causes resistance. The change must be put into context and prospective. It must be recognized that past actions were appropriate, given previous conditions, but conditions have changed, requiring new ways of doing things (Kanter 1985, 54).

### **Concern about Future Competence**

Employees may be concerned about their ability to function after a change, especially a technology-based change.

It is very threatening to be told that the new order requires a whole new set of competencies -- requiring someone to "start over". Managing change requires that people be made to feel competent. That sufficient education and training is available and opportunity and time is provided to acquire the new skills in a non-threatening environment (Kanter 1985, 55).

### **Ripple Effect**

Management must be sensitive to the fact that at-work changes can have a ripple effect on employees outside of their job. Changes can affect peoples' activities, free time and personal plans. The key to managing this effect is to build flexibility into the execution of the change. The transition phase should be planned in a manner which allows employees to cope with the change, on a personal basis (Kanter 1985, 55).

### **More Work**

A very reasonable source of resistance is that change frequently requires more work. They require employees to expend "above-and-beyond" efforts in energy and time and frequently ripple into their personal life. Management should recognize this and provide more support and compensation for the extra work. Support can include informing families of the reason why extra time is needed on the job, giving credit and rewards and providing support staff and physical support (Kanter 1985, 55-56).

### **Past Resentment**

Change can act as a catalyst which breaks an uneasy truce between employees and their managers. Management must be willing to "sweep away the cobwebs of the past" to overcome resistance to current change. Going forward can mean first going back -- listening to past resentments and repairing past rifts (Kanter 1985, 56).

### **Sometimes the Threat is Real!**

Sometimes changes do create adverse conditions for employees. People can lose status, comfort and even jobs due to change. There are winners and losers with most changes. Management must avoid pretense and false promises. There should be a free flow of information, as early as possible. Changes, once decided, should be executed as humanely as possible (Kanter 1985, 56).

## **CHANGE AT THE CULTURAL LEVEL**

An organization's culture is its system of shared values and beliefs that produce its norms of behavior (Ivancevich and Matteson 1987, 30). The culture defines what is important, how things work and the way things are done within the organization (Sharplin 1985, 68). It is necessary that the organization's culture be aligned to produce a quality product and follow TQM practices. Johnson (1992, 9) indicates that TQM consists of three key parts: competitive strategy, a

technology to produce goods and services and a way of managing an organization. He states that of these three parts, the management and its cultural interface are most frequently ignored. The organization must have a strong cultural bias -- a belief that defines what is important, how things work and the way they are done -- which is supportive of the concepts of TQM.

Argyris (1985, 73) deals with the organization's response when changes occur, which are considered counter to the organization's culture. He calls these actions defensive routines, and indicates that they are practiced by all levels within the organization and have the effect of resisting change. He indicates that the generic responses to a threat are two bypass strategies. One is to be direct and forthright, the second is to respond in covert ways. This is substantiated by the earlier discussion on framing by Bolman and Deal. It was recognized that the culture of an organization can dictate how employees and managers view or frame situations and their discussion involving denial and attack is analogous to the above-discussed defensive routines.

The direct response is frequently seen as "telling it as it is" and engaging in dialogue and actions in an adversarial, judgmental, closed and unchangeable manner. It frequently does not resolve the differences. The second method, "easing in" is seen as attempting to hinder the change in active, but covert ways. The employees seem passive, but they are

actively trying to undermine the change. Argyris (1985, 266-269) recommends seven actions which management might take when dealing with defensive routines:

1. To identify the reasoning and actions that create the defensive routines.
2. To reflect on the reasons and actions, checking for and minimizing inner contradictions.
3. To reflect on the reasons and actions, once the contradictions are accounted for to develop changes.
4. To construct maps that show how patterns of reasoning and actions create defensive routines.
5. To select the key point and time to interrupt the defensive teams. To find when and where it is most likely that learning and change will occur.
6. To deal effectively with your own and other's feelings.
7. To create conditions in which others can learn and use these management actions, to further the changes.

Key components of an organization's culture which must be supportive to TQM fall into seven themes (Johnson 1992, 9):

1. Empowerment at all levels within the organization.
2. Team-based actions.
3. A collaborative management approach.
4. Full (100%) involvement in quality.
5. Everyone trained and willing to use the quality tools.
6. Strong human resource policies.
7. Respect for the individual.

These components must be changed, if they do not reflect the organizational needs. Johnson (1992, 9-11) indicates that these changes are much the same as making any other change to the organization. He provides nine steps, which he believes are critical. These steps can be summarized into developing a value statement; in each of the above themes, conducting an audit to determine the differences between the current and

desired culture; redesigning, implementing and monitoring key indicators associated with the policies and procedures that express the quality values; reward and recognize value supporting behavior; and top management continuing involvement.

#### **CHANGE AT THE ORGANIZATIONAL LEVEL**

Sink and Monetta (1991) have provided a comprehensive "Grand Strategy" for the organization to achieve its best performance. This strategy requires that eight basic organizational subsystems or fronts must be engineered and managed over time to drive continuous improvement at the organizational level at rates which will keep the organization competitive. These fronts are: (1) planning, (2) infrastructure, (3) culture, (4) measurement, (5) education and development, (6) motivation/rewards and recognition, (7) politics, or satisfaction of critics and stakeholders, and (8) technology.

It is interesting to note that a description of the organizational fronts would be redundant to the literature research already documented. The importance of this work is that it recognizes that an organization is made up of major sub-systems, which must be appropriately managed. The terms "fronts", are intended to indicate that these sub-systems must be addressed concurrently and in a concerted manner. They use the word "front" to evoke the image of a battle field and the

necessity to keep all of the "fronts" together. "If one front gets too far ahead of the other fronts, it runs the risk of getting cut off; if it lags too far behind, it jeopardizes the other fronts (Sink and Monetta 1991, 5)".

From an organizational viewpoint, planning, culture, infrastructure, measurement, etc. must all be advancing together to advance the organization. For example, to advance planning, without addressing culture and infrastructure, is to jeopardize the entire TQM program.

In order to engineer and manage, over time, each of these fronts, a Grand Strategy, or plans must be developed which advances the eight organizational sub-systems on a systems or totality basis. Sink and Monetta (1991, 8) indicate that the focus should be on defining, planning, communicating and creating ownership for the future. They propose that the planning front must be the lead front, because it drives the development of a strategic plan which integrates business, quality, marketing, project and program, and budget plans into a single plan for organizational performance improvement.

#### **THE LEADER'S ROLE IN CHANGE**

Most of the research to this point can be summarized as the leader taking a change role within his/her organization. Joy indicates that TQM requires two skills from managers. They must know the TQM process and they must be able to

operationalize the human element behind such efforts -- in other words they must know "what to do" and then be able to align the organization, with its personal, culture and organizational sub-systems to satisfy this requirement. The TQM model of leadership has been summarized into six components, which describe specific behaviors for management.

The effective TQM manager (Joy 1992, 30-31):

1. Has a clear vision.
2. Models the vision.
3. Clearly defines departmental TQM criteria.
4. Encourages involvement and empowers employees.
5. Leads, coaches and mentors.
6. Is a change agent.

Each manager must define what this model means, to themselves and to their organization. They should be able to articulate it and apply the behaviors which support it.

**CHAPTER 8**  
**LITERATURE REVIEW - A SUMMARY**

**INTRODUCTION**

The literature review indicated that TQM is a systematic approach based on the core principles shown in table two which allow the organization to improve or maintain its market position in times of world class competition. The researcher found that leadership involvement in change is the glue that holds the various organizational elements together, thus, facilitating the improvements. Without leadership involvement, the various organizational subsystems are not likely to remain in concert, all being applied to making the desired changes. The literature review focused on five areas: leadership, quality, continuous process improvement, empowerment and change. Each of these will be summarized, from a leadership perspective.

**LEADERSHIP**

The focus of the organization's leaders actions in implementing TQM was seen to fall into two categories -- leadership and management. These terms are frequently treated as synonyms within the literature and everyday life, however, they are found to have very different, but companion,

meanings. Leadership focuses on what the organization should be doing, while management focuses on how it should be accomplished. Both categories are equally applicable to the organization and must be accomplished by all "bosses", however, the leadership aspect is seen as more important to the high level executives and the management aspect to lower level supervisors.

The literature made it clear that the top leaders were responsible for their organization's quality, productivity, competitive position and increasing their employees' standard of living. The leadership aspects of their duties involved developing the organization's vision (deciding what to do), establishing and aligning the people networks needed to accomplish the vision and providing continuous motivation, support and coaching. These aspects were developed into a process which will be discussed in a following section of this summary.

Numerous management styles were discussed and it was seen that current social and cultural trends and the concepts of TQM are all causing leaders to move from an autocratic to more participative styles. It was seen that the most effective implementation occurred when employees were committed versus compliant. The compliance is obtained when management dictates actions with sufficient power that people do what they are told -- however, execution is seen as, at best, limiting production to the letter of the law or what is

expected. It normally does not result in actions which exceed the minimums. The "above and beyond" actions occur when people are committed or personally enrolled in the change. They believe in the change to a degree that they are willing to make it happen. Commitment will only occur when they share the vision of what is to be obtained. The sharing is seen as the results of employee involvement in the development and refinement of the plans by an empowered work force, participating in the decision process.

An issue in the research was that the senior leaders must have a broad perspective or viewpoint. They must be able to work from multiple frames and assist others in reframing or using the appropriate perspective(s) when approaching problems.

### QUALITY

A major conclusion from the literature research, as cited in the above summary, is that leadership is responsible for the quality of their organization's goods and services. Quality is defined by the customer and the highest level is obtained when the customer has such enthusiasm about the goods and products received that she/he brags about them to others. The customer becomes committed to the product and provider to such a level that a sharing or mutualism occurs. Quality at

this level is the essence of the Deming Chain depicted in figure three.

It is the leadership's responsibility to include this degree of quality in their vision and work toward it becoming shared, thus the visioning and alignment process must include, as a major element, obtaining high quality, as perceived by the customer.

### **CONTINUOUS IMPROVEMENT AND PROCESSES**

#### **Overview**

TQM, from a leadership viewpoint, is based on the processes which the leader(s) must follow and the organization's infrastructure and processes required to support continuing improvement. These are based on the PDCA cycle and as reported below.

#### **Leadership Process**

The leadership process is based on the steps of visioning, strategic planning, network development, alignment and coaching. The visioning and strategic planning were seen to be best achieved through participative methods, allows those who's alignment is necessary to be part of the planning process. This entails empowerment which will be discussed below. The alignment step consists of building a shared vision and the associated commitment from all of the stakeholders within the network. Coaching was seen as exhibiting personal involvement and collaborative efforts

during the execution in such a way that commitment and actions remained focused on the vision. This was characterized as the change agent role of the leader.

A second viewpoint of the leadership process was the personal efforts that the individual leader must follow. This process was highlighted under the TQL discussion and consisted of: (1) acquiring knowledge of TQM (obtaining Deming's profound knowledge); (2) becoming committed to the process of TQM; (3) providing knowledge, guidance and resources for improvement and (4) removing impediments to change. A fifth step of continuously applying the other steps of this process is noted.

### **Organizational Processes**

There were two major, PDCA based, TQM organizational processes recognized within the literature -- policy planning and deployment and improving quality in daily work. These processes are seen as operationalizing the leader's change agent process summarized above.

Five different TQM approaches to process improvement were studied and the resultant finding was that the two basic processes are closely related. Policy planning and deployment are based on a preplanning phase, followed by the application of the PDCA cycle at the organizational level. The preplanning phase consisted of an organizational analysis to assess and understand the current internal and external environment within which the organization is operating. This

includes identifying customers and their needs and expectations. The organizational analysis serves as the base line data for the development of a long-term vision and the supporting guiding principles. From this understanding, strategic and tactical plans are developed to move the organization toward accomplishing the long-term vision within the constraints identified (planning phase); the tactical plans are implemented, on a trial or prototype basis (do phase); the results evaluated (check phase) and the processes are expanded beyond the prototype stage or improved upon depending on the results of the evaluation (act phase).

The improvement of quality in daily work processes is seen as a subset of the policy planning and deployment process. It represents the methodology required to implement the tactical planning phases, with the requirement acting as the initiating action to start the detail PDCA cycle. It was also noted that bottom-up improvement uses this process. Employees are empowered to identify needed changes within their own environment and institute the cycle, providing it satisfies three criteria: (1) consistency with the organization's vision, (2) customer focused and (3) saves some form of asset. The QUALTEC methodology seemed to the researcher to be the most systematic and thorough approach, specifically imbedding both processes.

Collateral to the TQM processes is the supporting organization. Most of the literature suggests the use of

teams or committees, consisting of a cross-section of stakeholders, to accomplish the steps involved in both the policy planning and quality in daily work processes. The QUALTEC, VPC and Navy TQL programs all use an infrastructure consisting of an oversight group of senior leaders, the use of QMBs to allow multiple inputs for strategic and tactical planning and PATs for detail execution for process improvement. The coordinating executive or link-pin between groups and the use of TQM coordinators and facilitators is inherent to the organizational process.

#### **EMPOWERMENT**

The concept of empowerment is based on management's willingness to establish a philosophy which supports appropriate participation by all levels within the organization in the decision-making process. Management must recognize that the best way to obtain the commitment associated with the shared vision and to release the potential of each employee within the organization is to allow them to be a part of the decision-making processes, including the development of visions and guiding principles. This is seen to imply that management is willing to use the participative management styles which include consultation, delegation and collaboration. The most effective conditions exist when managers and employees work together toward shared goals.

It was recognized that three conditions must exist to support employee empowerment: alignment, capability and mutual trust. Employees must share the vision to be accomplished; have received sufficient training and experience to exhibit the ability, skills and knowledge needed; and mutual trust must exist between the various levels of the organization. This implies that attaining full empowerment may be an iterative process, with management providing the necessary training to allow sufficient participation in the vision building and change process to attain a shared or mutual goal. As training, experience and mutual trust build, the degree of empowerment or participation can increase. Mutual trust is necessary if employees are to take the risk of being involved and the managers are to take the risk of bringing the employees into the decision-making process. It is best obtained through good experiences. This is seen by the researcher as a major element of TQM implementation, requiring significant time and effort, by both managers and employees, to build the prerequisite alignment, skills and trust.

From the researcher's viewpoint, the empowerment issue is of concern for organizations such as the U. S. Navy, with its cultural background of a highly hierarchial and autocratic management structure, coupled with rapid turn-over of managers and employees. It is extremely difficult to build the prerequisite alignment, skills and trust when one-third of the military personnel transfer out of the organization each year.

Likewise, the emphasis on command accountability and associated prerogatives of senior management and the need to "make a difference" discussed earlier makes it very difficult to obtain long-term objectives to serve as a focal point for alignment.

### **CHANGE**

Change is an inherent aspect of TQM since a key concept is **continuous** improvement. It was previously noted that leadership had the responsibility of insuring that the changes occurred and were accomplished as part of the visioning and alignment process.

The literature provided a systems perspective of change, recognizing that there are multiple strategies to be deployed depending on the degree of social conflict and complexity. The review also provided insight into change from personal, cultural and organizational viewpoints.

#### **Personal Change**

Change was seen as traumatic and frequently resulted in resistance from employees, individually and collectively. An understanding of the impact of loss of control and excessive uncertainty associated with change were found to be key to TQM. Kanter's observation that "change can be exciting when it is done by us, but threatening when it is done to us" is extremely important. It is believed to be the theoretical

basis for the concepts of empowerment and obtaining commitment through shared visions. If employees know and understand why a change is necessary and are involved in the planning to determine the "who, what/how, when and where" associated with effecting the change they remain in control and have reduced uncertainty. This results in fewer defenses and resistance.

### **Cultural Change**

The literature research noted the impact that the culture can have on implementing change. The culture defines what is important, how things work and the way things must be done. Often, change requires a reframing of the culture -- to see things differently. Bolman and Deal emphasize that the cultural (symbolic) frame is an inherent viewpoint of the organization which must be addressed as part of change. Argyris emphasized the defensive routines that results when changes impact on the basic beliefs associated with the culture. Again, it was seen that empowerment, team building and collaborative approaches to implementing change were the key to changing the culture to be supportive of the new vision.

### **Organizational Change**

Organizational changes were based on the recognition that each of eight individual subsystems must be changed in a concerted and concurrent manner. The subsystems are (1) planning, (2) infrastructure, (3) culture, (4) measurement, (5) education and employee development, (6) motivation,

rewards and recognition, (7) politics or satisfaction of critics and stakeholders, and (8) technology. If any one subsystem is emphasized or neglected then the total change is weakened. Battle field fronts were used to illustrate this concept.

**PART II**  
**RESEARCH METHODOLOGY**

## CHAPTER 9

### LITERATURE RESEARCH -- METHODOLOGY ISSUES

#### INTRODUCTION

Research methods are primarily concerned with understanding the researcher's tasks, identifying the work that must be done and techniques to be used to accomplish the tasks and to understand the nature of the problems that may be encountered (Hakim 1987, 8). They form the backbone of any research and must be chosen to satisfy the problem.

Patton provides five purposes of research: (1) basic, (2) applied, (3) summative evaluation, (4) formative evaluation and (5) action research (Patton 1990, 150-162). Miles and Huberman (1985, 29), addressing similar categories, identify them as a continuum from exploratory (identifying basic knowledge) to confirmatory (validating anticipated facts). The first two purposes (basic and applied) are the types of research most frequently used for doctoral dissertations, however, it was validated by the dissertation committee that the qualitative and participative oriented evaluative and action research purposes are valid endeavors for the field of engineering management. In fact, many "real world" issues are so complex that the more quantitative-oriented methodology normally equated to basic and applied research is not practical. The issues and variables are so complex that they

cannot be realistically isolated for observation and measurement.

Patton (1990, 197) indicates that formative evaluation is the appropriate research category when the purpose is to improve an existing program. As the term implies, this research method is based on evaluating or systematically studying a process or event for the purpose of formulating actions which, if adopted, will improve performance. In the case of this dissertation, the purpose is the identification of actions necessary to improve the adoption of TQM at NSCL.

The purpose of the literature research provided in this chapter is to identify the methodology issues which will facilitate the investigation. Topics to be researched include: (1) the nature of qualitative research and case studies, (2) the relationship between the researcher and participants within the organization, (3) actions necessary to insure validity and acceptability of findings and (4) a recognition of the approach to the research.

## **QUALITATIVE RESEARCH AND THE CASE STUDY**

### **Overview**

When the research requires systematically looking at and understanding a situation, selecting the associated instances, collecting and analyzing the data and reporting results, qualitative methods are most applicable (GAO 1990, 20). The qualitative methods are "... a collection of words obtained

through observation, interviews and extracts from documentation and extended into text to produce a wealth of detailed information about a number of people and classes (Miles and Huberman 1984, 21)."

One method of qualitative research is the case study which is defined as:

"... a method of learning about a complex instance, based on a comprehensive understanding of that instance obtained by extensive description and analysis of that instance taken as a whole and in its context (GAO 1990, 14)."

There is good agreement that case studies, based on qualitative data, are applicable when addressing such issues as "best practices", management and organizational issues, culture and the process of change. The case study is seen as information-rich and provides better insight than quantitative methods when addressing these issues (GAO 1990, Hakim 1987, Miles and Huberman 1984, and Patton 1990).

The literature lists a number of purposes for qualitative-based case studies, one of which is associated with evaluating program implementation. GAO indicates that the program implementation case study is designed to learn what aspects of a program have been achieved, to understand unexpected aspects of implementation and why the current status exists (GAO 1990, 40-45). The program implementation case study and action research to solve a problem (in this case a waning TQM program), are closely related methods and both appear applicable to this research.

## **The Case Study**

GAO (1990, 70) indicates that the case study consists of six phases: (1) literature review, (2) design, (3) site selection, (4) data collection, (5) data analysis and (6) reporting.

### **The Literature Review Stage**

The starting point of the case study is to understand the relevant bodies of knowledge pertaining to the research task. This is accomplished by a research review of the literature, which Harkim indicates is multi-disciplinary, taking into consideration the relevant studies from the disciplines involved. The research results are normally reported as an essay summary of the literature. A constant concern and pitfall to be guarded against is that of partial or selective coverage of the relevant literature (Harkim 1987, 17-19).

### **Design Stage**

Design is the planning phase of the case study. It establishes the framework for focusing and bounding the study. Basic assumptions about the relationships of the key research elements must be addressed (Miles and Huberman 1984, 29). Studies may be highly inductive and loosely designed (i.e., when exploring exotic or complex situations) or tight and pre-structured (i.e., when the phenomena is better understood). Most research plans are somewhere between the two extremes (Miles and Huberman 1984, 27).

Patton (1990, 197 and table 5.6) has developed a list of twelve design issues or questions which must be considered when designing a qualitative study. This is reported in the next chapter and will be used as the basis for the design of this research.

The design of a research project is one of trade-offs. Patton (1990, 162 and 165-166) indicates that there are no perfect designs. Limitations in resources, time and interests of those involved, the human ability to grasp complex issues and realities and the importance of the associated trade-offs all impact on the design. He says that this is not a choice between good and bad, but of choosing among alternatives.

#### **Site Selection**

This phase is concerned with where among the locations and situations available should the investigation be centered. There are three general bases for selecting instances (and the associated sites) to investigate: convenience, purpose and probability. GAO (1990, 22) suggests questions which might be asked at this stage:

1. Is the site being picked because it is convenient or expedient, or is it rich in information needed to conduct the study?
2. What are the research questions and how can they best be answered?
3. Should sites be picked to represent best, worst or typical cases?
4. Are they representative of the special interest circumstances?
5. Should quantitative methods be used to sample the entire population instead of specific sites?

### Data Collection

The process of data collection is one of implementing the planning phase of the case study. As indicated above, the design phase should identify those information-rich sources from which to collect data. During the collection of the data, GAO (1990, 20) indicates that there are three considerations -- comprehensive, flexible and multiple data sources.

The data must be comprehensive, fully addressing the issues, i.e., important conditions, consequences and reasons for instances. In order for the data to be comprehensive, the data collection process must be flexible in order to allow for changes in the design, depending on what is happening on the scene. Carefully developed, pre-planned data collection is important, however, there must be flexibility to account for learning that goes on during execution of the plan.

To be creditable, the data should be obtained from multiple sources which can be achieved by two means: chain-of-evidence and collaboration. Data obtained through the chain-of-evidence is collected in a sequential nature from its beginning generation to its conclusion. Auditors call it "building an audit trail" (GAO 1990, 57). The emphasis is to develop a logical, complete chain-of-factors (with no missing links) which leads to a conclusion (Miles and Huberman 1984, 227). Collaboration from multiple sources, involves

replicating data from documents and archives, interviews and observations (GAO 1990, 63).

Patton (1990, 11) indicates that " ... the validity and reliability of qualitative data depends, to a great extent, on the methodology, skill, sensitivity and integrity of the research." This is important since Patton has also observed that " ... what people 'see' is highly dependent on their interest, biases and backgrounds (Patton 1990, 200)." This has impact for this research since the investigator, as the principle change agent for the processes under study, must develop methodology to minimize bias and self-interest. Without this emphasis on validity, its rigor and acceptability to the research community and NSCL management will be suspect.

Research, in which the investigator brings to the field his/her personal experiences and insight, is known as heuristic inquiry (Patton 1990, 71). This is an important issue for this dissertation because of the role played by the researcher in the TQM process under study. In order for heuristic inquiry to meet the rigor and standards of formal research, the other participants in the events under study must have shared in the experience and reflection to a level that there is mutual agreement (Patton 1990 71-72). This issue established the need for the research to be collaborative in nature, i.e., the principal investigator and other participants become co-researchers. The required rigor

will occur when observed data is mutually seen and recognized by the research team of principle researcher and participants.

### **Data Analysis**

The culminating activities of qualitative inquiry are analysis, interpretation and presentation of findings (Patton 1990, 371). According to the GAO, data analysis is based on two elements or strategies -- pattern matching and explanation building. Pattern matching requires using past experiences, logic or theory during the design stage to specify the expected finding. Then, by comparing the collected to the expected data, the assumptions are validated or adjusted.

Explanation building starts with the qualitative data collected to develop a "picture" of what is happening. Hunches are developed as a picture during the collection and analysis of the data and then filled in, changed or elaborated as the interpretation continues. The researcher asks him/herself, what would be a plausible explanation for the effects represented by the observed pattern. Answers would serve as the basis for the hunches(s) or hypotheses and represent a cause-effect relationship that explains the observed phenomenon.

Initial or tentative understanding serves to initiate an emerging "picture", much as a grouping of individual tiles are used to develop a mosaic. Further review and analysis of the data would, in a similar manner, fill in other sections or refine the total picture. Likewise, this review and analysis

allows the validation or revision of prior understandings through triangulation of data. This process continues until the data have been exhausted and/or the picture is complete. An incomplete picture and exhausted data suggest either further data collection or a re-iteration of the review and analysis process with the existing data.

GAO provides six methods of analyzing case study data which are provided in Table 10 below. While the methodology

Table 10. Ways of Analyzing Case Study Data<sup>11</sup>

<u>Analysis</u>	<u>Methodology</u>
1. Iterative	Data collection and concurrent analysis
2. OTTR	Observe, think, test and revise
3. Triangulation	Comparison of multiple independent sources of evidence before deciding there is a finding.
4. Rival Explanation	Developing alternative interpretations of finding and testing through search for confirming/disproving evidence until one hypothesis is confirmed and others ruled out.
5. Reproducibility of data	Establish through analysis of multiple findings, sites and data over time.
6. Plausible and complete	Data analysis ends when a plausible explanation has been developed, considering completely all the evidence.

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<sup>11</sup> This table is reproduced from GAO, Table 4-1, p. 59

portion of this table are generally self-explanatory, each supports the two strategies for analysis discussed above. For example, iterative analysis requires the researcher to "think" while he/she collects data. Asking such questions as -- How does this fit into my expected pattern or how does this support my emerging picture? The answers to these questions may suggest further data gathering (another iteration) or allow the cessation of data collection.

For this heuristic-based research, the pattern matching model, using past experiences to build explanations, appears most applicable. Further, the shared observations and reflection between co-researchers, inherent to the triangulation methods, and reproductability of data through multiple sources appear to best support the analysis of research data.

### **Reports**

Patton (1990, 150) indicates that the type or purpose of the research normally drives the format of the report. Basic and applied research is published in scholarly journals which dictate the format of the report. Other researchers serve as the judge of the contributions, using such standards as rigor, validity and theoretical import. In contrast, evaluation and action research are for specific stakeholders who use the results to make decisions. Thus, the contents, length and nature of evaluative reports are often a matter of negotiation

between the researcher and the primary users (Patton 1990, 428).

In the case of this research, the reports must satisfy both the research community and NSCL managers. Emphasis must be placed on the standards of rigor and validity inherent to the research community, while providing useful data and conclusions in a format that will satisfy and support management decisions. This resulted in two reports -- a briefing for NSCL managers and this dissertation for the research community.

Patton (1990, 429-430) provides guidance in the preparation of qualitative research reports by stressing that each research question must be addressed. The emphasis must be one of focusing on the purpose of the research and must provide a balance between description, analysis and interpretation.

## **REFLEXIVITY AND COGENERATIVE LEARNING**

### **Introduction**

The heuristic, collaborative research approach discussed earlier is achieved when there is mutual and cogenerative learning between the co-researchers. This mutual learning can occur through a process of reflexivity, in which the researcher, an active observer, and the other participants form reflexive loops. Through these loops, they co-create or co-generate a mutual story to explain the issues under study.

The concepts of reflexivity and cogenerative learning have application to this research.

### **Reflexivity**

Research is a knowing process -- one in which the inquirer or researcher moves from a condition of less to more knowledge. Steier indicates that this process is made up of reflexive loops in which the researcher is part of the loop, as an active observer. "Reflexivity is a way in which circularity and self-reference appear in inquiry as we contextually recognize the various relationships in which our knowing activities are embedded (Steier 1991, 163)". He notes that we create our own research worlds through stories which guide us toward making understandings. However, from a research community viewpoint, these stories are often not admissible evidence without constructing or re-telling the stories in the language of the researchers. This places the researcher into a translation process, reconstructing the language of the work group and research site into the language of the research community (Steier 1991, 173).

Research of a participative and qualitative nature requires the collaboration of insiders. The local participants, which Steier calls reciprocators, allow the story to be developed and told in a manner which is reflexive in nature. He says that "it is by their hearing me and answering me [a reflexive activity] that a 'me' can emerge... (Steier 1991, 165)." This has implications for this research.

The researcher must get others inside the organization to help develop the "story". This can be reflexive in nature, in that the researcher suggests a story, which the insiders hear and respond to in clarifying and amplifying ways, thus allowing the co-creation of a "mutual world" through an agreed upon "mutual story".

Steier, referring to the works of Jane Jorgenson, discusses how the co-creation of the mutual world can help change the research setting. Using the context of the family, he noted that by asking questions, formulating descriptions and participating in therapy activities, family therapists can be seen to co-construct (with the family) the very families that they treat (Steier, 1991, 167). This has application to the formative evaluation setting. The researcher, by asking questions, formulating and describing organizational situations and participating in the formulation of improvements is working with the insiders (organizational family) to co-create a new approach which addresses and helps resolve the issues which instigated the initial evaluation.

Steier's essay provided two other issues which have application to this research. He noted that, in family therapy settings, the therapist brings their own history of family interactions, training in the "proper" way for families to interact and their own personal family history. They use this personal background to help the family create,

cogeneratively, new and more effective behaviors (Steier 1991, 167). In formative evaluations for organizations, it is observed that the researcher brings the same personal history, training and interactions issues from their own organizational background to help the corporate managers co-generate new and more effective behaviors. This is the basis of the heuristic inquiry as previously discussed.

Dr. Steier also provides a discussion on research techniques from a reflexivity viewpoint, one of which seems very applicable to this research. That is the process of mutual mirroring. This is a process in which the insiders reflect (as in a mirror) their understanding of the process onto the researcher, who in turn, reflects back his understanding of the initial reflection. In this way, both the researcher and reciprocator co-construct an image, each serving as a basis for the other -- hence a "mutualness" (Steier 1991, 173).

For this research, the collaborative approach between researcher and participant (reciprocators) must result in mutual mirroring and the associated co-construction of the "story" in order to provide the required rigor and validity. Likewise, the shared story resulting from the mutual mirroring process will facilitate acceptance of the research conclusions by the other NSCL managers.

### Cogenerative learning and Action Research

Using the concepts of participation inherent to the TQM process and the above discussion of reflexivity, it would seem that the cogenerative learning models followed by the participative action researchers have application to this research. Whyte (1990, 130) reporting on the work of Max Elden and Morten Levin proposes a model for cogenerative learning based on the Scandinavian style of participative action research as shown in figure 18.

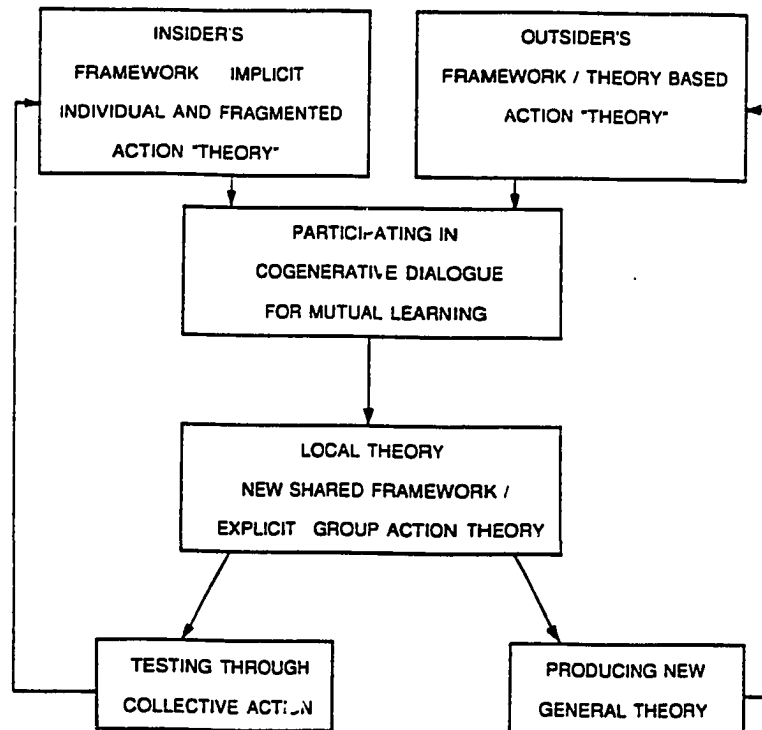


Figure 18. A Model of Participative Action Research Scandinavian Style: The Cogenerative Way (Whyte 1990, 130).

The model recognizes that insiders, who spend their work lives in a particular organization, get to know more about the organization and have more ways of understanding their own world than an outsider. Likewise, the researcher coming from the outside brings theory-based knowledge and other experiences from their previous research and consulting activities to understand the organization. The insider cannot obtain the researcher's theory-based knowledge without significant investment in learning and the outsider cannot obtain the insider's rich knowledge without "going native" with the associated expense and time consumption.

The model in figure 18 suggests that the outsider (researcher) and insiders participate in cogenerative dialogue for mutual learning and the development of a new shared framework. This framework and mutual learning can be applied to the work place for improvement and for the production of new general theory. This seems applicable to this research, except that the researcher also has an insider's framework. The research methodology to be developed in the next chapter will take this model and the researcher's insider experience into consideration.

## **RESEARCH AND FRAMING**

### **Applicability of Framing to Research**

It is well recognized within the literature that each researcher, when making observations and analysis can be

highly selective in their perceptions. As Patton (1990, 200) indicates, " ... what people 'see' is highly dependent on their interests, biases and backgrounds." A recognition of this is important to this investigation because of the researcher's insider role and his own biases and experience with the implementation of TQM.

Bolman and Deal's (1991) concepts regarding framing and reframing discussed in chapter three suggest a way for the researcher to observe and think, which has applicability to research methodology. They stated that each decision maker and change agent has one or more of four sets of assumptions or frames which they apply to their organizational activities. It is proposed that these frames are equally applicable to conducting research and provide a context for looking at situations in multiple ways, thus improving validity.

The four frames or viewpoints provided by Bolman and Deal (1991, 9) are listed below and discussed in context of this particular research. It is noted that the use of these frames, in a research methodology context, was not found in the literature review. Thus, the below discussion represents the researcher's own extrapolation and application of the framing concepts to research methodology.

1. Rational System and Structural Theorist -- A research orientation which emphasizes understanding the logical and structural relations between organizational goals, roles and technology and the organizational subsystems and leadership behavior. It focuses on finding ways to understand these relationships in the context of implementing TQM.

2. Human Resource Theorist -- An emphasis on identifying the employees' and managers' skills and values and their formal roles and relationships. Observations and analysis provide an understanding of these roles and the level and/or nature of TQM-oriented knowledge, skills and values.

3. Political Theorist -- A recognition that power, conflict and the distribution of scarce resources have a profound impact on the adoption of organizational change. A formative evaluation must recognize the sources and nature of the conflicts and alignments. Likewise, the interfaces between researcher and participant must take into consideration the political consequences on the research.

4. Symbolic Theorist -- The research must focus on the meaning and underlying culture and values within the organization. This is necessary in order to formulate changes to these inherent beliefs. The researcher must recognize how the cultural defenses impact on the implementation of TQM.

#### **Framing Implications to Researching TQM**

Each of the above discussed frames has major impact on the research and the methodology to be followed in this formative evaluation. The following attempts to apply the concepts of the frames to the research methodology.

#### **The Rational System Frame.**

The TQM processes reported in the literature search are seen as highly rational and structured -- to a level that detail processes and procedures are cited as inherent to "doing TQM." From a research methodology viewpoint, the investigator must identify the ideal, espoused and actual structures and systems which serve as the underpinning to implementing TQM.

### Human Resource Frame.

TQM recognizes the need for leadership and empowerment, which causes the research to focus on the managers' and employees' skill, values, roles and relationships. These are inherent to the human resource frame and require the investigator to understand the same espoused and actual roles, training levels and relations associated with the change process.

### The Political Frame.

The political frame is a major concern for this research. The researcher believes that the case study will show that there are significant non-alignments and conflicts between the senior managers. A major thrust of this research is to identify weaknesses in the leaders' actions in implementing TQM and recommending corrective measures. This requires the researcher to be politically astute in his dealing with the NSCL managers. Data gathering and analysis and the formulating of corrective actions must be conducted in such a manner that the top managers do not perceive the findings as unfair or unduly critical. If they perceive the research to be an attack against them, their natural defenses will most likely hinder their accepting the changes necessary to revitalize the TQM process.

### The Symbolic or Cultural Frame.

TQM implementation represents significant organization-wide change which, according to the literature review, results

in conflicts when they challenge the existing beliefs. These changes can create a loss of meaning and purpose for existing symbols and symbolic activities and the researcher must be cognizant of this frame and understand how the culture affects change processes.

In summary, the researcher must be cognizant of each of the four frames, both in gathering and analyzing data and formulating recommended corrective actions.

### **Framing Implications for Research Design**

Framing and reframing has consequences during each of the six stages of the case study reported earlier.

#### **The Literature Review.**

As indicated earlier, TQM is a highly rational system and the associated literature review must focus on this frame. However, TQM also emphasizes management and employee roles, relationship's, knowledge and skills which are a part of the human relations frame. Finally, the political and symbolic frames must be considered due to the inherent nature of changing the organization and the change agent's roles and challenges. The above literature review reports findings from each of these frames.

#### **The Design Phase.**

The design phase must recognize the impact of each of the frame(s) to answer the research questions. To understand the nature of the espoused TQM practices and procedures would require the use of the rational system frame, while the

political and symbolic frames may be necessary to understand why they were not implemented. It may be necessary to reframe issues to efficiently conduct the research. For example, the nature of the research questions may be so political or culturally sensitive that to investigate in these frames would result in significant individual and organizational defenses. This realization suggests that the research design be reframed to the rational systems or human resource frames. If it is not, the investigation may become so "bogged down" in trying to overcome defenses that the accuracy and usefulness of the research may be reduced. This is especially true for a formative evaluation which emphasizes improvements.

The adage that there are many ways to "skin a cat" is applicable, with the design focusing on emphasizing the research frame(s) that have the highest probability of success.

#### **Site Location.**

Site selection has framing implications, however, the concept of conducting research in information-rich areas may be the over-riding concern. For example, if the human resource frame is being employed, the sites containing training and personnel records would be used. In general, the frame will dictate the nature of information to be gathered and analyzed, which in turn, dictates the use of specific, data-rich sites.

### **Data Gathering.**

The methods used for gathering data will have a major impact on the frame being employed. For example, data gathering involving review of records is structurally oriented. The frame or viewpoint that the researcher is taking will dictate the nature of the data to be gathered. However, it is noted that frequently, data gathered from one frame may be analyzed from one or more of the other frames.

The researcher must be sensitive to the cultural and political issues involved whenever people are surveyed or interviewed. Poorly worded questions can clash with either frame, which may result in counterproductive conflicts that could have been avoided, if adequate sensitivity and reframing had occurred.

### **Data Analysis.**

Data analysis often involves multiple frame(s). The researcher must constantly recognize the frame(s) or viewpoint(s) that he/she is taking. Likewise, asking similar questions of the data using the context of a different frame may provide considerable insight and validation. The important issue is that data should be analyzed from multiple viewpoints, which will help in building the researcher's understanding of the incidents under study and may provide collaborative evidence to support findings.

### **Reports.**

As indicated earlier, for formative evaluations there are often two reports -- one to satisfy the requirements of the organization wishing to improve and the second to the academic community. The research must be reported in a manner which is logically and structurally (rational frame) based to have validity and meaning. It must also recognize the impact of the report on the reader -- both from a practitioner and academic perspective. This political frame is extremely important if the report is to be accepted and acted upon by both communities.

Finally, the multiply framed research must report the results from the perspective of each of these frames if the research is to be complete.

### **Framing Implications for Formulating Improvements**

Perhaps the most critical element of a formative evaluation is how the recommended changes are offered and seen by those who must implement them. If they are seen as inappropriate or provided in a context which puts the current practitioners (either from a political or cultural viewpoint) on the defensive, they will not be accepted in a manner which fosters commitment and accomplishment.

It is important that the recommendations be soundly and rationally based on the data and associated analysis (rational frame) and provided in a manner that minimizes "win-lose" and "lose-lose" situations and the associated conflicts (political

frame). The potential for recommendations to be seen as an attack on the current symbolic and cultural values and procedures is real. The researcher believes that, to the greatest extent possible, the formative evaluation should report and frame recommendations in the less controversial rational system and human resource frames -- provided the end results are that the necessary changes from the other two frames are incorporated as a by-product.

### GAP ANALYSIS

A formative evaluation, by its nature, is intended to move the implementation of a program, process or activity to a more desirable state -- to reduce the gap between desired and actual performance. There are two gaps of importance to this research -- the gap between ideal and espoused (what people say they do) methodology for implementing TQM and the gap between the espoused and actual implementation.

According to Patton (1990, 107), it is important to understand the differences between what people say they do (espoused theory) and what they actually do (theory-in-use). The espoused vs. theory-in-use distinction was proposed by Argyris (1982 and 1985) and Patton indicates that an analysis of the differences can provide insight and understanding of the reason for discrepancies in implementing a program.

This concept suggests that this formative evaluation make use of the differences between ideal and actual. The comparison would serve as the research methodology i.e., critically comparing the ideal and espoused theory of execution and the espoused and actual execution. The gap between ideal and espoused represents discrepancies of an implementation design nature, while the gap between espoused and actual represents problems with implementation. Both gaps must be addressed to insure optimum performance.

## CHAPTER 10

### THE RESEARCH PLAN

#### OVERVIEW

The TQM aspect of this research consisted of four major elements: (1) a literature search to identify the leadership and management roles and procedures required to implement TQM in a service organization such as NSCL; (2) a case study of NSCL's implementation of TQM, emphasizing an understanding of leadership aspects of espoused and actual execution; (3) a critical evaluation and analysis of the causes for the differences between ideal, espoused and actual conditions and their impact on the implementation process; and (4) the formulation of strategies to revitalize implementation of TQM.

The methodology issue of the research also follows the four steps: literature search, case study, analysis of data and development of a research approach.

#### THE RESEARCH HYPOTHESES

The research hypotheses were reported in chapter one above. The hypotheses address the importance of the senior leaderships' actions and the methods they used to implement TQM and the importance of systematic research methodology in

conducting qualitative-based case-studies. The hypotheses are repeated as:

1. The degree of success in implementing TQM is directly related to the actions of the organization's senior leadership and the methods and procedures used by them.
2. A methodology for conducting a systematic formative evaluation by an informed insider can be developed.

These hypotheses suggest several corollary hypotheses, e.g., TQM implementation can be facilitated by systematically improving the associated actions and procedures used by the organization's senior leadership. Likewise, qualitative-based, case-study research can be facilitated by the insider-researcher having appropriate methodology available.

### **THE RESEARCH QUESTIONS**

This dissertation is a formative evaluation to identify how a service organization (NSCL) should revitalize their TQM program. It focuses on the senior leadership aspects of adopting TQM by developing an understanding of the ideal and espoused method of implementing TQM and NSCL's actual implementation. From this understanding, improvements in the espoused methods of implementation and necessary counter-measures to roadblocks can be identified.

Three over-riding research questions were identified and reported in chapter one above to support this effort. Each of

these are provided below, with a series of more detailed questions.

**(1) What changes are necessary to align senior management's espoused theory with the ideal implementation of TQM?**

This question suggests three subordinate questions:

1. What are the ideal roles, actions and procedures of senior management in order to implement TQM?
2. What are NSCL's current espoused roles, actions and procedures to be followed by senior management in implementing TQM?
3. How does the ideal and espoused theory differ?

**(2) What measures should NSCL put in place to remove roadblocks to senior management's execution of their espoused theory of TQM implementation?**

This question is broken into four subordinate questions:

1. What actual actions and methods did senior management follow in executing TQM and how successful were they?
2. What roadblocks exist to senior management's execution of their espoused implementation of TQM?
3. Will these roadblocks exist when the espoused theory is revised to reflect current ideal methodology?
4. What are the appropriate measures to remove the identified roadblocks?

**(3) How can the methodology for qualitative-based, case-study research be improved?**

This question can be addressed by breaking it into two components: (1) What significant lessons were learned regarding methodology during the research and (2) how can these lessons-learned be applied to future research?

These research questions are used to focus both the literature research (to determine the ideal implementation methodology) and the case-study and associated analysis and formulate a revitalized TQM process and improved research methodology.

### **LITERATURE SEARCH**

The Naval Sea Support Center's TQM program is espoused to be based on the works of W. Edward Deming and the associated implementation process provided by the VPC and QUALTEC. According to U. S. Navy policy, the program must be consistent with the Navy's program titled Total Quality Leadership (TQL). A literature search, from a management and leadership perspective, has been provided in part I. Table two and figure three summarized the research topics and the associated justification is provided in chapter two. Chapter nine provides the findings for the literature search associated with the research methodology.

### **THE RESEARCH APPROACH**

#### **Overview**

As frequently cited above, the research consists of the four steps of literature search, case study, analysis and formulation. The basic methodology is one of developing the

information necessary to perform two gap analyses -- one associated with identifying improvements in design of the implementation processes and the second with removing roadblocks to actual implementation.

The methodology must also focus on identifying techniques to insure a rigorous approach in order to satisfy the validity standards of the research community. As cited earlier, the investigator has an in depth insider knowledge of the TQM process under study, which allows heuristic inquiry. In order to meet the standards of research, the researcher must obtain collaboration, through mutual mirroring in the recognition and analysis of data. He cannot just state his personal observations and beliefs as facts.

To satisfy the validity requirements, a research methodology was developed and followed as part of the data collection aspects of the case study. It was soon recognized that the approach was inefficient and faulty for reasons to be cited and a second, new methodology was developed. The following two sections of this chapter and the observations in chapter 14 and the analysis in chapter 17 address the methodology issues in detail.

### **Initial Methodology**

The initial research approach, to insure validity, closely followed the Scandinavian style of participative action research as illustrated in figure 18. This represented a traditional approach of discovery and validation which would

satisfy research standards. The methodology allowed the researcher to use his insider's knowledge to develop an academic, theory-based framework, which would be focused on the critical issues. This framework and the researcher's background would be used to develop an initial or tentative understanding or "picture" that would be filled in or refined through participative in cogenerative dialogue.

It was seen that the reflexive loops between the researcher and the insider/reciprocators would result in mutual mirroring and a shared framework. The resultant framework would provide the basis for generating new theory, satisfying the dissertation requirement and formulation of actions to revitalize the program. The researcher's inside knowledge would allow the cogenerative dialogue to be focused on "information-rich" reciprocators and would greatly facilitate the translation between academic and NSCL languages.

This approach was found to be very inefficient and bothersome to the reciprocators. It did not account for the fact that much of the cogenerative dialogue and the development of a shared framework or "mutual picture" had already occurred during the mutual observations of the actual events. The process was quickly seen as "re-inventing the wheel." It was clear to both the researcher and reciprocator that questions and discussions of a "discovery" nature were a waste of time. The real requirement was to obtain mutual

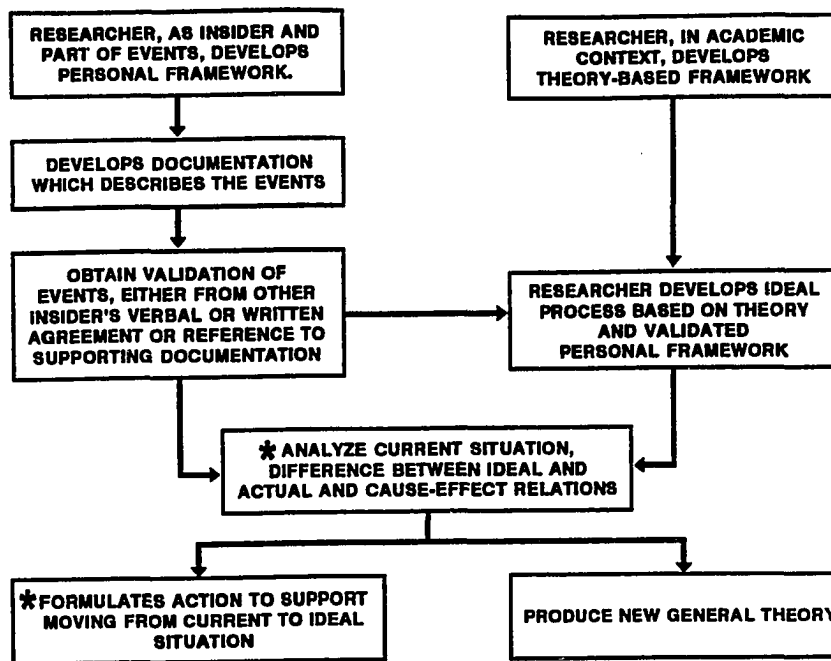
agreement on the nature and meaning of the events -- a validation issue involving insuring that mutual mirroring had occurred. This led to the development of a new methodology, which is discussed in the next section.

### **Final Methodology**

As indicated above, it became apparent that a new methodology or approach for the data gathering and associated analysis was necessary. The literature review substantiated that heuristic inquiry, in which the researcher brought his previous knowledge and experience to the research setting, was acceptable to the research community. However, no methodology was found to insure the degree of validity necessary.

After consultation with the dissertation committee, the previously discussed works by Steier and Jorgenson and the Scandinavian model in figure 18 were reflected upon. The results of this reflection is provided as figure 19 and specifically addresses the situation in which the researcher has an in depth, insider knowledge of the events under study. It is believed to be original.

The methodology, as illustrated, allows the researcher, using his previous observations, knowledge, and understanding to develop his own "picture" of key events. However, as indicated, the researcher could not just document this personal framework as fact. Rather, it must be validated. This is accomplished in several ways.



**\*IDEALLY, SHOULD BE A COLLABORATIVE EFFORT BETWEEN RESEARCHER, AND INSIDERS.**

Fig. 19. A Model for the Case Study Methodology When the Researcher is a Also an Insider.

For controversial issues, the researcher develops documents which describe the key events or salient concerns for his personal perspective. Then the data is validated by some combination of: (1) obtaining supporting documentation; (2) conducting interviews with key participants and/or (3) the use of a "strawman" document.

The strawman documents are written in the language of the participants (vice the academic language). They are provided, concurrently, to the various managers and key personnel who were a part of the events for their review and comment. The strawman is based on both the researcher's personal knowledge

or reflections and, supplemented as needed, by informal discussions with those who were involved with the issue. The reviewers are asked to "correct" the strawman by annotating it in the margins. They are specifically asked to insure that the facts are valid, reported in a balanced (neither over- or under-stated) manner and to add amplifying comments as appropriate.

This is seen as a form of cogenerative dialogue for mutual learning proposed earlier by Whyte. It serves the purpose of the more time-consuming interviews and questionnaires followed in most case studies and has the additional advantage of being "self-documenting". Follow-up interviews are conducted if the researcher and other insiders (collaborators) do not agree on the issues. When agreement cannot be obtained in the follow-up interviews, the opposing views must be included in the case study. These efforts resulted in a new, shared framework.

For less controversial issues, the researcher considered his observations and other data, prepared a summary document which he used as the basis for discussion with reciprocators who were a part of the same event. From these discussions, mutual mirroring occurs, allowing the researcher a clearer and validated understanding and facilitated "writing up" the situation as part of the case study report. For final validation, the draft of the case study is provided to key participants for review and to comment. This provides the

opportunity for the other participants to see the entire data portion of the case study and comment on the total coverage.

In an ideal situation, the analysis and formulation steps would be collaboratively accomplished by the researcher and the other key insiders and the investigation would become one of action research. This is one weakness of this specific investigation since time constraints minimize this mutual effort. It is recognized that time and financial support constraints are common to many research situations and are "real world". This methodology, with the recognition of what "should be done" appeared to be a realistic compromise in execution and is entirely consist with the researcher directed formative evaluation process.

A weakness of this methodology is that the strawman and "picture" development are based on the observations and decisions of a single individual. No matter how conscientious the researcher, the initial picture is bound to be a one-sided view and the resultant strawman documents and discussions to be leading in nature. The methodology of multiple interviews to discover a rich set of data, by design, has a greater number of viewpoints, but is dependent upon the interviewer asking the right questions and understanding the inter-relationships of the responses. Patton's earlier observation, that research is a series of compromises, is applicable here. The proposed method allows a more defined, clearer, less ambiguous picture which can be arrived at more quickly than

the multiple interview technique, however, these advantages are obtained at the cost of the more narrow view of a single observer, the researcher.

The methodology has an advantage over the researcher obtaining data in an exploratory manner from multiple participants. In the situation of multiple participants, the biases of those being interviewed may not be recognized and the "luck of the draw" as to those interviewed may also lead the researcher to a one-sided viewpoint. In the proposed methodology, the researcher recognizes the potential for bias and attempts to be non-biased. Further, the fact that the data is being documented for the reciprocators' final review forces a balanced reporting of the situations.

Finally, it is noted that the politics of co-researcher review, especially in the case of an evaluation such as this research, insures that the principle researcher thinks through the events to minimize one-sided reporting. However, it is necessary to guard against reporting in a "politically correct" manner to minimize adverse responses from the reciprocators. The results would be compromised findings and invalid research.

### **Framing the Research**

#### **Observations on Use of Framing.**

It is interesting that the application of Bolman and Deal's concepts of framing and reframing to the research methodology was not identified by the researcher until well

into the analysis and report writing stages of the dissertation. The concept had been reported in the literature review and served as one of the methods of practitioners viewing or framing change, but not as a method of viewing the research process.

The researcher found, as expanded upon later in the dissertation, that he had intuitively emphasized the rational and human relations frames and minimized using the political and cultural frames. This realization caused the concept of framing to be added to chapter nine in order to provide a theoretical basis for applying it to the research. Unfortunately, the methodology planning and data-gathering phases of the research did not consider framing and the additions there and in this chapter are more structured around what should have happened, rather than what did happen. This concern is addressed in chapters 14 (research methodology observations) and 17 (analysis of methodology issues).

#### **The Use of Framing in the Research.**

As indicated earlier, the researcher must be cognizant of Bolman and Deal's four frames and the concept of reframing. This is accomplished by the investigator, during the gathering and analysis of data by frequently asking himself: Which frame or frames are most applicable to this situation and how would the results differ if viewed from a different frame?

The political frame has major impact on the methodology for conducting this research. Using the case study model of

figure 19, the cogeneration and validation of the events associated with TQM, would best occur when the other insiders do not feel that they, or their performance, are being attacked. This is a sensitive issue for the researcher. In his insider role as change agent, the researcher was frequently in the position of directing changes which the other senior managers were expected to implement. Care must be taken, from a political viewpoint, to insure that the other insiders do not see the dialogue and research to be threatening on a personal level. If they do, it will be very difficult to obtain shared meanings and develop acceptable corrective actions.

The cultural frame is also of concern. As reported earlier, attempts to change an organization normally result in defenses aimed at protecting the status quo. The researcher must be careful not to let changes and defenses be reframed into the political, because of the potential for establishing "win-lose" situations.

To minimize the potential for conflict, the researcher may find it practical to reframe the dialogues to be within the rational system and human relations frames. The research surveys and dialogues should emphasize the relationships of processes, roles and methods of "doing TQM" and the skills, knowledge and training required of the leadership. Also, every effort should be made to generalize the discussions and findings so as to minimize individual performance issues.

This approach should only be taken if the finding within these frames allows the development of an accurate and validated picture of the situation which supports a logical and reasonable extrapolation to the other frames. If this connection cannot be made, then the finding may be invalid.

### **THE DESIGN**

Patton (1990, table 5.6 and 197) suggest the twelve issues, shown in table 11, which must be addressed during the design of a case study. Each of these is discussed below.

#### **Primary Purpose and Focus of the Study**

The study is a formative evaluation of the implementation of TQM at NSCL. The results of this study provide the basis for formulating improvements to the TQM process. The purpose of the study is to also address methodology issues focusing on developing improved techniques.

#### **Units of Analysis**

Various units of analysis are used. The overall organization, individual organizational units and specific events were analyzed. The focus of the analysis was on the impact of management actions. The time-frame for the analysis is from the initial program inception (April, 1988) until August, 1993.

Table 11. Design Issues and Options

<u>Issues</u>	<u>Sample Options and Considerations</u>
1. What is the primary purpose of the study?	Basic research, applied research, summative evaluation, formulative evaluation, action research
2. What is the focus of the study?	Breadth vs. depth trade-offs
3. What are the units of analysis?	Individuals, groups, program components, whole programs, organizations, communities, critical instances, time periods
4. What will be the sampling strategy or strategies?	Purposeful sampling, probability sampling; variation in sample size
5. What types of data will be collected?	Qualitative, quantitative or both
6. What controls will be exercised?	Naturalistic inquiry, experimental design, quasi-experimental options
7. What analytical approach or approaches will be used?	Inductive, deductive, Content analysis, statistical analysis, combinations
8. How will validity of and confidence in the findings be addressed?	Triangulation options, multiple data sources, multiple methods, multiple perspectives, and multiple investigators
9. Time issues: When will the study occur? How will the study be sequenced or phased?	Long-term fieldwork, rapid reconnaissance exploratory phase to confirmatory phase, fixed times versus open time lines.
10. How will logistics and practicalities be handled?	Gaining entry to the setting, access to people and records, contracts, training, endurance, and so on.
11. How will ethical issues and matters of confidentiality be handled?	Informed consent, protection of human subject, reactivity, presentations of self, etc.
12. What resources will be available? What will the study cost?	Personnel, supplies, data collection, materials, analysis time and cost, reporting costs

### Sampling Strategies

The research, using qualitative inquiry methodology, focused on relative small samples (frequently one person or event), selected purposely to address a specific research

question in an information-rich environment (Patton 1990, 169). Thus, purposeful sampling was used almost solely.

### **Types of Data Collected**

To the greatest extent possible, data was derived from historical records and archives available at NSCL. Information such as the evolution of formally stated organizational visions, goals, policies and plans were available from the records. Likewise, the implementation of TQM training was found in the training archives and the allocation of assets was found in the financial records.

Data associated with group dynamics, cause-effect relationships, opinions and motivations for actions were obtained through personal reflections of the researcher and then collaborated by the respective managers and impacted employees as discussed above. Some opinions were obtained through quantitative sampling. For example, two Navy sponsored surveys, designed to identify the current status of the TQM program and its strengths and weaknesses, and a researcher developed survey to identify perceived roadblocks to performance were conducted as part of this research.

### **Controls to be Exercised**

A significant portion of the data used in this dissertation was collected through the organization's records and archives. This form of naturalistic inquiry has little direct impact on the on-going operation of the TQM processes, therefore, no special controls were necessary. Likewise, the

researcher's remembrances have been used which were previously obtained as part of the insider's role, thus no additional controls were necessary.

A portion of the research data was feedback to the strawman documentation, validation interviews and surveys which, by their very nature, have the potential for affecting the participants' (insiders') conduct. The formative nature of this research has the intended purpose of improving the implementation of TQM, therefore, data-gathering which causes reflection by the organization's leadership has a salutary effect.

#### **Analytical Approaches to be Used**

Pattern matching and explanation building, as discussed earlier, was the analysis approach followed. The researcher, as an insider and principle change agent throughout the implementation of the TQM process, was able to initially specify a rich picture or set of expected findings which facilitated the pattern matching techniques.

#### **Validity**

Validation tactics were based on the triangulation (comparison of multiple independent sources of evidence) and replication of findings. The comments solicited on the strawman documentation and draft case study were a form of triangulation and replication. The effect that the researcher's prior role may have had on data collection and

associated concerns and conclusions are believed minimal and addressed later.

#### **Time Issues Associated with the Study**

As indicated above, this research was conducted as part of an effort by the organization to improve the TQM process. The sponsor expressed a desire to have information available for planning purposes in June, 1993 and the final planning for program improvement completed by September, 1993. Therefore, time was of the essence.

#### **Logistics and Practicalities**

This was not a key issue. Sufficient logistical resources were available from NSCL's sponsorship of this research to satisfy requirements. The only practical problem was the pace at which the researcher worked in order to complete the efforts in the required time-frames.

#### **Ethical Issues and Confidentiality**

Much of the data used in this research was from government files and reports and is therefore part of the public record. Thus, there was little impact from an ethical or confidential nature. Confidentiality of individual responses was maintained throughout the research. Permission was obtained from everyone interviewed to make reference to their comments. If the unique nature of the informant's position made it apparent that they are the source of the findings, additional permission was obtained. Refusing to

grant permission to be interviewed or quoted would have been honored, however, it never occurred.

Information indicating negatively on the performance of any individual or group, was treated as an ethical issue. On the one hand, this performance could be critical to the validity and usefulness of the evaluation and follow-up improvements, but on the other hand, it could have a negative impact on the individual(s) involved. Each situation was treated individually, with every attempt made to report the information in a general manner in order to protect those involved. Usually, the research findings were that negative performance was due to inadequate training, procedures and support and not due to any inadequacy of the individuals.

#### **ROLE OF THE RESEARCHER**

The researcher is the Executive Director of the Naval Sea Support Center and served as the organization's Technical Director (Senior Operating Officer) and principle change agent throughout the introduction and implementation of the TQM process. As such, he brought to the research a unique perspective and set of experiences, observations and knowledge which will greatly facilitate the research. Patton indicates that the personal experiences, which a researcher brings to the inquiry, can be critical to understanding the phenomenon (Patton 1990, 40). Thus, the researcher's own observations,

experiences and insights, as cited earlier, became an inherent part of the methodology for this investigation.

One challenge for the researcher was to maintain what Patton calls "empathic neutrality" in the research and associated evaluation. He indicates that the researcher's passion must be understanding, "not proving something, not advocating or advancing personal agendas" and that "it is important that the personal experiences and insight be part of the relevant data, while taking a neutral, non-judgmental stance toward whatever content may emerge" (Patton 1990, 41). In situations such as these, Patton recommended a form of Heuristic Inquiry in which the researcher constantly asks -- "What is my experience of this phenomenon and the essential experiences of others who also experienced this phenomenon intensely?" (Patton 1990, 71). The use of the strawman technique and the politics forced the researcher into careful and balanced documentation of the facts and the feedback from the reciprocators provided valuable clarification and helped insure validity, objectivity and neutrality.

## CHAPTER 11

### EXPECTED RESULTS

#### INTRODUCTION

It was reported in the methodology portion of the literature research that it was important for the researcher to have a picture or set of expectations to assist in the design and his qualitative analysis of data. Using these expectations, the analysis of chain-of-events and/or multiple data sources are used for validation or revision. These expected results consist of the differences between the literature review and the espoused theory of implementation and the differences between espoused and the actual implementation.

#### EXPECTATIONS REGARDING DIFFERENCES BETWEEN LITERATURE AND ESPOUSED THEORY OF IMPLEMENTATION

The espoused theory of implementation is based on the VPC and QUALTEC methods provided over six years ago. It was expected that since then, significant improvement to their processes have been instituted. This condition will reflect a portion of the difference between the literature and espoused theory which must be recognized in order to update the espoused theory. For example, an article by Sink

(Director of VPC) indicates that implementation of TQM must be made concurrently and be mutually supportive in eight distinct organizational subsystems which are not included in the espoused theory of implementation (Sink and Monetta 1991).

It is also recognized that TQM philosophy has become a popular area of research and significant gains in the methods of implementation since NSCL's adoption are expected to be found. Since TQM is such a broad and evolving process, each consultant's theory of implementation will have stronger and weaker elements. It was expected that the literature search would identify implementation and operational techniques which were not part of the consultant's emphasis areas. For example, the leader's role of visionary and their actions necessary to establish the environment to facilitate cultural change were not emphasized in the espoused theory of implementation provided by the consultants.

These differences served as the basis for the formulation of an improved espoused theory of implementation and the associated operating processes.

#### **EXPECTATIONS REGARDING DIFFERENCES BETWEEN ESPOUSED AND ACTUAL IMPLEMENTATION**

It was expected that significant differences would be found between the espoused theory and the actual implementation. These differences will be due to the roadblocks encountered. For example, one roadblock is the

availability of funds for training and employee participation. For a number of reasons, it was expected that the actions of NSCL's leadership have frequently not met their espoused actions, thus they did not "walk their talk" (a common phrase used in the TQM literature). One major expectation was that initial implementation training provided for management did not adequately identify the duties and processes in what is seen as a new management philosophy.

Other reasons for the managers' actions are expected to include some having agendas to optimize their own part of the organization, which occurred at the expense of the total organization. Others were expected to have never accepted the need for TQM or did not really understand their espoused role and necessary actions. Another major issue is the lack of leadership exercising their power to support and insure effective long-term implementation.

#### **EXPECTATIONS REGARDING RESEARCH METHODOLOGY ISSUES**

It was expected that the very process of data gathering and reflection during the case-study on the methodology would have a salubrious impact on the actual research. The formal documentation of daily thoughts would force the researcher to be more thorough and specific (less fuzzy) in his thoughts. It was expected that the pattern matching aspects of the research necessary to allow purposeful, information-rich

research will, in its own right, generate a rich set of patterns for analysis -- especially the thought process and resolutions encountered.

A final expectation of the case study will be the development of perspectives or viewpoints to take when conducting formative evaluations of organizational-wide change in setting such as NSCL.

**PART III**

**THE DATA**

## CHAPTER 12

### THE NAVAL SEA SUPPORT CENTER, ATLANTIC -- AN OVERVIEW

#### MISSION OF THE ORGANIZATION

The Naval Sea Support Center, Atlantic (NSCL), is a U. S. Navy maintenance engineering and logistics support organization providing consultant engineering services for maintenance and operational problems on Atlantic Fleet ships. The systems and equipment supported include hull, mechanical, electrical and combat systems, involving the services of mechanical, electrical and electronic engineers and technicians. Additionally, the organization provides consulting logistics support to these ships and operates Navy-wide programs such as maintenance of ships configuration data and preventive maintenance standards and calibration of test equipment using logisticians and equipment specialists. Approximately eighteen percent of the command is staff support or management personnel.

#### DEMOGRAPHICS

NSCL consists of about 650 employees (600 civilian and 50 military). Approximately 460 employees are located in Norfolk and Portsmouth, Virginia; 100 in Charleston, South Carolina;

60 in Mayport, Florida and the remaining are small detachments at other fleet locations. The typical technician, logistician and equipment specialist has twenty or more years experience with his/her equipment and many are retired military or have extensive shipyard or industrial experience. Most of the engineers have prior experience in the local shipyards, with the original equipment manufacturers or with the command's cooperative engineering program. Experience levels range from several years to decades with the systems and equipment they are supporting.

#### **ORGANIZATIONAL STRUCTURE**

The organization's senior leadership consists of a Commanding Officer, (who is the Chief Executive Officer), an Executive Officer, a Technical Director (who is the Chief Operating Officer) and four Department Heads. Each department consists of a number of division heads, who are supported by the first level supervisors (called branch heads). Figure 20 provides an organizational chart of the upper levels of the organization.

#### **ADOPTION OF TOM**

In response to Presidential Executive Order 12552 of 1987, the command established an improvement program. The

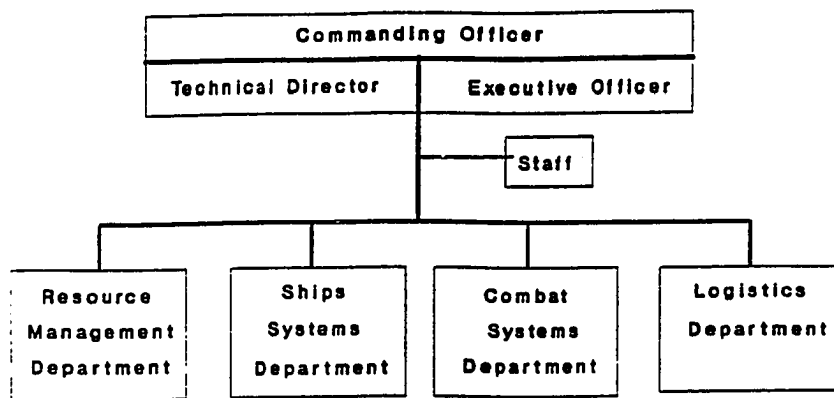


Fig. 20. NSCL Organizational Chart

initial effort, in 1987, was to establish a committee of mid-level managers to study ways to improve the organization. Based on a desire for a more structured improvement process, the organization, in 1988, obtained the support of the Virginia Productivity Center (VPC) at Virginia Polytechnic Institute and State University. The VPC program is based on the works of W. Edward Deming and emphasizes structured planning, a parallel TQM organizational support structure, empowerment of all employees, continuing process improvement and management-by-fact. VPC had a record of working successfully with Navy organizations, including the Norfolk Naval Shipyard, and was highly recommended by several senior Navy officials.

In 1989, with recognition that more emphasis was needed in systematic problem-solving techniques and group dynamics, the support of the QUALTEC Division of Florida Power and Light

was obtained to supplement the VPC process. QUALTEC's methods had been implemented at the Naval Ships Systems Engineering Station (NAVSSSES), Philadelphia, which also used the VPC methods and was recommended by the previous NSCL Commanding Officer who was instrumental in initially adopting TQM.

In 1991, the Navy formally adopted the Total Quality Leadership (TQL) program, which placed a greater emphasis on command responsibility and leadership. TQL acknowledges the unique role of leadership in military operational commands (aboard ship and combat command environments) and their differences from shore activities (Garrett 1991, 2). Little or no change was made at NSCL as part of this Navy program, other than changing the program title to TQL.

NSCL applied for the U.S. Senate Productivity Award in 1989, 1990 and 1991. The applications were suggested by VPC as a method of, and catalyst for, self-evaluation of implementing TQM. NSCL received an "honorable mention" the first year, was a "runner-up" the second year and won the Public Sector Award in 1991. After the award, emphasis and continuous improvement under the TQM umbrella seemed to wane. The case study will show almost no management input or oversight of the TQM process during 1992 and 1993.

### MOVING TO THE NEXT LEVEL OF PERFORMANCE

NSCL senior management has recognized the need to move the TQM process to a higher level of performance. The researcher, as part of his work duties, has been assigned the task to identify the steps necessary to re-emphasize the process. This dissertation is being conducted concurrent with, and is intended to provide base-line data for this effort. As such, the dissertation is being supported by NSCL.

## CHAPTER 13

### THE CASE STUDY

#### INTRODUCTION

This case study considers the espoused and the actual implementation of TQM at NSCL from a senior leadership perspective and is intended to develop the data to support the associated analysis and recommendations provided later in the dissertation.

The case study is divided into six major sections: (1) overview of the espoused key elements of TQM; (2) the TQM infrastructure; (3) a review of studies, surveys and assessments, either conducted as part of this research or earlier by the organization; (4) leadership-oriented activities; (5) the command level TQM oriented processes with which the senior leadership interfaces and (6) the appraisal and recognition system for employee evaluation and reward.

The studies, surveys and assessments reviewed in this case study were obtained from prior actions by NSCL management or specifically conducted for this research. They all represent the opinions of the employees and managers of NSCL regarding the command's implementation of TQM/TQL and are used to gauge their opinions of the effectiveness of the process. They provide a base line of opinions regarding the

effectiveness of the TQM processes and the senior leadership's actions.

In general, the format to be followed for the other five sections of this case study will be to introduce and discuss the issue from a theory viewpoint, then document the espoused position regarding the issue and finally, to document the actual implementation. The only exception to this format is the documentation of the espoused key elements of TQM. The theoretical basis for the key elements is represented by the entire literature review contained in Part I and the actual implementation is contained in the other sections of this chapter.

#### **OVERVIEW OF ESPOUSED KEY ELEMENTS OF TQM**

In order to determine the espoused key elements of TQM implementation, a literature review of in-house documentation was conducted. Documents reviewed were the workbooks used in the initial planning and TQM training session for the various levels of management conducted by the Virginia Productivity Center; various presentations to employees and external organizations by the command's representatives; and the formal statements of philosophy, methodology and data provided by NSCL as part of their application process for the U. S. Senate Productivity Awards. Where necessary, the researcher used

personal observations following the methodology discussed in chapter nine and shown on figure 18.

There was no single instruction which defined the key elements of the TQM process at NSCL. Rather, the elements were contained in a number of documents as cited above. The key elements of the TQM process at NSCL were reported to include:<sup>12</sup>

- \* Customer focus
- \* Top-down driven policy planning and deployment process
- \* Bottom-up driven process improvement process
- \* Participative management, with emphasis on empowerment and decision making at the lowest appropriate level
- \* Senior leadership involvement
- \* Establishing a supportive culture
- \* Use of structured problem solving
- \* Management by fact and emphasis on measurement of key quality indicators
- \* Emphasis on employee recognition
- \* Supportive infrastructure

These represent the espoused TQM process elements and policy statements by the top management. It is noted that these elements fall into the last three major sections of this chapter as cited above. For example, the customer focus can be seen as an espoused action by the leadership and the top down driven policy planning and deployment is seen as a command level TQM-oriented process.

It is interesting to note that these key elements represent an excellent summary of the literature review and if

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<sup>12</sup>These key elements are summarized in a speech given by the researcher as part of the U. S. Senate Productivity Award (Stevens 1991, view graphs 8-20).

followed, would result in a program that is "by the book". It is the researcher's understanding that this situation is no accident. NSCL's espoused program evolved from the VPC and QUALTEC quality of work life processes discussed in part I and continuing learning by several key managers including the researcher, Deputy Technical Directors and other senior leaders. It is the researcher's observation and remembrance that these key issues were espoused during the U. S. Senate Productivity Award process based on an analysis of the optimum TQM implementation elements and what had to be said and done to win. Efforts were expended to implement key issues and report results around these elements.

### **TQM INFRASTRUCTURE**

#### **Overview**

NSCL espouses to closely follow the VPC and TQL organization structure as discussed in chapter five. As shown in figure 21, the organizational structure consists of an Executive Steering Committee (ESC), Senior Management QMB, Department Level QMBs and Branch Level QMBs. These are interconnected by a coordinating manager. Additionally, there is espoused to be a network of TQM facilitators and coordinators to support the processes.

## Organizational Elements

### The Executive Steering Committee (ESC).

The ESC is espoused to be composed of the Commanding Officer, Executive Officer, Technical Director and Department Heads, with the senior TQM facilitator serving as a

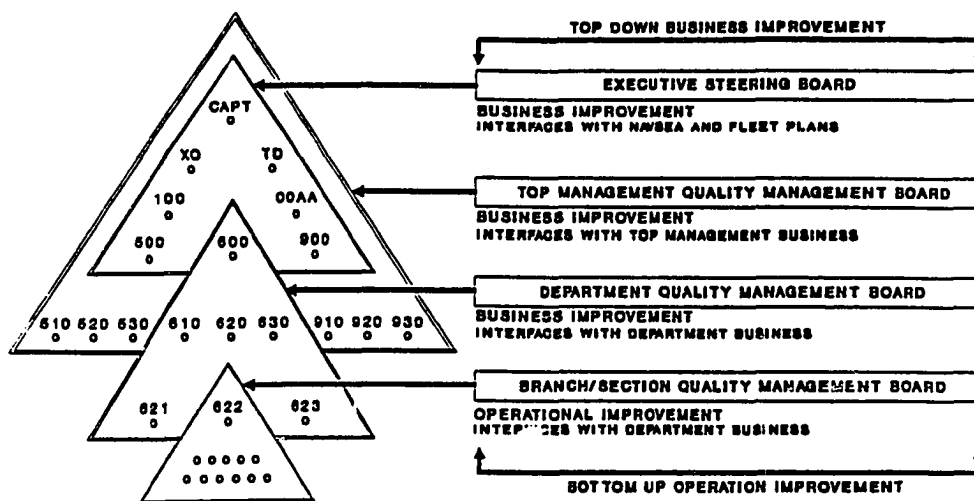


Fig. 21. The NSCL Method of Obtaining Organizational Participation in the TQM Process.

coordinator. The espoused duties of the ESC include providing overall leadership and oversight for TQM. The ESC, in effect, serves as an executive committee for the Senior Management QMB. The espoused role of the top leaders (Commanding Officer and Technical Director) is to facilitate and coordinate the development of command policy through the rest of the ESC and Senior Management QMB, but not to dictate it. As such, all command policy associated with TQM is espoused to be reached

by group consensus, with the division and department heads participating.

A parallel organizational unit is the Management Council. This group, made up of the Commanding Officer, Technical Director and Department Heads, services as the Command's executive board for non-TQL issues. They meet, at least weekly, to coordinate the operational activities of NSCL and to address policy issues. This is the primary forum for the executives of the organization to coordinate day-to-day issues.

**The Senior Management QMB.**

The Senior Management QMB is composed of the ESC and the mid-level managers at the division head level. It is espoused to be the primary method of obtaining mid-level participation within the organization in policy development and initiating command level business and corporate improvements and initiatives. The QMB is espoused to refine the ESC's proposed visions and overall guidance and convert these into detail strategic and tactical plans, which are then implemented through PATs. These PATs are composed of the members of the QMB, expanded by other employees and customers, as necessary. There is no clearly identified "link-pin" back to the QMB and the chairman of the PAT provides this coordination, if any.

**The Department Level QMB.**

The Department Level QMBs are composed of all the supervisors within a specific department. Their espoused

functions are to refine the Senior Management QMB actions and tailor them to meet the specific conditions within their department. There are four potential Department Level QMBs as shown on figure 20.

**The Branch Level QMB.**

The branch level QMBs are composed of all the employees, including the supervisor, within the branch (normally the lowest organizational unit within the NSCL hierarchy). These QMBs are espoused to only address issues assigned to them by the Department QMB or those that are locally initiated, using the Nominal Group Technique. Issues are expected to be operational or process-oriented. There are approximately 32 potential branch level QMBs.

**The Division Level QMB.**

NSCL does not espouse to form division level QMBs, however, it is recognized that the division head and his branch level supervisors may form such a group. Code 610, the Anti-Air Warfare Division, is one such division level QMB. It is the only active division level QMB identified.

**TQM Coordinators and Facilitators.**

The Deputy Technical Director was espoused to be the TQM Coordinator for NSCL. This was a developmental/training position for mid-level managers and was filled by high potential division heads. The TQM Coordinator's duties were seen to closely follow those cited in figure 16 and it was recognized that while the coordinator functions were

collateral in nature, they represented a significant portion of the work. The TQL and Management Analysis Division (Code 220) was established to provide TQM facilitator and management analysis support to the entire organization.

#### **Actual Implementation of the Organizational Infrastructure**

The five-year plan reported earlier was executed, and by 1990 the ESC and a large cross-section of QMB's at all management levels were established. The ESC exactly parallels the Management Council. It is composed of the same members and is also coordinated by the TQM facilitator. Generally, the Management Council meets, and during its discussions, considers TQM business. An observer would not be able to differentiate between the two groups. Initially, the weekly Management Council meeting set aside a weekly time for ESC business and in 1989 and 1990, a portion of the command's measures was discussed as part of this meeting. The discussions of these measurements stopped in mid-1991 and less time was set aside for TQM to address more pressing matters.

In the fall of 1991, as a cost reduction initiative, the position of Deputy Technical Director (a GM-14) was abolished and the TQM Coordinator functions were assumed by the senior TQM facilitator, a GS-12 Senior Management Analyst. During this period, many of the TQM facilitators in Code 220 were transferred to the line departments and the facilitator function became a collateral duty within the department. Thus, the espoused TQM Coordinator and Facilitator support has

reduced concurrently with the reduction of TQM activity. This issue was addressed earlier in this chapter.

As reported earlier, the Senior Management QMB has not met since February, 1992 and there is little activity at the Department and Branch level within the context of the QMB and PAT infrastructure.

In summary, while the espoused infrastructure has been established, it is no longer being executed.

### **REVIEW OF STUDIES, SURVEYS AND ASSESSMENTS**

A major element of the data concerning actual leadership results is included in the below surveys, studies and assessments. In addition, a review of the earliest TQM documentation to gauge initial employee and supervisor perceptions regarding the process was conducted. The Department of Defense Self-Assessment (surveys of the work force and management staff), Presidential Award for Quality Self-Assessment and the Supervisor's Opinion Surveys were conducted as part of this research. The other information represents the researcher's reporting of other reports, surveys and information discovered during the research.

#### **Department of Defense Self Assessment**

NSCL conducted the DOD Self-Assessment Survey<sup>13</sup> in

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<sup>13</sup>This survey consists of the Work Force and Staff Modules. It is listed in the bibliography as Quality and Productivity Self-Assessment Guide for Defense Organizations,

April/May, 1993 as part of this research. The survey was developed by the Federal Quality Institute and is computer (PC) based and consists of a staff module for supervisors and managers and a work force module for all others. The questions included in the modules are shown in appendices one (work force) and two (staff). The responder inter-actively answers the questions and the program software summarizes the questions into topics and computes the score and mean for each topic. Appendices one and two indicate the grouping of questions, by topic and these topics are shown and discussed below.

Each NSCL department head was requested to have a cross-section of their personnel take the survey and then provide the data disk to the TQL Coordinator, Code 220, for processing and printout.

**DOD Self-Assessment Survey -- Work Force Module.**

Table 12 provides the statistical means for each of the topics, by department and for the command. The respondents were to consider their department as the organizational unit, to define leaders as the people at the highest level in their department and customers as anyone, internal or external who receives the work of the department. The scores then reflected the work forces' assessment of their department's implementation of TQL.

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Version 2.0. 1991.

Table 12. Results of DOD Self-Assessment Survey - Work Force Scores.

Topic	Department Means				Command	
	200	500	600	900	Mean	std dev
Aware. of Strategic Challenge	4.51	4.60	4.99	4.56	4.71	1.04
Vision of the Future	3.51	3.44	3.90	3.41	3.59	1.31
Innovation	3.73	3.44	3.22	3.12	3.36	1.30
Quality Policy/Philosophy	4.36	3.79	4.16	4.13	4.05	1.21
Value Systems/Ethics	4.03	4.19	4.38	4.10	4.21	1.20
Total Strategic Focus	4.05	3.92	4.20	3.93	4.03	1.01
Leader's Involvement	3.54	3.23	3.31	3.51	3.35	1.37
Leader's Visible Commitment	3.51	3.36	3.47	3.67	3.47	1.31
Supv's Role in Qual. Improve.	4.18	3.44	3.72	3.59	3.66	1.43
Supv's Concern for Improve.	4.00	3.18	3.54	3.69	3.50	1.48
System for Quality Improve.	3.85	3.17	3.61	3.73	3.50	1.32
Total Leadership and Mgt.	3.81	3.28	3.52	3.63	3.49	1.22
Aware. of Prod./Qual. Issue	3.85	3.33	3.83	3.58	3.61	1.34
Attitudes/Morale	4.46	4.22	4.75	4.26	4.43	1.28
Cooperation	4.08	4.02	3.83	3.77	3.93	1.15
Involvement	4.38	4.45	4.80	4.42	4.55	1.17
Perception of Work Environmnt	4.28	4.33	4.80	3.59	4.36	1.10
Social Interaction	4.46	4.28	4.56	3.81	4.32	1.25
Task Characteristics	4.00	3.53	4.21	3.44	3.80	1.23
Reward/Recognition	3.09	3.09	3.67	3.06	3.27	1.32
Total Work Force	3.97	3.82	4.24	3.66	3.95	0.95
Total Customer Orient.	4.42	4.36	4.16	4.69	4.36	0.97
Total Communications	3.87	3.51	3.91	3.59	3.71	1.10
Total Score -- Climate	3.87	3.74	4.03	3.78	3.87	0.95
Number of Responses	13	32	27	13	85	

The respondents selected one of six possible answers for each question. The questions were stated in a positive manner, so that to agree was to state that the assessment was positive from a TQM implementation viewpoint. The answers range from strongly disagree (1) to strongly agree (6), while a score of three represents a rating of somewhat disagrees and a four somewhat agrees. The median between the rating of

three and four (3.5) is assumed to be neutral, neither agreeing nor disagreeing. The authors of the survey indicate that any score equal to or lower than 3.5 represents an area of needed attention, since the average responder felt negatively about the topic.

Review of table 12 shows that 85 of the approximately 580 non-staff personnel responded to the survey. This represents nearly 15% of the work force and is therefore statistically adequate, provided they were chosen randomly.

Discussion with the mentors of the survey indicate that, with the exception of Code 900, the responses were obtained from those in the work force that were in the office and available at the time of the survey. For Code 900, all responses were from employees who were available in one specific branch, Code 911. This branch was selected because it was located physically close to the individual conducting the survey.

From a command viewpoint, the mean score of all questions (which represents the average of the departments) was 3.87, with a standard deviation of .95. The researcher is not convinced that averaging the department scores (as done by the computer software) is an indicator of the entire organization's rating, since those taking the survey were asked to rate their department. The researcher suggests that the scores would be different, perhaps significantly, if the respondents were asked to consider the organization, vice the

department. The only way to validate the data would be to repeat the survey, asking the work force to identify the organization as NSCL. This is not practical.

The total climate score for each department is also above 3.5 and the range of scores is approximately the same as that for the organization. The survey breaks the total climate down into the five elements shown on table 12. The average scores, with one exception, in each of these five elements are greater than 3.5. The exception is the total leadership and management element, with a score of 3.49 or only slightly negative. This negative score is based on the results from the Ships Systems Department, Code 500. It is noted that the Code 500 employees (about 25% of the responses) provided a rating of below 3.5 in every topic within the leadership element. This would suggest that the general area of leadership and management in Code 500 needed attention since the scores, using standard statistical analysis, indicate that approximately 65% of the employees have negative perceptions regarding the top leader's and supervisors' involvement and concern for TQM. Likewise, the employees in Code 600 rated the leaders's involvement and visible commitment to TQM goals below the score of 3.5.

The work force rating was consistently above the target score of 3.5 with two exceptions. In all departments, except Code 200, the employees perceived that innovation was not

positive. In all departments, the reward/recognition system was scored below 3.5.. Both of these are key elements in TQM.

It is interesting to note that Code 200 employees, with the exception of the rewards and recognition issue, were the only departmental work force to rate each topic above 3.5. These employees represented the lowest paid and least status employees within NSCL.

#### DOD Self-Assessment Survey -- Staff Scores.

The DOD Self-Assessment Survey by the staff employees was completed by 22 of the 50 managers and supervisors. This program is also computer-interactive based, however, the design, as shown in appendix two, is somewhat different from the work force survey. Each measurement topic consists of two or more questions which are either answered by a yes or no or by an agreement of which of the listed items apply. A scoring and averaging scheme is developed, which results in a target score and individual department and command summary scores.

The measurement areas or survey elements are shown in table 13 and the associated questions and an explanation of the element is provided in appendix two. It can be seen that the survey elements fall into three major categories: processes, tools and outcomes. The processes category is made up of three sub-elements: improvement activities, enhancement approaches and sustainment. Table 13 indicates a target score for each measurement area, category and overall. Review of the table shows that scores are, in general, significantly

Table 13. Results of DOD Self Assessment Survey -- Staff Scores

Measurement Area	Target Score	Department Score				Cmd Score	% Cmd / Tgt
		200	500	600	900		
Diagnosis	4.5	3.14	3.68	2.43	**5.05	3.21	71
Quality Focus	4.3	2.25	2.67	1.83	2.39	2.33	54
Qual./Prod. Process	4.3	3.71	2.98	1.60	**4.33	2.75	64
Definition (leaders)	4.5	1.94	2.41	1.71	2.67	2.19	49
Definition (Wk Unit)	3.5	3.00	3.00	1.96	**3.58	2.66	76
Definition (Workers)	3.5	2.94	2.75	2.11	3.42	2.61	75
Internal Cust. Act.	4.3	3.50	2.04	1.95	**4.89	2.46	57
External Cust. Act.	4.3	4.75	4.13	2.90	**4.89	3.83	89
Planning	4.3	2.88	3.71	1.24	3.78	2.67	62
Improve. Activities	4.15	3.18	3.09	1.99	3.99	2.87	69
Organ. Streamlining	3.5	2.63	3.00	1.57	**3.67	2.38	68
Invest./Technology	3.5	3.25	2.75	3.10	**4.11	3.08	88
Meth./Process Improv	3.5	3.25	4.04	3.33	**5.00	**3.65	104
People-Orient. (idea)	3.5	3.42	3.63	3.24	**4.56	3.45	99
People-Oriented (Creativity)	3.5	3.31	2.81	2.82	**3.50	2.90	83
People-Oriented (Training)	3.5	**3.63	**4.38	**4.29	**3.83	**4.20	120
Enhance. Approaches	3.5	3.26	3.37	3.06	**4.12	3.27	93
Measurement	3.5	1.83	1.90	1.00	3.41	1.69	48
Evaluation	3.5	1.89	1.54	1.00	3.14	1.57	45
Feedback	3.5	1.00	1.31	1.00	**4.33	1.13	32
Rewards System	3.5	3.25	2.44	3.14	**5.33	2.90	83
Perform. Appraisals	3.5	2.88	3.81	1.00	**5.17	2.50	71
Sustainment	3.5	2.33	2.08	1.71	**4.17	2.29	65
Total Processes	3.77	2.93	2.83	2.09	**4.07	2.65	74
Assessments	3.5	3.08	1.94	1.95	**5.44	2.29	65
Define. (Teams)	4.3	3.08	4.02	1.83	**5.44	3.00	70
Meas./Proc. Anal.	3.5	3.08	2.17	2.14	**3.78	2.38	68
Organ. Develop.	3.5	2.75	2.75	2.19	**4.22	2.55	73
Awareness/Comm.	3.5	2.96	2.16	1.41	**4.57	2.21	63
Total Tools	3.66	2.98	2.63	1.83	**4.85	2.86	78
Work flow/Delays	3.5	3.25	3.38	3.14	**4.33	3.30	94
Waste	3.5	3.25	3.31	2.36	**4.50	2.90	83
Tools/Equipment	3.5	**3.63	2.94	3.00	**3.83	3.13	89
Safety	3.5	**3.88	**4.88	**4.71	**4.67	**4.60	131
Health	3.5	3.00	**4.06	3.29	**4.17	**3.50	100
Staffing	3.5	**3.63	**3.81	**4.86	**4.17	**4.18	119
Facilities	3.5	**3.88	1.94	3.36	2.50	2.90	83
Training	3.5	3.38	**3.69	**3.79	**3.83	**3.68	105
Supplies/Parts	3.5	**4.13	3.44	3.14	**4.50	**3.63	104
Work Priorities	3.5	2.75	3.13	3.36	**4.33	2.98	85
Quality	3.5	**3.75	**4.94	**5.00	**5.17	**4.73	135
Timeliness	3.5	**3.88	**4.94	**5.07	**5.00	**4.85	139
Reliability	3.5	**3.88	**4.88	**4.79	**5.00	**4.63	132
Total Outcomes	3.5	3.59	3.79	3.84	4.31	3.84	109
Total-Processes, tools & Outcomes	3.67	3.06	2.96	2.35	4.24	2.95	80
Number of Responses		4	8	7	3	22	--

below the targets. An "\*\*\*" has been added to the table to flag the relatively few acceptable scores.

It can be seen that Code 900 managers were consistent in their positive responses and the entire organization was generally favorable regarding the "command outcomes" elements. A command-to-target score percentage has been computed for each survey element and shown in the last column.

A percentage of 100 or greater indicates an acceptable rating. The results have been grouped and presented in figure 22 as a histogram. It can be seen that the results are skewed to the lower percentages and the median scores are in the 60% to 79% band.

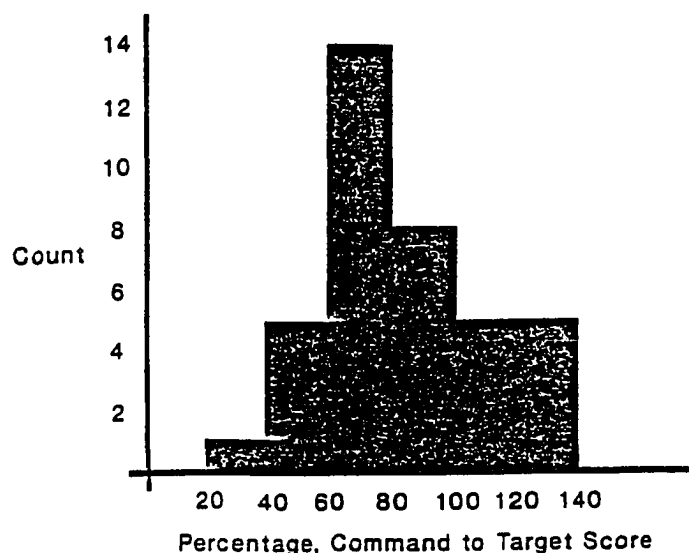


Fig. 22. Histogram of the Results of the DOD Self-Assessment Survey -- Staff Scores.

Table 14 is a sort of the data in table 13, based on the researcher's categorization of the measurement areas. As

Table 14. Analysis of DOD Self Assessment Survey -- Staff

Category Measurement Area	Command to Target Percent
<u>Policy Planning and Deployment</u>	63.5
Definition (Leader)	49
Quality Score	54
Quality/Productivity Process	64
Definition (workers)	75
Definition (work units)	76
<u>Management Oriented Processes</u>	93.5
Awareness/Communications	63
Organizational Processes	68
Performance Appraisal	71
Rewards System	83
Facilities	83
Work Processes	85
Investment/Technology	88
Tools/Equipment	89
Health	100
Supplies	104
Training	105
Staffing	119
People Oriented (Training)	120
Safety	131
<u>TOM Oriented Processes</u>	77.1
Feedback	32
Evaluation	45
Measurers	48
Internal Customers	57
Assessment	65
Measurement/Process Analysis	68
Definition (Teams)	70
Diagnostics	71
Organizational Development	73
People-Oriented (Creativity)	83
Waste	83
External Customer	89
Work Flow/Delays	94
People Oriented (Good Ideas)	99
Methods/Process Improvement	104
Reliability	132
Quality	135
Timeliness	139

shown, the measurement elements were divided into one of three categories: policy planning and deployment; management oriented processes not normally considered by NSCL as part of their TQM process; and those issues of a TQM orientation. The data has been listed by command-to-target score percentage in ascending order. The mean of the percentages in each category is also shown.

#### **A Preliminary Analysis.**

It is evident that the policy planning and deployment category (the "what to do" aspect of leadership) has been rated lowest and the management-oriented processes rated highest. It is interesting to note that policy planning and deployment is seen as a top management responsibility and management-oriented processes are seen as mid- and supervisory level oriented. Thus, the responders are saying that the lower managers are more effective. Review of the individual areas and their percentage ratings suggests significant areas of needed improvement.

There are two obvious areas of needed improvement. There is the need for senior leadership to develop and deploy the organization's visions, guiding principals and strategic and tactical plans as discussed in part I of this dissertation. Likewise, five of the six lowest rated TQM oriented processes have to do with measurement and its evaluation and use.

The parameters associated with the output of the organization's products and services (reliability, quality and

timeliness) received the highest rating from the managers. This may have significance for implementation of TQM. Management may feel that emphasizing TQM is not important since they believe that the customer is happy with their output. If they perceived that the products and services were unsatisfactory, then there may be a greater incentive on adopting TQM.

#### **Presidential Award for Quality**

NSCL conducted, as part of this research, a self-assessment using the Presidential Award for Quality criteria guide provided as appendix three. This survey asked each department and the Executive Steering Committee to rate themselves in the eight critical elements shown in table 15. The questions to arrive at these ratings are shown in appendix three and the ratings were to be made by employees who were considered knowledgeable in the TQM process. The ESC never responded to the request to conduct the survey, even after they were reminded several times. The reason given was that they had been too busy but promised to get it done. This was never accomplished.

Table 16 summarizes the data for the departments and command by statistical range and as a percentage of command score to maximum score. Table 17 provides the guidelines for analyzing the data on tables 15 and 16.

Table 15. Results of Presidential Award For Quality - Self Assessment

Criteria Element	Max Score	Department Score					ESC Score
		200	500	600	900	Aver	
I. Top Management Leadership & Support	20	7.6	5.5	7.6	11.5	8.1	
II. Strategic Qual. Planning	15	5.4	3.4	5.6	14.0	7.4	
III. Customer Focus	35	15.3	3.5	13.0	25.6	14.4	
IV. Training	10	3.8	1.3	4.0	8.7	4.5	
Recognition	5	1.8	1.0	0.7	3.0	1.6	
V. Employee Empowerment & Teamwork	20	8.8	7.0	6.0	11.0	8.2	
VI. Measurement & Analysis	15	5.2	0.9	4.5	10.5	5.3	
VII. Quality Assurance	30	11.0	6.0	7.5	10.5	8.8	
VIII. Qual. & Prod. Improvement Results	50	---	15.0	17.5	25.0	19.2	
COMPOSITE SCORE	200	78.1 <sup>14</sup>	43.6	66.4	119.9	77.2	

The composite score for the command is 77.2 or 38.6% which, according to table 17 indicates the beginning of a well-planned, sound and systematic TQM approach had been implemented in some parts of the organization. Five of the eight critical elements reflect scores in the 40-60% level which implies a well-planned, sound and systematic TQM approach has been implemented in many parts of the

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<sup>14</sup>Code 200 used the survey method, which did not provide a score for Quality and Productivity Results. In order to obtain a composite score which could be compared with the other departments, the average of the other three department's score for Quality and Productivity Results (19.2) was assigned.

Table 16. Results of Presidential Award For Quality - Self Assessment. Command Summary.

Criteria Element	Max Score	Command Score	Range of Dept Data	% of Cmd to Max Score
I. Top Management Leadership & Support	20	8.1	6.0	40.5
II. Strategic Qual. Planning	15	7.1	11.6	47.3
III. Customer Focus	35	14.4	22.1	41.1
IV. Training	10	4.5	7.4	45.0
Recognition	5	1.6	2.3	32.0
V. Employee Empowerment & Teamwork	20	8.2	4.0	41.0
VI. Measurement & Analysis	15	5.3	9.6	35.0
VII. Quality Assur.	30	8.8	4.5	29.3
VIII. Qual. & Prod. Improvement Results	50	19.2	10.0	38.4
COMPOSITE SCORE	200	77.2	N/A	38.6

Table 17. Data Analysis Guides for Self Assessment - Presidential Award for Quality.

Level	Score (points)	Percentage	Analysis
1	below 40	below 20%	Beginning of TQM awareness in some areas or functions.
2	40-80	20 - 40%	Beginning of a sound, systematic TQM approach in some parts of the organization.
3	80-120	40 - 60%	A well planned, sound and systematic TQM approach has been implemented in may parts of the organization.
4	120-160	60 - 80%	A well developed, systematic TQM approach with excellent functional integration has been implemented in most parts of the organization
5	above 160	above 80%	A world-class TQM approach that is systematic, effective, continuously evaluated and improved, and innovative. It has been implemented fully across the organization and is ingrained in its culture.

organization. Three of these elements, strategic quality planning, customer focus and training have very large ranges, in proportion to the maximum scores. Review of the data on table 15 shows that Code 500 has the lowest score in most instances and Code 900 has the greatest. Code 200's and 600's scores approximate the command average. This means that Code 900, on their self-assessment, believes that they are the most advanced in their quality journey and Code 500 has the least implementation. This data is generally consistent with the previously discussed DOD self-assessment surveys.

An interview with the Department Head of Code 500 indicates that his self-assessment team was not picked from the most knowledgeable TQM personnel, but from a sample believed more representative of his department. He believes that this negatively biased his department's results, when compared to other departments.

#### **Supervisor's Opinion Survey**

The researcher developed an opinion survey to determine the beliefs of the command's line supervisors regarding roadblocks to implementing TQM. This survey was provided in June, 1993 to 47 supervisors and senior management and there were 36 responses. Responses from two executives and one staff supervisor arrived after the data was tabulated, therefore the summary or "all" data only reflects 33 responses. The survey questions and associated data are shown in appendix four and focused on two major issues -- the

managers' beliefs regarding (1) the degree of progress the command has made in implementing TQM over the last two years and (2) potential hindrances or roadblocks to adoption of TQM. Three of the potential roadblocks (leadership, culture and assets) were expanded to include potential causes of difficulties in these areas. The topics and causes were developed, based on concerns expressed to the researcher during various times over the life of the TQM implementation. The responders were offered the opportunity to suggest other topics and causes and these are also included in the appendix. Table 18 summarizes the results of this survey.

The first question allowed the responder to indicate the status of TQM, on a continuum, from significant improvement to significant regression, with a neutral mid-point. The mean of the data was 3.34 for all supervisors and a 3.4 for the Management Council (a three was the neutral point and a four indicated that the process had regressed somewhat over the past two years) which reflects a bias towards regression of the process.

The responders were asked, in question two, to rank the six listed potential hindrances to adoption of TQM, with a score of six assigned to the greatest hinderance, a five to the next greatest, through a score of one to the least hinderance. With 33 responders for the all category, the largest possible score was 198 (6 X 33) and for the Management Council, with five responders was 30. As can be seen from

table 18, the data is presented in descending order or rank based on the "all" category, with the scores of the Management

Table 18. Summary of Data. Survey of Managers Opinions Regarding TQM Implementation.

1. Do you believe the command has (please check one):

<u># of Votes</u>			
<u>All</u>	<u>MC</u>	<u>Score</u>	
1	0	1	Significantly improved in implementation of TQL/TQM over the past two years.
6	1	2	Improved somewhat in implementation of TQL/TQM over the past two years.
10	1	3	Stayed about the same time -- little real change.
11	3	4	Regressed somewhat in implementation of TQL/TQM over the past two years.
4	0	5	Significantly regressed in implementing TQL/TQM over the past two years.

Mean for all = 3.34

Mean for Management Council = 3.4

2. Rank the following areas as to their hinderance to NSCL's adoption of TQL/TQM.

<u>Ranking</u>				<u>Problem Area for Implementation</u>
<u>All</u>	<u>MC</u>			
<u>Score</u>	<u>%TL</u>	<u>Score</u>	<u>%TL</u>	
170	24	23	22	The top leadership's execution.
139	20	17	16	A flawed TQL/TQM approach
126	18	21	20	The organization's culture.
92	13	15	14	Inadequate assets
89	13	12	11	A backlash from the emphasis put on TQM leading to the command winning the U. S. Senate Productivity Award.
86	12	17	16	The branch heads' and employees' execution.

3. Rank the following organizational or cultural issue as to their negative impact on implementing TQL/TQM.

176	20	29	21	There is a lack of common purpose between the organizational units and/or their managers.
154	17	18	13	Distrust between various levels of management.
122	14	8	6	Distrust between managers and employees.
121	14	27	19	Belief by many that existing processes are generally OK and that the command does not need to change to the degree suggested by TQL/TQM.
116	13	25	18	The existing management and employee roles (what people think they are supposed to do) are not consistent with the degree of employee participation suggested by TQL/TQM.
108	12	11	8	The rewards and recognition provided are inadequate to justify the efforts necessary to implement TQL/TQM.
101	11	22	16	TQM/TQL Processes are just too far from the way NSCL does its work to be easy to adopt.

Table 18 (Continued). Summary of Data. Survey of Managers Opinions Regarding TQM Implementation.

4. Rank the following leadership concerns as to their negative impact on implementing TQL/TQM.

<u>Ranking</u>				<u>Problem Area for Implementation</u>
<u>All</u>		<u>MC</u>		
<u>Score</u>	<u>%TL</u>	<u>Score</u>	<u>%TL</u>	
182	20	30	21	A lack of visible commitment to TQL/TQM by members of the Management Counsel, ie., lack of follow-up to TQM/TQL related issues and not "walking-their-talk"
152	17	20	14	Conflicts between senior managers.
134	15	28	20	Senior leadership is too involved with other issues.
129	14	26	19	Inadequate organizational policy planning (Visions, guiding principles, strategic and tactical planning).
126	14	18	13	Lack of adequate "management of participation", ie., senior leadership does not adequately involve others in the process.
106	12	9	6	Leadership just does not support implementing employee identified improvements.
71	8	9	6	Subordinates just will not "get with the TQL/TQM program".

5. Rank the following asset concerns as to their negative impact on implementing TQL/TQM.

197	22	34	24	Not enough time. The nature of the work load is such that time can not be spared to work on TQL/TQM.
166	19	23	16	Funds to pay for employee salaries while they participate in TQM/TQL.
129	15	10	7	Inadequate assets for employee training
113	13	19	14	Available TQM/TQL Facilitator to support the QMBs and PATs.
108	12	23	16	Inadequate tools, such as computer systems software and availability of necessary information.
91	10	17	12	Support of outside consultants.
85	10	14	10	Inadequate training aids such as films, books and magazines.

Council shown in the second set of columns. Questions 3, 4 and 5 all provided seven potential causes for difficulties with implementing TQM. The greatest concern, as to negative impact, was assigned a score of a seven and the others were assigned scores in descending order, to the least concern with a score of one. In this case, the highest score for the all

category was 231 (7 X 33) and 35 for the Management Council. In three cases, respondents did not choose to answer specific questions or rated the answers differently than requested, thus totals may slightly differ from maximum possible votes cast.

Table 18 reflects perfect correlation between the opinions for the all manager and Management Council categories for the first or primary concern in questions two through five. Thus, the managers of NSCL have collectively identified that the number one problem area in implementing TQM is top leadership's execution and the number one cause or concern associated with leadership (question four) is a lack of visible commitment to TQL/TQM by members of the Management Council/ESC. The next three concerns associated with leadership, while not ranked in the same order by the two categories, all fell in the same grouping.

The order of the second and third ranked problems (a flawed TQL/TQM approach and the organization's culture) were interchanged for the "all management" and Management Council categories. The fact that they fall in the second or third ranking reflects their high level of concern. Both groups or categories agreed that the number one problem/concern within the cultural issue is the lack of common purpose between the organizational units and/or their managers. Review of the comments provided do not provide insight into what the differing purposes might be, however, the researcher has

frequently observed that many managers see the "business aspects" of their job as distracting from the "engineering aspects" and what they perceive is the primary purpose of their organizational unit, ie., "to fix ships". The differences between the business and engineering aspects may reflect a view of lack of common purpose, ie., the first level supervisor and employees stress fixing ships while the second and top management are seen as more involved with non- "ship-fixing business" activities.

It is interesting to note, that the all manager category rated the two distrust concerns as the second and third cultural issue, however, these were rated in the bottom three by the Management Council.

The fifth question involved asset allocation and the overwhelming response for both categories was the concern for time to devote to "doing TQM". It is also interesting that the command managers do not believe that TQM/TQL processes are too far from the way NSCL does its work to be easy to adopt (rated last of the seven issues), while the Management Council ranks this issue as forth of seven.

The questionnaire did not identify or ask for priorities for the causes associated with a flawed TQM approach. This is seen as an initial weakness of the research. Rather than conduct a follow-up survey, the researcher and Ms. Glenda McRary, a Senior Management Analyst, conducted twelve interviews with key individuals concurrently. Many

reciprocators provided multiple observations. This dual set of interviews supported triangulation of data as well as to speed up the research. Comments included:

1. We did not have enough control over or pay enough attention to PATs -- they were just running around "Willie-Nillie".
2. Management was not involved enough in implementation.
3. There was inadequate bottom-up implementation.
4. The process did not take into consideration the cost and time required - at all levels.
5. We tend to only focus on one thing at a time. One time its planning, then its process improvement and now its measurements. Our process should be on a systems approach.
6. The process did not focus on what is important -- quality and our customers needs.
7. Too many projects, initially.
8. Top management appeared to be on line in the beginning, but they pushed the process down, rather than being personally involved.
9. Execution was flawed. No frequent, regular emphasis on TQL. The quarterly emphasis and then let's get back to work made it an appendage (viewed as something else to do by first line managers); was not integrated as every day way of life.
10. Not flawed; misused process by communicating to teams that they were empowered to implement, ie., teams met, expecting to make changes, then management made their own decision. If we were not going to implement their changes, we should have specified we were asking for ideas or recommendations.

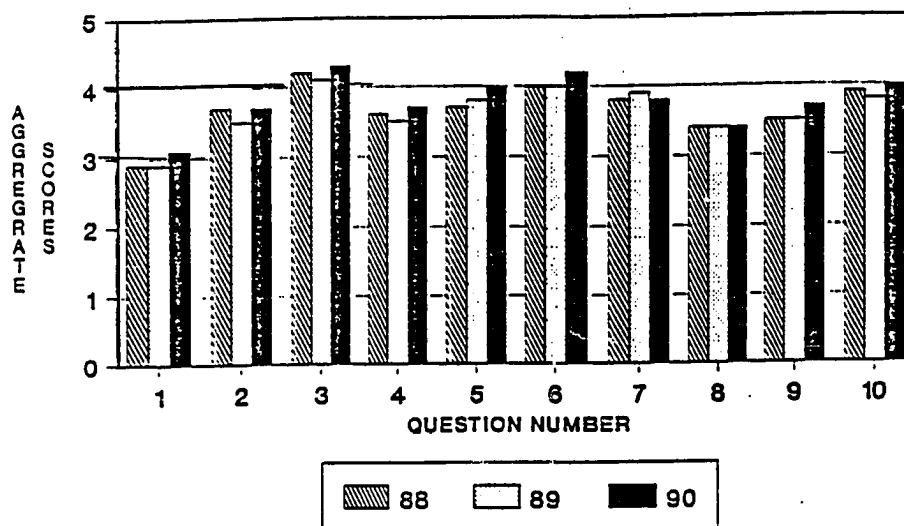
Most of the flaws reported are closely associated with implementation, leadership participation and support, process focus or asset issues and not directed at the actual processes. It would be desirable to conduct a follow-up survey to identify and prioritize, more rigorously, the potential causes and determine the opinions and ranking of the supervisors, however the researcher's senses of the supervisors' feeling is that they are getting tired of surveys

and the effort could be counter-productive to supporting TQM. All of the issues identified above will be considered in the adoption of an "ideal" TQM implementation process for NSCL in chapter 14.

### **Employee Satisfaction Survey**

NSCL conducted employee satisfaction surveys in 1988, 1989 and 1990 (Employee Satisfaction Survey 1990). The 1990 survey summarizes and assesses the data for these three years and figure 23 is a reproduction of the questions (in the form of statements) in the survey and the employees' responses. The survey could be answered by one of five choices: a one was assigned to strong disagreement with the statement, a three with a neutral feeling and a five for strongly agree. Two was for somewhat disagreement and four for somewhat agreement to the questions-statements. The survey was provided to all 699 employees, including all levels of management and 384 responded. Data was not available on standard deviations.

The data shown in the bar chart of the figure indicates that the employees are neutral about the first question - "I think there is high morale and camaraderie in our command." The average response was somewhat below three for 1988 and 1989 and just positive for 1990. There was continuing improvement in most of the questions with all other questions to be rated at 3.5 or above. The data does not show any



1990 - SENT OUT 699 - REC'D 384

1. I THINK THERE IS HIGH MORALE AND CAMARADERIE IN OUR COMMAND.
2. MY DEPARTMENT MANAGEMENT SPONSORS GOOD TEAMWORK.
3. I HAVE AMPLE OPPORTUNITY TO EXCHANGE INFORMATION WITH MY SUPERVISOR.
4. I FEEL THAT DEPARTMENT MANAGEMENT ENCOURAGES EMPLOYEES TO PARTICIPATE AND BECOME INVOLVED.
5. I KNOW THE GOALS AND OBJECTIVES OF NAVSEACENLANT.
6. I UNDERSTAND MY DEPARTMENT'S ROLE IN NAVSEACENLANT.
7. I UNDERSTAND THE CRITERIA USED TO EVALUATE MY PERFORMANCE.
8. I BELIEVE I AM FAIRLY AND PROPERLY REWARDED AND RECOGNIZED FOR MY WORK.
9. I FEEL THAT MANAGEMENT WILL LISTEN AND SUPPORT MY IDEAS ON BETTER WAYS TO DO MY JOB.
10. I FEEL I AM A VALUED EMPLOYEE OF NAVSEACENLANT.

Fig. 23. Employee Satisfaction Survey Results, Command Total.

particular concerns. Employees agree or feel positively about all areas; continuous improvement is occurring on rating; and four of the ten questions (numbers 3, 5, 6 and 10) are at the four or above level.

The survey allowed employees to write comments and these provided insight into the employees' feelings regarding a number of topics. Eighty-nine of the employees (23% of the responders) provided comments and these are listed in sequence in the survey. The researcher has, using personal opinion, classified these by the degree of "negativeness" or "positiveness" from an organizational viewpoint. They were also classified as orientation around four topics: management, process, organizational and personnel practices. Appendix five shows the detail classifications of the comments and table 19 summarizes this data.

Table 19. Analysis of Employee Satisfaction Survey Comments -1990

	<u>Number of Responses in Category</u>				
	<u>Very</u>				<u>Very</u>
<u>Orientation</u>	<u>Negative</u>	<u>Negative</u>	<u>Neutral</u>	<u>Positive</u>	<u>Positive</u>
Management	8	24	4	2	0
Process	0	9	5	1	0
Organizational	0	2	3	3	5
Personnel	1	20	0	1	0
Practices					
Total	9	55	13	7	5

The data shows that 64 of the employees provided negative or very negative comments and 32 or 50% of these were oriented to management and leadership issues. Review of the negative and very negative comments resulted in the finding that nine

of these 32 management comments were oriented to concerns over senior/upper management (which, from the context of the comments generally implies the Management Council and in some cases the GM-14's) actions and five within the management and process areas were oriented to dissatisfaction with TQM. There were 21 negative comments regarding personnel practices. Six identified concern with the employee performance evaluations processes and eight with travel and especially the required use of Bachelor Officer Quarters (BOQs) (transient living quarters for officers) while on travel. These classifications are shown as additional notes at the end of the individual comments in appendix five.

The data indicates that 30% of the employees providing comments stated negative issues involved with supervision, management and leadership, with one-third (10% of the total comments) focused on top/upper level management. Approximately five percent addressed problems with the concepts of TQM, which seems surprisingly low, however, this was confirmed by Thomas' findings discussed later in this chapter. Employees seem to generally accept TQM, but have significant concerns about their leaders.

#### **A Study of the Employee's Buy-In and Opinions Regarding TQM Introduction.**

Carmen Thomas, the Budget Officer of NSCL, under command sponsorship, prepared a master's thesis which studied the degree of employee's buy-in or acceptance and their opinions

regarding TQL concepts (Thomas 1993). Ms. Thomas served, in a collateral capacity, as a TQM facilitator and TQL instructor for NSCL's Team Leader and Team Leader courses. She was motivated in her research by a desire to understand how employees' buy-in, or lack thereof, would ultimately affect NSCL's TQL efforts.

#### The Questionnaire.

She distributed a questionnaire to the 360 employees trained during the period July, 1990 to June, 1992 and received a return rate of 56%. The questionnaire included six statements shown in table 20 below:

Table 20. Questionnaire Statements.

1. I see the benefits of TQL implementation within my department/office.
2. I understand the goals and objectives of the TQL process.
3. TQL can improve NAVSEACENLANT work processes and provide for continuous improvement.
4. TQL has motivated me to be more customer focussed.
5. I believe in the TQL process and what it can do for NAVSEACENLANT and me as an employee.
6. I plan to implement TQL tools and techniques.

The responders were asked to rate their degree of agreement with the questions/statements on a five point scale, with a one indicating strong disagreement; five, strong agreement and a three for a neutral response. The results of this survey are shown in table 21, for both supervisors and non-supervisors.

Thomas reported that her statistical analysis of this data shows that the mean, median and mode for the data all

fell within the level four (agree) response and that the standard deviations were .5 or less.

Table 21. Questionnaire Results Regarding NSCL Employees Buy-In and Opinions of TQL. (Thomas 1993, 41)

Department	----- Statements -----					
	1	2	3	4	5	6
<u>Non-supervisory</u>						
200	3.42	4.11	4.05	3.68	3.74	3.72
500	3.39	4.24	4.15	3.92	3.96	4.23
600	3.07	4.03	3.69	3.41	3.49	3.49
900	3.00	4.18	3.75	3.88	3.64	4.03
Average	3.22	4.14	3.89	3.72	3.71	3.88
<u>Supervisory</u>						
200	4.50	3.25	4.25	3.50	4.25	4.25
500	3.78	3.89	3.78	3.78	4.11	4.44
600	3.69	4.54	4.23	3.62	3.92	4.31
900	3.36	4.18	3.91	3.55	3.91	4.09
Average	3.83	3.97	4.04	3.61	4.05	4.27

#### Analysis of the Questionnaire Results.

The averages shown in table 20, when rounded to the nearest whole number, show that the responders agreed (level-four) in all but one case -- the first question for non-supervisors. The non-supervisory employees were neutral about the benefits of TQL within their own department or office. Thomas suggested that this data might be understood by a quote from Juran (1989):

"A lively beginning to a lecture on quality is to ask, Who in the room is against quality? No hands are raised. No one -- not managers, supervisors, specialists, the work force, the union. No one. Do we then need to talk about motivation for quality? We do, but not in the sense of convincing people that quality is desirable. Instead, the need for motivation arises because there are some very real obstacles to achieving quality and because getting rid of some of these obstacles does involve motivation."

Thomas (1993, 44) observed that the data suggests that everyone believes that quality is a good idea -- they are sold on the concept of TQL -- however, non-supervisory employees are neutral about its application to their own organization.

The questionnaire allowed responders to provide comments regarding their perception of TQL. Thomas found in these comments an explanation for the non-supervisory personnel being unsure about the applicability of TQL to their own organization. She found "approximately 40% of the comments submitted expressed negative perceptions of management's interest, participation, commitments and intentions in relation to TQL" and provides the below examples of some of these comments (Thomas 1993, 44).

- \* There's little TQL leadership and direction in the command.
- \* TQL could benefit all of NAVSEACENLANT if management practiced what they preach.
- \* Even though I feel positively about the TQL process, I have yet to see real involvement at the supervisory (middle management) levels.
- \* I would hope after five years management, who expended the bulk of the TQL funds, would start to convey a team spirit.
- \* You can't believe management.

Thomas also found very few positive comments about NSCL's TQL efforts, which she believes implied that few people have had positive experience with TQL, or that people with positive experience did not bother to respond and/or provide comments.

#### **Observations from these Findings.**

These findings suggest that non-supervisory employees believe in, understand and are willing to commit themselves to

TQL, however, they doubt that the process will be valuable to their own organization. The comments indicate that the employees do not believe that the managers are willing to make the commitment and take the actions that will allow TQL to be valuable to their organization. This has significant impact for this dissertation because it validates the importance of top leadership's actions to implementing TQM and supports the hypothesis that many of the current difficulties with TQM at NSCL are directly tied to senior leadership actions.

#### **Further Observations and Recommendations.**

Thomas, reviewing the comments and making her own observations as an informed member of the work force, has suggested the following difficulties with TQL implementation (Thomas 1993, 47-48):

1. Management tried to implement the process too quickly, without the benefits of command-wide awareness training. The pressure exhibited by senior managers was passed down to the working level for exclusion, when they did not have adequate tools. This "left a bad taste in everyone's mouth".
2. Management provided little visible commitment to TQL processes.
3. The command has not publicized the TQL efforts and the resultant successes to gain employee support.
4. After command-wide training of employees was implemented, no clearly defined plans were developed for future reinforcement, maintenance, and implementation of TQL goals and objectives.
5. NSCL management has not been successful at gaining the trust and commitment of the working level.
6. Management overemphasized TQL systems and processes at the expense of the human relations aspects of total quality and culture change.

Thomas has also provided a number of actions which should be taken to re-vitalize the TQL effort. They are involved

with changing employees' perceptions about management and NSCL's TQL efforts and include (Thomas 1993, 49-51):

1. Show visible commitment to TQL processes, principles, and philosophy by joining teams, and spearheading real improvements.
2. Support TQL efforts by providing the necessary resources.
3. Implement a form of subordinate appraisal so management can get honest assessments of their performance from the worker's point of view.
4. Continue the employee satisfaction survey, widely disseminate the results, and conduct feedback sessions within work groups to discuss the results and possible solutions.
5. Stop taking surveys and never publicizing the results or doing anything about the results.
6. Publicize TQL efforts.
7. Management should determine what organizational attributes work for and against TQL implementation at NSCL, and build an action plan based on these strengths and weaknesses.
8. Vigorously advertise and promote the command's visions and guiding principles.
9. Train managers in the concepts of organizational behavior and the psychology of change implementation.

These issues will be considered in part V of this dissertation.

### **Roadblock Assessments**

The TQM records provide insight into the mid- and first level managers' view of roadblocks to implementing TQM. There were three TQM planning sessions in 1987-88 which are interesting and provide insight into the supervisor's long-term opinions of top management. The first was a meeting of the Performance Steering Committee (a forerunner of the Senior Management QMB) in November, 1987. This group was established prior to the VPC/QUALTEC processes and consisted of influential mid- and first level supervisors chartered to

serve as a command steering committee to improve performance. It was the first forum to start implementing TQM. The second two sessions were the initial training and implementation courses taught by VPC to the command's first level supervisors. In all three cases, the groups did a Nominal Group Technique (NGT) exercise to identify roadblocks to improvement. These are reported below.

**Performance Steering Committee - 12 November 1987.**

The group of eight mid- and first level managers addressed the issue of how the command could improve its performance. The team addressed the question of identifying roadblocks to improvement and identified 39. Each participant was given seven votes, with a seven being assigned to the most critical roadblock and a one given to the seventh roadblock. The results of this effort, showing the top ten roadblocks to performance improvement are shown on table 22.

Two of the top four elements were identified as management issues. The poor communications and defensive communications were seen as an issue involving all levels of management and the forth priority, lack of consistency for top management was directed at the Management Council and "front office".

The first number of the second column indicates the number of votes provided to the roadblock and the second the total score or sum of the values of the votes. For example, six of the eight managers identified poor communications as an

Table 22. Nominal Group Technique Results by the Performance Improvement Steering Committee.

<u>Prty</u>	<u>#Votes/ TL Score</u>	<u>Idea</u>
1.	6/34	Poor communications. Defensive communications.
2.	5/27	Morale/attitude.
3.	5/22	Insufficient staff. Large workload.
4.	6/20	Lack of consistency from top management. Inadequate mission statement. No command direction. Lack of goals. Interpretive control.
5.	3/17	Lack of discretionary resources. Lack of time. Inequitable budget distribution. Money/Cost.
6.	4/11	Resistance to change. Implementing change. Obtaining authorization to change. Tradition.
7.	3/11	Job security.
8.	2/12	Understanding processes. Lack of SOPs.
9.	3/10	Management intolerance to failure (no warm fuzzes from the top).
10.	3/10	Continuous short term reorganization.

issue and the total of vote priorities assigned was 34. Thus, 5.66 ( $34/6 = 5.6$ ) out of a maximum of seven is jointly assigned to this roadblock. This serves as a "figure of merit" for this issue. The second issue would be 5.4 ( $27/5 = 5.4$ ), thus of lesser importance than the 5.6 for the first issue.

#### Tactical Planning Session for Corporate Improvement.

As part of the VPC training, two groups of first level supervisors were concurrently trained and actually developed tactical planning. They used the corporate strategic planning developed earlier by the Senior Management QMB as the basis for the training and development of tactical plans. One of their exercises was to use the NGT to identify roadblocks to

corporate improvement. The first team of 37 supervisors met in May 1988 and the second group of 29 met in October 1988. Tables 23 and 24 provide a listing of all management-oriented roadblocks and their score and relative priority.

Table 23. Nominal Group Technique Results by First Tactical Planning Session of First Level supervisors.<sup>15</sup>

<u>Prtv</u>	<u># Votes/</u> <u>TL Score</u>	<u>Roadblock</u>
1.	24/173	Lack of leadership. * Lack of foresight, vision and planning
2.	28/153	Lack of true commitment to change. * Lack of involvement of top management * Negative thinking * Not-invented-here syndrome * Resistance to Change * Top management not uniform in commitment
3.	27/120	Lack of communications between codes. * Each department has its own paradigms and can't see others
7.	16/79	Feeling of distrust. * Top Management credibility
10.	12/50	Lack of incentives to improve.
11.	11/48	To many levels of management.
12.	7/43	No atmosphere of joint ownership.
13.	11/36	Non-involvement of units in planning activities that effect them.
15.	5/30	Micro-management from top.
16.	10/29	Protectionism of duties or responsibilities.
18.	8/28	No pat on the back for a job well-done.
22.	5/26	Lack of authority or ability to implement "ideas"
23.	4/25	Implementing new ideas or programs without proper testing or acceptable results.
24.	6/23	Spirit of competition rather than cooperation for resources.
25.	5/21	Inequity of decision.
28.	7/17	Turnover of Commanding Officer every 2-3 years.

These roadblocks are extremely interesting and important to this research. They represent the initial exposure to the concepts of TQM provided to the first level supervisors. They

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<sup>15</sup> Report on Output from Tactical Planning Session for Corporate Improvement. May 10-12, 1988. VPC: Blacksburg, Virginia.

Table 24. Nominal Group Technique Results by Second Tactical Planning Session of First Level supervisors.<sup>16</sup>

<u>Prty</u>	<u># Votes/ TL Score</u>	<u>Roadblock</u>
1.	25/200	Lack of Communication between upper management and lower level.
2.	17/98	Don't work together as a team.
3.	15/82	Too many layers of management.
4.	13/78	Reluctance to change.
5.	12/55	Favoritism.
6.	8/52	Lack of command understanding that goals are determined by our customers and are continually changes.
7.	10/49	Lack of senior management PR with fleet and type CMDR's.
11.	8/42	Lack of trust between employees and management.
12.	7/42	Lack of leadership.
13.	9/41	Crisis management.
16.	7/33	Managers micro-managing to the extent that supervisor's skills and capabilities are not developed.
17.	6/33	Managers can't make decisions.
18.	6/33	Senior mgt intents to fill pipeline with degreed personnel therefore killing incentive.
20.	6/32	No command long range goals to support new system.
21.	8/31	Looking for instant Return on investment.
23.	5/23	Multiple and inconsistent lines of authority.
24.	5/22	No support for bottom-up ideas.
25.	5/22	Emphasis on quality rather than quality.

are entirely consistent with all of the other findings within the five earlier surveys, reports and assessments. In effect, the first level supervisors have not changed their view of the world and the activities of the top management after five years of practicing TQM. This findings may suggest that this represents a cultural issue which should be considered as part of TQM implementation. It will be addressed further in the analysis and future direction sections of this dissertation.

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<sup>16</sup> Report on Output from Tactical Planning for Corporate Improvement. October 24-26, 1988. VPC: Blacksburg, Virginia.

## **LEADERSHIP-ORIENTED ACTIVITIES**

### **Leadership's Personal Actions**

#### **Background.**

The earlier literature research indicated that the leadership's personal actions may be seen from two viewpoints: that proposed by the TQL program and by Kotter (1988) and others. The TQL program indicates that leaders must (1) apply themselves to thoroughly understand TQM/TQL processes to a level that they recognize the importance of the processes to their organization; (2) become dedicated to their application and finally (3) implement this knowledge and dedication.

Kotter's viewpoint is that a leader must develop a vision of where the organization should be going and the associated strategies to get there. Then he/she establishes appropriate networks with those whose support is necessary to accomplish the strategies, aligns (motivates) them to work for their accomplishment and provides continuing coaching, support and recognition to keep the alignment.

#### **Espoused Personal Actions by the Leadership.**

There was little NSCL documentation found that espouses the leaders' roles and responsibilities in the context of TQL or Kotter as described above. The VPC and QUALTEC training did not address leadership roles. Virginia Productivity Center provided the primary training to senior leaders. It was a "just-in-time" method of interweaving training and "doing", while developing the corporate visions, goals,

guiding principles, strategic and tactical plans and to set up and operate the associated PATs. Thus, the training was process oriented -- focusing on the management role of "how to do TQM" vs. the leadership role of determining "what to do" as emphasized in part I.

The only formally espoused position regarding top managements' involvement with TQM was found in a NSCL sponsored magazine article. NSCL stated:

"We recognize that top management commitment is absolutely mandatory to implement and sustain a successful TQM process throughout an organization. Without it, even the most ardent supporters of the process will probably become frustrated and slowly revert to 'business as usual'. Our top management has made significant investment in time and money as well as personal involvement to ensure that TQM becomes 'business as usual' (Hudson and Stevens 1991. 55)."

Reflections by the researcher, which were validated by general discussion with other managers, is that leadership recognized and espoused the responsibility for the program and the need to act as a role model -- to "walk their talk" and "lead by example". Primary involvement in "doing TQM" was in the area of serving on the ESC and the Senior Management QMB and associated PATs as described later and acting as a public advocate for the process. In many ways, the senior leaders espoused to provide the similar support, oversight and control to the TQM that they provided to other projects.

In summary, the senior leadership did not espouse to follow the systematic learning, commitment and application model of the TQL program, nor did they espouse to follow the

Kotter model. The espoused personal actions of the leadership included involvement with the TQM process through the ESC and Senior Management QMB. The VPC model for policy planning did not include the personal vision, strategic planning and alignment actions by the senior leader(s), rather these were diffused through participation in the process by all of the top and mid-level management. The below discussion on empowerment and participation and policy planning will amplify on these observations.

**Actual Personal Actions by the Leadership.**

It was the researcher's observation that during the initial years of implementation, the senior leaders actively "talked" TQM in almost every forum. Informal feedback to the researcher, in his role as Technical Director, indicated that people were tired of hearing it. The Commanding Officer and Technical Director instituted a process of program reviews to show senior management involvement and required each program review to include a TQM status briefing.

None of the members of the Management Council/ESC, other than the researcher, instituted a self-development or personal learning program to the degree envisioned by the TQL model. An informal polling of the Management Council/ESC members resulted in the finding that training is inconsistent between them. At the two extremes, the Commanding Officer has taken extensive TQM training sponsored by Juran and Crosby and the TQL program and has attended numerous Deming-related short

courses, but because of asset limitations had not taken the VPC or QUALTEC team leader course, while the Executive Officer has taken no TQM-related courses.

The civilians on the Management Council/ESC have all had the VPC and QUALTEC team leader training and two of the three have taken other courses or seminars. The researcher, the prior Technical Director, has followed an academic program leading to a Ph.D. in Engineering Management, with much of his studies and research focusing on TQM issues. Several other managers had taken additional courses, however none of them has followed a systematic development program to acquire the profound knowledge required by Deming, nor have any of these managers been adequately exposed to the need through the courses offered by NSCL. There is an existing Executive Development Plan that is not being followed and it does not address TQM and acquiring profound knowledge to the degree necessary to meet the TQL model.

As stated earlier, the Kotter model of visioning, etc. was not espoused by the organization, however, there are indications that the managers at the department level, collectively, have worked to develop department level visions and plans which could approximate the model.

#### **Actions by the Leadership - The Role of the Change Agent**

There are many actions by the senior leadership which are necessary to implement TQM. Many of these were identified

earlier as NSCL's key TQM elements. The following issues will be considered as part of this research:

- \* Customer focus
- \* Level of employee participation and involvement
- \* Senior Management Alignment and Team Work
- \* Relative priority of TQM implementation
- \* The allocation of assets

**Customer Focus.**

**An Overview.** The TQM philosophy places the definition of quality with the customer and requires that efforts be focused on meeting and exceeding the customer's requirements. It is a major element of the Deming philosophy and the QUALTEC methodology for improvement indicates that all efforts being accomplished under the mantle of TQM must be done from a customer viewpoint. The customer can be either the in-house receiver of a product or service or the business' external customer.

**Espoused Degree of Customer Focus.** NSCL, as previously reported, espouses that their TQM processes are customer focused and recognizes the concept of in-house and external customers. They profess to use such tools as the input/output analysis at all levels of the organization to identify the down-stream customers and the up-stream services they are provided. The NSCL documentation and observed management "talk" does not differentiate between customer focus required of top leaders and other levels of management. There are frequent references to top management's responsibility to work with the senior managers at other government activities to

ensure adequate recognition of customer requirements and acceptance. NSCL espouses to implement customer satisfaction surveys.

**Actual Customer Focus.** There is little evidence that top leadership considers their employees as in-house customers of their management processes or efforts. There was no input/output analysis from a top leadership perspective discovered, nor can the researcher remember any concerted effort to focus on employees as customers. Top leadership does coordinate with senior managers of other organizations, as customers, and the researcher is unaware of a lack of external customer focus. Customer opinion surveys were conducted in 1988-1990 and the results are shown in figure 23.

The customer satisfaction survey was provided to all Atlantic Fleet ships, shipboard operational commands and a major cross-section of the engineering support organizations which NSCL supports or interfaces with. The data shown in figure 24 reflects excellent customer acceptance.

It is speculated that the difference between espoused and actual in-house customer focus by senior management may be due to the cultural aspect of leadership within the Navy. The Navy, in general, does not espouse the concept of leaders serving their subordinates in a server/customer capacity. It is the researcher's observation that, in many cases, the feeling is more one of a paternal nature between the leader and subordinate.

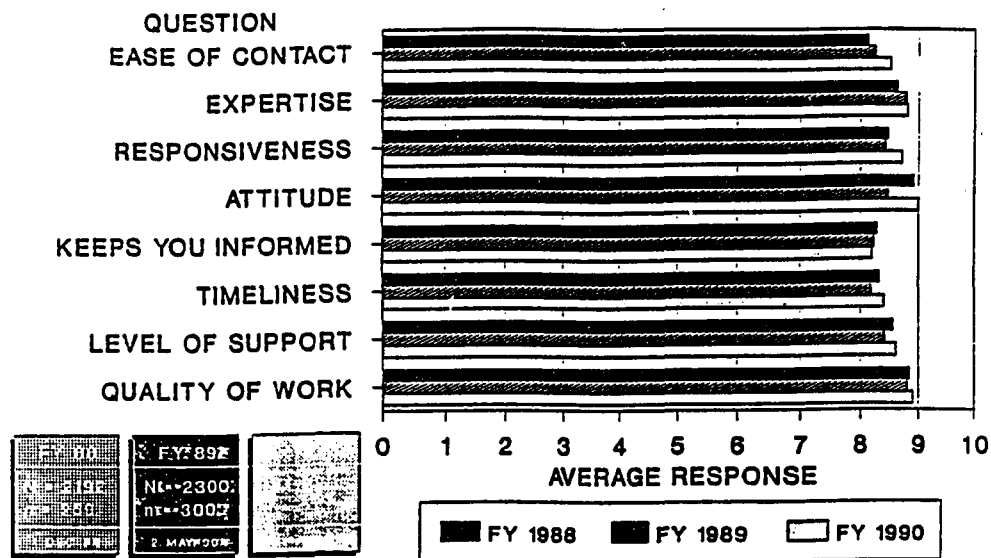


Fig. 24. Customer Satisfaction Survey Responses: 1988-1990. (Stevens 1991, viewgraph 22)

One division head was critical of the customer focus issue during interviews. He had developed a process which amplified the customer orientation and this will be addressed later in this chapter.

#### Employee Participation and Empowerment.

Overview. The TQM literature stresses the importance of managing participation and empowering employees to make appropriate decisions and assume responsibility for their tasks. The concept of management of participation recognizes that each of the leadership styles discussed in chapter four can be appropriate, on a situational basis, however, in order to obtain buy-in and alignment to the leader's visions, it is

important that the employees participate in their development. A strong bias toward the more participative leadership styles is recommended.

**Espoused Level of Participation and Empowerment.** Every document describing NSCL's TQM program espoused that the organization used a participative management style. The guiding principles, published as part of the 1990 Senate Productivity Award documentation, indicated empowerment of all levels of the organization by moving responsibility and authority for all actions to the lowest appropriate level and achieving continuous improvement of quality and performance through active participation of all employees.

The earlier discussion on organizational infrastructure for implementing TQM at NSCL revealed that the hierarchial structure is based on empowering the middle and lower levels of the organization. This is accomplished by the series of management boards indicated and illustrated in figure 21. It is espoused that the top leadership is responsible for business improvement, while the branch level QMBs focus on operational improvements. In the context of the earlier TQM language, the top management espouses to take the lead in Policy Planning and Deployment and the lower levels take the lead in improving quality of daily work.

Each QMB establishes PATs to address particular tasks and improvements they have chosen or been assigned to implement. These teams are " ... empowered to implement any performance

improvement which affects their organizational unit only. They need approval by higher authority only when the solution to the problem involves additional funds or additional manpower (Hudson and Stevens 1991, 56)." They must also obtain approval if their solution crosses organizational lines.

It is noted that figure 21 indicates that the supervisor of the organizational level establishing the QMB serves as the link-pin or coordinating manager to the next higher QMB.

**Actual Participation and Empowerment.** The degree of employee participation through QMB and PAT involvement has significantly waned over the implementation period. In 1990, NSCL reported that 382 of their 646 employees were involved with TQM processes, 34 of the potential 48 organizational sub-units had been formed and there were 175 PATs chartered (Stevens 1991, viewgraph 18). At this time, there are four PATs operational within Code 600, three within Code 200 and none within the other two departments. The command level QMB has not met since February, 1992 and there are no long-term strategic or tactical plans in place at the command level. Several departments generated their own strategic and tactical plans after the February, 1992 meeting, using NSCL level strategic plans and visions developed in December, 1991. There is no indication that these department level plans are being implemented at this time.

Top management at NSCL, and the Navy as a whole, seem to have adopted the use of QMBs and PATs as a mechanism to obtain

participation in the decision process. It has become a part of the way to do business. For example, NSCL is in the process of a major reorganization which will result in a name change, consolidation with other commands and a new sponsor. Almost all of the planning is being done through a QMB and a number of PATs and working groups composed of working-level employees and managers. One observation is that some employees see the management directed PAT negatively. Comments such as TQM is a "cop-out by management -- they pass the buck instead of making the hard decisions" and "everything has to be decided by committee" have been directed to the researcher.

The DOD and Presidential Award for Quality self-assessments reported early in this chapter provide some insight. Table 12 indicates that work-force assessment of the employee involvement is very favorable. The command mean was 4.55, with a range across departments of 4.38 to 4.80. The authors of the assessment indicate that scores above 3.5 indicate a positive response. Table 15 provides additional insight. Two of the departments rated themselves at a level two, and two at a level three as defined by table 16. Thus, two departments reported that they had the beginning of a sound, systematic TQM approach in some parts of their organization and the other two reported a well-developed approach with excellent functional integration being implemented in most parts of the organization.

The results of the surveys do not match with the number of PATs actually in place. Discussions with several managers indicate the belief that this disparity is due to the fact that the TQM processes, including empowerment, have (at some level) become embedded in the way people do their work and formal PATs are not necessary. This may be an area for future research.

#### **Relative Priority of TQM Implementation and Asset Allocation.**

**Overview.** The literature clearly indicates that TQM implementation should have a very high priority within the organization. It is believed to be key to long-term survival of the organization in today's global marketplace. Every TQM thinker stresses the need to place a priority on the long-term gains and rewards associated with quality and productivity improvements even when it will surely occur at the expense of current assets and short-term profits.

Because of the potential for controversy associated with this topic, a "strawman" position was provided to reciprocators and their responses are included in attachment 5.

#### **Espoused Level of Relative Priority of TQM Implementation.**

The degree of espoused relative priority at NSCL has varied over time. The initial documents establishing TQM-focused on implementation based on higher level (DOD and Presidential) direction and is general in context, relative to priority of implementation. The initial actions and statements by the

senior leaders clearly espoused to the command's personnel that TQM had a very high priority.

**Actual Relative Priority of TQM Implementation.** The philosophy of the senior leadership was that an investment now will reap rewards in the future and competition was such that improvements had to be achieved if the organization was to be continued. To reinforce the relative priority of TQM, the Technical Director frequently said that it was OK to "pass a job" to another activity if the short-term job conflicted with supporting TQM. This is a major cultural "no-no". One mid-level manager, during the research validation process, made the comment that this philosophy was never agreed to by first and mid-level management and was felt to be contrary to TQM principles of customer focus.

TQM was espoused as having a very high priority during the submission process for the 1989 and 1990 U. S. Senate Productivity Awards. It became unclear to many employees and managers, which was most important -- improving performance or winning the award. In 1991, there was an apparent waning of the degree of priority of the TQM program and since 1992, the top management seldom publically espouses the importance of the TQM process. One senior manager, reviewing these observations, noted that the importance of using the TQM tools for day-to-day operations (ie., using PAT teams to systematically study issues identified by management

[researcher's example]) was still stressed and a mid-level manager noted that there is still active promotion of TQM/TQL principles by some managers as part of the day-to-day work process, but there is no apparent command-coordinated effort.

Another mid-level manager made an interesting observation during the validation process. He said he believed that TQM is quickly waning within the entire business society. He sees fewer articles, less enthusiasm and less interest in the literature and his interface with other organizations. The reduced priority and waning of TQM, he believes, is a natural response to the fad nature of most management changes. In any case, he believes " ... we have planted the seeds of TQM. Its time we sat back and gave it a chance to grow."

One method of determining the degree of actual priority of TQM is the amount of assets allocated to the process. The assets include funds for salaries and time from the normal job for training; "doing" TQM in the PAT process; and dedicated TQM facilitators and coordinators. During the proposal stage of this dissertation, it was suggested that statistics regarding these assets over time might serve as leading indicators for the relative health of program implementation.

Table 25 provides a summary of the financial records regarding funds and man-hours expended to support TQM during the period 1989 through 15 June 1993. To put these numbers into context, the 1989 financial cash flow for NSCL was about

Table 25. Assets Reported as Expended by NSCL for Support of TQM during the period 1989 through 1993.

<u>Year</u>	<u>Funds Expended</u>	<u>Labor hours charged</u>
1989	\$134,177	4,087
1990	43,267	418
1991	9,883	178
1992	15,804	163
1993	17,195	32

\$51,000,000 and the funding authority for 1992 was nearly \$60,000,000.

This data was obtained from the command's financial records and is extremely misleading. For example, review of training records reflected 151 employees trained in the QUALTEC team leaders' course and 347 in the team member course in 1991 and 1992. The team leader course requires five days and costs approximately \$1,000 in salary, and the team member course requires two days and costs approximately \$400 in salary per employee. When adding the cost associated with the in-house trainers, the cost of training was \$110,000 in 1991 and \$237,000 in 1992 for labor alone. This does not include the cost of local travel and the training supplies. Likewise, it was reported earlier, that in 1990, NSCL had 382 employees involved with the TQM process. If each employee had spent five days during the year working on their PATs, this would have equated to approximately \$380,000. Obviously these costs are not included in the financial data shown in table 24.

The reason for the disparity between the actual cost and reported cost is that NSCL has historically been under-funded for overhead costs and is required to charge reimbursable

customers directly for much of the employee overhead salary and training requirements. The net results are that the funds were expended, but the records do not reflect the amount for overhead purposes, including TQM-related activities. There is no way to determine the amount of funds expended for TQM, however, it is observed that the training records showed no courses taught in 1993 and only seven PATs are operational, thus funds expended in 1993 must be significantly less than earlier years. The data does not support trend analysis inherent to developing performance indicators.

Asset allocation also included the assignment of staff to serve as TQM facilitators and coordinators. It was reported earlier that the Navy's TQL program recommended a full-time coordinator for commands of over 500 employees and QUALTEC recommended one full-time facilitator for each ten active PATs. In 1990, NSCL had a TQM coordinator (the command Deputy Technical Director, GM-14) who spent approximately 60% of his time involved with TQM. In addition, there were six management analysts who collectively spent about 70% of their time involved with TQM. Today, there is a GS-12 Senior Management Analysis who spends less than 30% of his time functioning as the TQM coordinator and three facilitators who collectively spend less than 40% of their time supporting the TQM process. Thus, the data indicates significant reduction in manpower assets assigned to support the implementation of TQM.

One interesting observation regarding TQM priority and asset allocation was seen by the Management Survey reported above and summarized in table 18. While asset allocation was assigned a relatively low priority (4/6) in question one, the second and third concerns associated with assets allocation in question five involved lack of salary for "doing" and training for TQM. The comments provided in Appendix four and discussions with managers, suggest an important cultural issue. Many of the managers at the mid- and lower levels seem to equate importance of a project to it having its own funding and job order. A cultural belief is that important work is funded by management and when management "hides" the cost of a project, it's not really very important. In an interview with one mid-level manager, the concern was expressed that senior management "forced" the program on mid-level managers without funding, which caused them a lot of trouble to identify and allocate funds which had been ear-marked for other purposes.

Many of the comments in appendix four and the data on table 18 indicate that one major concern is the lack of time available for TQM. TQM is seen as something else that must be done, not inherent to what they would normally do, and as such, is seen as having a lesser priority than the organization's mission of "fixing ships".

In summary, the degree of espoused TQM/TQL priority appeared to have crested in 1991 and does not appear to be

actively pursued (thus espoused) at this time. The only active senior leadership involvement in TQM, as a specific issue, appears to be the sponsoring of this research and the desire to reactivate the process.

**Senior Management Alignment and Team Work.**

**Overview.** Inherent to the TQM process is the alignment of the top managers to the same corporate objectives. Both Deming and Senge were quoted in part I to emphasize that the organization must operate as a system, with the system components (in this case, the departments and divisions) all sharing a common purpose and working toward the same objectives. This can only be achieved when the individual units are willing to sub-optimize their own performance to the overall good of the organization.

**Espoused Alignment of Senior Management.** No specific documentation was discovered which espouses the degree of alignment of the senior manager of NSCL nor does the researcher's or others' recollection provide such a statement. The senior managers belong to the Management Council, discussed earlier, which acts as a steering committee for the command, collectively participating in policy decisions with the Commanding Officer. The researcher, being a part of this Management Council since its inception, has observed that the group does not normally, within itself, espouse to be cohesive or work well as a team.

**Actual Alignment of Senior Management.** The management survey of opinions regarding TQM/TQL reported in table 18 provides insight into the degree of alignment within senior management. The supervisors-at-large rated conflicts between senior managers as the second most critical issue under the leadership category and the Management Council rated it fourth. The first issue by both supervisors and Management Council in the area of culture, was a lack of common purpose between the organizational units and/or their managers.

From the viewpoint of the researcher there have, for the entire period of TQM implementation, been conflicts within the senior management ranks. These have elements of interpersonal friction and distrust; lack of alignment between objectives; differing management styles; conflicts over the roles of the top military and civilian leadership; and disagreement, of a philosophical nature, regarding the appropriate degree of centralization and standardization within the command and the autonomy of the departments.

The issue of conflicts within the senior management ranks has had a negative impact on the senior leaders' ability to present a consistent front to the organization, especially for the adoption of TQM. A consistent theme of the various survey feedbacks and discussions within the command is that the senior management does not work well as a team and is unable to reach a consensus or present a united front on any management issue of substance. This has resulted in a general

lack of senior management direction and may be a major contributing factor to the waning of TQM implementation.

It is interesting to note that the researcher's above observations were provided to the Management Council/ESC and several mid-level managers who had closely observed the group with the request to meet with the researcher and discuss the issue. One member of council said it correctly described the situation, one mid-level manager agreed with the observation and the others were never available to discuss the issue, even after follow-up requests. One member said that he wanted to read it again before he was willing to comment.

A validating observation to the lack of management cohesiveness is the fact that Management Council/ESC obtained the services of an industrial psychologist within the past year to assist in driving fear out of the work place and helping the senior leaders work together more effectively. After several sessions, they decided to no longer use these services.

A final observation is that, using the earlier reporting work on framing and reframing by Bolman and Deal, the researcher believes that most of the senior leadership emphasizes the political frame. It is necessary for the leadership to broaden their use of frames, especially the use of the organizational and cultural, when implementing TQM.

## **COMMAND LEVEL TQM PROCESSES**

The top leadership owns the processes of the command and, as such, is responsible for their execution. Part I of this dissertation documents a number of processes which should be in place to implement TQM. Each of these policies will be addressed below, from an espoused and actual viewpoint.

### **Policy Planning and Deployment**

#### **Espoused Policy.**

The espoused methodology for policy planning and deployment is based on the Virginia Productivity Center Eight-Step Process discussed in chapter five and shown in figure seven. The espoused process, in addition to that discussed in chapter five, emphasizes the need for strategic and tactical planning associated with implementing TQM (as a program). It was designated a "superordinate strategic issue" and is similar to the eight organization fronts proposed by Sink and Monetta and reported in chapter seven. Sink and Monetta called this the Grand Strategy.

The policy planning and deployment process was also applied to the department level of the organization. The visions, guiding principles and plans developed by the senior management QMB and ESC were considered as a "given" and refined and made applicable to the individual departments. Figure 21, above, documents this part of the process, recognizing that the emphasis was on how the organization's

business improvement initiatives interfaced with the department's business.

In August, 1988, NSCL issued a command instruction promoting the philosophy of continuous improvement and institutionalized the Eight-step VPC strategic planning process. This instruction required annual recycles, with quarterly progress reviews.

Figure 21, as indicated earlier, includes the senior leader as the coordinating manager or link-pin to the next higher QMB, however, this role was not espoused.

#### **Actual Implementation of Policy Planning and Deployment**

NSCL senior managers very closely followed the espoused process until 1991. An initial meeting was held by the Commanding Officer, Technical Director and Deputy Technical Director with VPC in December, 1987, to develop an initial set of visions and guiding principles to be refined by the Senior Management QMB. The first formal policy planning meeting by the Senior Management QMB was held in March, 1988 and followed by three quarterly reviews in May, August and November. The products produced followed the processes exactly. The first annual recycle for policy planning was held in May, 1989, and the second recycle in June, 1990. There was only one "quarterly" review held in each of these years.

At the May, 1989 annual recycle, the organization had come to realize that they needed to treat the implementation of TQM as a "project", with specific objective and milestones.

This was established as a superordinate strategic objectives and a five-year plan was developed. The plan elements are shown on table 26. The third annual recycle was held in May,

Table 26. Five year planning Elements for Implementing TQM (Top Management Planning Session 1989, 19).

TQM Training	-- Established a training plan for the ESC, supervisors, line personnel and TQM consultants and coordinators.
Computer tracking system	-- Development and execution of an ADP system to support TQM measures.
Measures	-- Developed a process to identify and implement performance measurements.
TQM budget	-- Develop a process to identify and obtain dedicated funding for TQM.
Awards/Recognition	-- Established goal to win external TQM recognition for process.
Organization	-- Establish TQM organization of ESC, and QMBs at all levels.
TQM Library	-- Obtain appropriate training aids.
Performance appraisal	-- Improve employee performance appraisal process, using Deming philosophy.

1991 and to the surprise of most participants it was found that most of the five year plans developed in 1989 were almost completed and the planning effort needed to be redone. Likewise, most of the strategic and tactical planning had been completed. In recognition that the command would have a new commanding officer in August, 1991 and he must have buy-in to make the process work it was decided to delay the detail planning.

During the summer of 1991, NSCL's sponsor (Naval Sea Systems Command) developed their corporate vision, guiding

principles and strategic plans and provided them to the subordinate organizations to be used as guidance for their development of policy planning. The Commanding Officer, with the support of the Management Council/ESC, held a retreat in December, 1991, to develop policy plans which would be consistent with the sponsor's. While not recognized by the researcher at the time, this represented a departure from the espoused Eight-step process, in that this should have been done collectively by the Senior Management QMB.

The ESC met with the Senior Management QMB in February, 1992 and the vision and guiding principles portion of the policy plans were refined. Inadequate time was scheduled to develop the strategic and tactical planning elements of the eight-step process. It was decided to schedule a follow-up meeting for this purpose. Three separate meetings were scheduled but were always canceled due to higher priority, more pressing events. The ESC/Management Council again met in retreat in November, 1992, to address issues of conflict within the senior management ranks and address revitalizing the TQM program. A new set of visions and guiding principles was developed, but never promulgated.

In summary, NSCL followed their espoused policy-planning process until 1991. After that time, the process was not followed. The key events that occurred during this time were the change of the Commanding Officer and the guidance provided by the sponsor. The Commanding Officer has frequently

expressed a lack of faith in the VPC process and observed that the policy planning process was not well enough documented to allow execution. The Technical Director, because of work load was never able to adequately document the process.

### **Quality in Daily Work**

#### **Espoused Methodology**

Quality in daily work is espoused to be based on the QUALTEC team-solving and improvement process shown in figure ten and discussed in chapter five. This is a seven step process following the Plan-Do-Check-Act cycle and is espoused to be the method that all PATs follow when addressing tasks. Tasks are assigned to PATs by QMBs or senior QMBs or managers. QMBs are established at the branch level, thus the individual employee is able to work within his own immediate group to identify and work on locally-generated improvement issues.

It is interesting to note that the QUALTEC training received by NSCL did not address the management review required after steps two and four as shown in figure ten and they are not espoused to be followed. The process espoused to follow the "story board" method of displaying the PAT's status and progress. A large display board identical to the figure ten is displayed in the work or meeting area of the PAT and the documentation associated with the steps is attached to the board in the appropriate box for other employees to observe and attach their own observations and suggestions.

Branch level teams, to generate their own tasks according to QUALTEC, must satisfy three criteria: (1) supporting the organization's fundamental objectives; (2) be customer focused and (3) result in saving. These criteria were not espoused, nor were they part of the training provided.

**Actual Implementation of Quality in Daily Work.**

It was previously reported that the NSCL had 175 operational PATs in 1990, studying issues identified by 34 QMBs and management. Cumulative cost-savings due to PAT and command level quality and productivity initiatives were reported to be \$90,000,000 over a four-year period (Stevens 1991, viewgraph 33). While no analysis as to the degree of success is available for each of the PATs, (there was a computer program on the command network to record accomplishments, but it was not systematically used) it was observed that in the 1989 and 1990, period they were extremely active -- so much so that many employees and managers felt overburdened. They felt that the PAT's efforts were in addition to their normal efforts and did not result in the freeing of time due to improvements, which was espoused in the training received by VPC and QUALTEC.

There was never a formal, command-wide, upper-management review process to support the individual PATs espoused or implemented and the concept of link-pin or coordinating executive was not recognized or implemented, even though it was shown in figure 21. Currently, there are seven recognized

PATs actually working and none of these are using the "story board" method of publicizing their progress.

Mr. James Boyette, a former Deputy Technical Director and TQM coordinator, developed for his division an alternative process for improving quality in daily work. This process is shown in figure 25 and emphasizes the need to base internal improvements on customer needs. It is based on the Plan-Do-Check-Act cycle and consists of 14 steps. The first five steps, associated with planning, identifies the customers, their relative importance to the command and the associated command processes, and their needs.

The DO portion of the cycle consists of developing "5-Star standards", developing and improving associated processes and identifying measures to validate performance against the 5-Star standards. Then targets and goals for implementation are developed, a prototype executed and deployed when the processes are ready. The check cycle evaluates the effect of process improvement and appropriate corrections and recycles are taken. The process requires review of identifying priority customers and the associated processes annually.

The Division QMB currently has one PAT working on their most critical customer's, most critical processes. They are currently in step 11 as shown in figure 25. In the researcher's opinion, this process represents an advance to the literature and will be applied in the optimum process in Chapter 14.

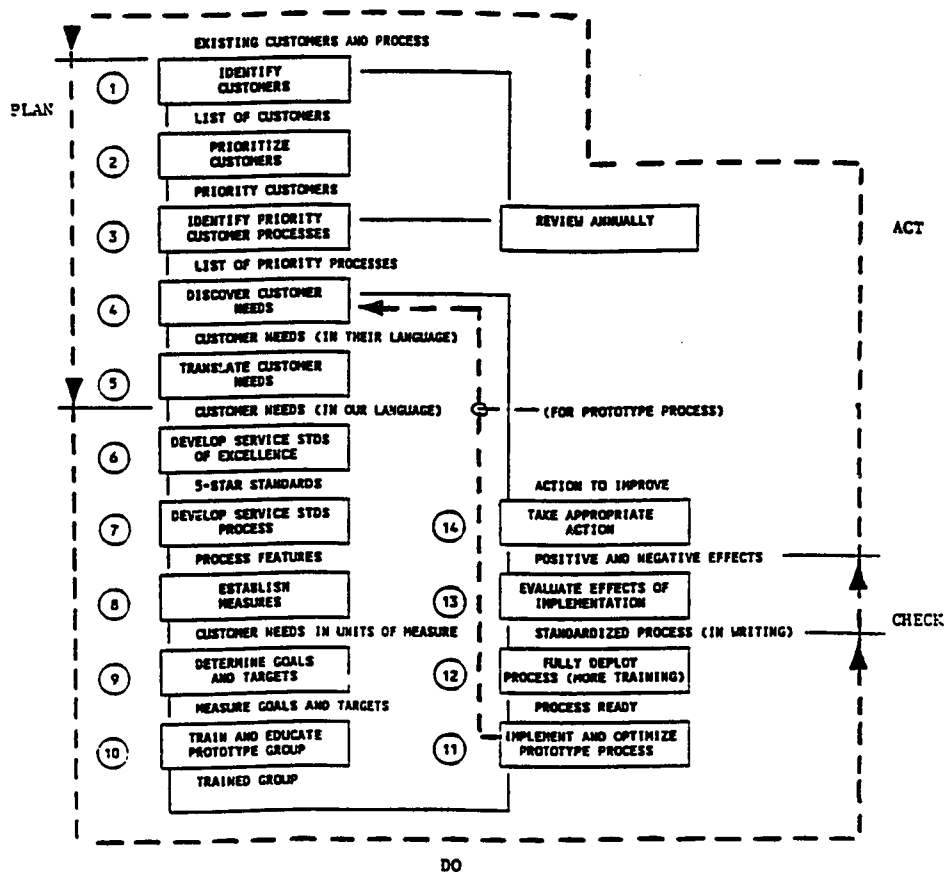


Fig. 25. Code 610 Tactical Objective Process.

## EMPLOYEE PERFORMANCE APPRAISAL AND RECOGNITION

### **Espoused Performance Appraisal System**

The espoused performance appraisal system has varied over the implementation period. Initially, the system was espoused to follow the standard Navy methodology, appraising the employees and managers against standards developed jointly by

management and employees. In many ways, the system used a Management-by-Objective methodology.

In 1991, NSCL changed its employee performance appraisal process. This change was espoused to be motivated by and to align the appraisal system to the works of Deming, as reported in chapter seven, under the topic -- Rewards and Recognition. It was espoused that the current performance appraisal system was counter to Deming's 8th, 11th and 12th management principles. It was stated that performance evaluation was a source of fear, based on arbitrary criteria and represented a quota system which had little to do with actual performance. It also recognized that the inherent interdependency of the work force, their reliance on processes and tools which dictated their performance and the natural variance of conditions had as much or more impact on any individual employee's performance as their actual application of work effort.

Based on the new system, the espoused process was to give nearly everyone the same rating -- a level four (Exceeding Fully Satisfactory). Exceptions could only be granted in cases of extreme and special cause variance, representing truly individual outstanding or poor performance. This was espoused to be consistent with the teaching of Deming and would facilitate team work.

The organization initially espoused that "awards and recognition for our employees are being stressed more than

ever since our involvement in TQM (Hudson and Stevens 1991, 56)." It was stated that high achievement was rewarded by nomination for Navy and DOD-wide meritorious awards and by team recognition. Internally, annual recognition to employees, woman and manager-of-the-year was provided and the bonus pool for high performance had been expanded to the legal limit. In 1992, the annual recognition of individuals-of-the-year was suspended because it was believed to be divisive, setting up winners and losers. This was espoused to more closely follow Deming's principles.

#### **Actual Execution of Performance and Awards**

The performance evaluation and rewards system currently in place seems to be working as currently espoused. A review of the personnel records shows three group awards and two individual awards in FY93 through May 1, 1993. Seventeen superior performance awards were granted in Code 900 in May, 1993 as part of the annual performance appraisal. The data is not available on other FY93 rewards or recognition. It is noted that the bonus funds budgeted for FY92 and FY93, for cost reduction purposes has been reduced significantly from the 1988 - 1991 time period.

During the period of 1988 - 1991, there were periodic meetings focusing on TQM performance which gave the senior leadership the opportunity to informally recognize, encourage and reinforce positive behavior. These meetings no longer are

held and there appears to be little recognition provided for TQM participation.

The work force portion of the DOD Self-Assessment reported on table 12 provides current employee input regarding their acceptance of the rewards and recognition system. The command mean for this category is 3.27, which is the lowest rating of all of the categories. Likewise, three of the four departments, rated rewards and recognition at less than 3.1, which are the lowest rating on the table. A 3.5 is considered a neutral response and the employees are clearly stating that they are unhappy with the process.

This data is validated by the staff employees in the survey shown on table 13. With the exception of Code 900, the scores in reward systems and performance appraisal were among the lowest assigned. The data in tables 15 and 16 places the element of recognition at the next to lowest score on a percentage of maximum score. However, the management opinion survey shown on table 18 indicates that rewards and recognition were believed not to be a hinderance to implementing TQM. This can be interpreted that while employees are unhappy with the rewards and recognition system it is not seen as a critical TQM issue.

## **CHAPTER 14**

### **OBSERVATIONS REGARDING METHODOLOGY ISSUES**

#### **INTRODUCTION**

This chapter is a case study of the methodology issues which occurred during the research. The six phases of the case study suggested by GAO and reported in chapter nine and the additional topic of the researcher's personal interface and concerns will be used as the format to report the observations. Using the methodology followed throughout this research, chapter nine can be seen as the ideal, chapter ten as the espoused and this chapter as the actual implementation of the research.

#### **THE LITERATURE RESEARCH**

The literature research was primarily conducted during the proposal phase, which greatly facilitated the preparation of the dissertation. Three issues regarding the literature research were frequently observed: maintaining focus on the leadership aspects of the research; the constant iterative nature of the data gathering and documentation; and the interdependency of many of the topics.

### **Maintaining Focus**

The primary purpose of the research was to conduct a formative evaluation of the leadership issues associated with implementing or revitalizing TQM at NSCL. The very nature of leadership is that all of the TQM elements studied, represent tools and knowledge that leaders should possess and it was difficult for the researcher to limit his efforts to providing only sufficient information to serve as the basis for the research. Each topic had an extensive body of literature, often not specifically focused on TQM and there was a tendency to go into more detail than necessary. The researcher estimates that approximately twenty-five percent of the literature studied during the review was not used in the dissertation.

### **Iterative Nature of the Research**

The bibliography reflects an extensive number of sources used in the literature research. In part, this was due to the broad, interdisciplinary nature of TQM and led to a great deal of revisiting and refining the research data as new information was uncovered. The process followed was that the researcher maintained extensive notes while reviewing the references. Once a critical mass of data was obtained, a strawman description of the research area was prepared. Then, as additional-related information was identified, the strawman documentation was revised.

One observation was that the text by Tenner and DeToro (1992) was discovered very early in the research. This text is an excellent overview of the entire TQM process and greatly facilitated identifying a critical mass of the data to allow developing the strawman.

### **Interdependency of Literature Topics**

Many of the issues contained in the research are inter-related to a degree that the researcher had to make constant compromises between being redundant or referring to another section of part I. For example, the concepts of alignment and the use of the PDCA cycle is a constant recurring theme throughout the research. The researcher decided to compromise on the side of redundancy since it was felt that most readers would be looking for specific information and the topic under current discussion would be weakened if only a reference to previous work was given.

### **DESIGN OF THE RESEARCH**

Design of the research was constantly evolved in detail. A major element of the design was the unique (to the literature) fact that the researcher had been a major participant throughout the implementation of the process. It was noted by one dissertation committee member that the very fact that the Technical Director (equivalent to the Chief Operating Officer) of an engineering firm was conducting a detail evaluation, in a formal research context, was believed

a unique and noteworthy experience within the body of knowledge for both TQM and research methodology.

The research provided a unique opportunity for the researcher to evaluate, in a very formal manner and with oversight, the effectiveness of his own efforts. This, in turn, caused the research design to be focused on methods of maintaining objectivity and neutrality. A second major element of the design issue was the constant evolution and revision of the plan as the research progressed. Both of the elements will be addressed below.

### **The Evolving Nature of the Design**

While the overall research design remained constant, the details evolved as the research progressed. The overall design consisted of developing the ideal, from the literature research and then identifying the espoused and actual implementation from a case study. Using this data, a gap analysis was conducted and the recommendations formulated. The details involving the literature portion of the research discussed above equally apply to the case study.

The details associated with conducting the research seemed to evolve with the research. There was never more than a vague, somewhat "fuzzy" approach in the mind of the researcher. The concept of looking at the TQL and Kotter models (described in chapter four above) became apparent and were adopted as part of the evolving design. The details of what to look for and the location of the data seemed to defy

systematic advance planning and were more closely based on constantly asking: What's next and how should it be accomplished?

### **The Research Model**

The initial model for conducting the research was to review documentation and conduct exploratory interviews to identify and develop a picture of the situation using the explanation-building processes suggested by Patton and discussed in chapter ten. Then additional interviews and documentation reviews would be conducted to collaborate and validate the researcher's understanding.

The researcher discovered that the explanation building and verification model were not appropriate. The researcher had already developed the required picture and associated explanations while serving as a change agent for the implementation of TQM. To initiate actions to rediscover what was already known was inefficient, time-consuming and bothersome to the reciprocators. The few times it was tried, it quickly became an exercise in the validation phase, not an exploratory discussion.

Advice was solicited from the dissertation committee and Steier's work on reflexivity and the Elder and Levin model of the Scandinavian style of participative research shown in figure 18 were recommended as starting points. It was noted that no one, to the committee's knowledge, has applied this work to this particular research issue. The recommendation

proved to be extremely useful and resulted in the development of the model of figure 19, which was used to validate the researcher's picture of the situations.

The research model selected proved efficient and productive. The researcher would formulate, from his experiences and observations, a statement of conditions within the case study. This would then be validated, as discussed below, through mutual mirroring between researcher and reciprocators.

#### **SITE SELECTION FOR RESEARCH**

This was not an issue. The site was clearly NSCL. It was found that because of the physical proximity of one department head, two division heads and a TQM facilitator, the validation process frequently focused on their department. However, the researcher was quick to obtain further validation when he felt uncomfortable with his understanding or believed the results would not be typical.

#### **DATA COLLECTION**

Data collection fell into three major categories: existing documentation, three new surveys or assessments and the researcher's own recollections, which were validated by the methodology shown on figure 19. Additionally, data for

the methodology aspects of the research were maintained in a research diary.

### **Existing Documentation**

The research was greatly facilitated by the researcher having an insider's knowledge of the existence and location of information necessary to conduct the case study. Financial records were obtained from the budget office, training records from an informal data base maintained by one of the TQM facilitators, previous assessments and surveys obtained from the personnel involved and data involving key events from the historical files maintained by the TQM coordinator.

### **New Surveys**

The researcher, as part of his formal duties within the organization, had identified the need and initiated the DOD and Presidential self-assessments shown in appendices 1 - 3 prior to actually starting the dissertation. The research effort was one of analyzing the data. During the research, and not part of the initial design, it became apparent that more information was needed regarding the nature of the roadblocks and the Manager's Opinion Survey shown in appendix four was developed and conducted.

### **The Researcher's Reflections**

#### **Using the Process.**

Much of the data contained within the case study was obtained by the reflective and mutually mirroring model discussed by Steier. This methodology is shown on figure 19

and consisted of the researcher reflecting on his personal observations regarding the circumstances and preparing a discussion in text format for validation. If the researcher was comfortable with his knowledge because of extensive or repeated observations, a simple confirming discussion with an available reciprocator was conducted. In three situations where the observations could be seen as political or less clear, the formal discussion, in the form of a "strawman" document was sent to key players for their review and comment. Care was taken to obtain a reasonable mix of people and minimize the review efforts on any one person. Appendix six provides two of the three "strawmen" and the reciprocators' feedback.

The review and comment format were interesting. The metaphor for the process that evolved was for the reader to be asked to "chop" the document, much as they would any other engineering or management document that would be reviewed. The review and signature process at NSCL, and most other Navy organizations, is that the writer seldom signs his own correspondence. Rather, it is sent up the chain-of-command for a higher level manager to sign. During the routing, each reviewer indicates desired changes or corrections and returns it to the writer or indicates his/her agreement and either signs the document or sends it further up the line for additional review. This process is called "chopping" and the researcher was able to use this as a metaphor, with the

reviewers being asked to return it immediately, instead of sending up the line. This was a quick, efficient method which allowed a cross-section of managers the opportunity to provide their comments, while the researcher was proceeding with other efforts.

By providing the document to more than one reviewer, the researcher was able to obtain triangulation and was not dependent on any single reciprocator for response. The fact that a reviewer did not respond did not harm the research, because others would. As shown in appendix six, the nature of the comments were normally expanding or rhetorical in nature. The researcher was normally able to correlate the comments to an individual and asked for expanding comments in the few cases that they were necessary. The discussion was normally conducted quickly, over the telephone, since it usually dealt with a single issue.

The final draft of the case study was provided to each senior manager, one TQM facilitator and a prior commanding officer of NSCL who had continued his involvement and knowledge of the command over the time-frame of the implementation. Their comments were helpful and generally in the form of further clarification and minor correction. There were some observations that information in the data section represented personal opinion which more appropriately should have been included in the analysis section of the dissertation. All of the comments were considered and

appropriate changes made. The routing of the final document for "chop" allowed each of them the opportunity to review the findings, in gestalt, and was believed necessary for final validation.

#### **The Research Diary.**

A diary of key events involved with the research was maintained. The diary was used as a method of documenting methodology concerns as well as serving as a forum for documenting ideas and reflections. It was frequently used to allow or force the researcher to think through an issue. The act of having to write about the issue caused the researcher to think more clearly and logically. The diary also provided an excellent source for recapturing data for the preparation of this and the associated analysis chapter of this research.

The researcher had initially planned to write-up the day's events and reflect on future actions at the end of each day. This proved to be only partially workable. Frequently, the researcher would find that he had worked too late to allow time for the write-up, especially when nothing of sufficient importance had happened to force the issue. Likewise, once important decisions had been made, the actual implementations were frequently mundane, with little needing to be documented. At one point, the researcher found that over a week had gone by and felt obligated to "catch-up". He thought back and documented events as if they were being documented on a real-

time basis. This seemed somewhat dishonest, but was also seen as a reasonable compromise at the same time.

It is observed that the diary method is extremely useful at critical junctures of the research. However, during day-to-day data gathering it is less useful. The problem is that if the researcher does not maintain the habit of writing his diary, he does not remember to do it when it is necessary. Also, the reality is that valuable insight from a discussion of the mundane was frequently obtained. In hindsight, the researcher wishes he had done a more complete effort on the diary and did not appreciate the amount of self-discipline necessary for this effort.

#### **The Impact of Framing and Reframing on the Methodology.**

It was not recognized until very late in the analysis and report phases of this dissertation that the data gathering and much of the analysis and formulation of recommendations had been based on the use of the rational system and human relations frames. The researcher had intuitively avoided or minimized the use of the political and symbolic frames when gathering data because of the belief that to work within these frames would result in considerable conflict and be counter-productive.

This provided a concern since many of the findings concerning roadblocks to implementation of TQM are embedded in the political and symbolic frames and data was collected from a different context. A second concern is that the findings

and recommendations would have been different if the data had been specifically gathered using the political and/or symbolic frames.

The researcher spent considerable effort reviewing and reflecting on the data in the case study, the findings in the analysis chapters, the recommendations and the manner in which the research unfolded. This resulted in the belief that, intuitively, he had not *ignored* the political and symbolic frames, rather he had intuitively *reframed* from them to the rational systems and human resource frames. This is an entirely different issue than ignoring these frames. It is believed that data gathered from these frames avoided the conflicts, fears and defenses that would have resulted in using the political and symbolic, while still supporting the findings and conclusions.

The data gathered through reframing allowed the researcher to draw conclusions, again intuitively, using both political and symbolic viewpoints. A review of the findings and conclusions with these specific frames in mind, did not result in change.

It is believed that findings recognized during analysis of data involving the effectiveness of the senior managers (including the researcher) may not have been possible if the data had been gathered in the political frame. For example, if the researcher had approached the training of senior managers by initiating conversations focusing on the lack of

the senior managers' attaining what Deming calls profound knowledge of TQM, the managers would have felt criticized. Instead, the "strawman" of appendix six was provided which discussed the training process and instructions provided (the rational frame). In doing so, the researcher's insider knowledge of the level of management training was validated and allowed the conclusion that most of the senior managers had not been afforded or taken the opportunity to truly understand the concepts of TQM.

Reflection on what might have happened by using the political frames to research the power, conflicts and alignment within management constantly results in the belief that it would have been a disaster! This belief is based on the researcher having worked with the other senior managers for two to six years and having a good knowledge of their thought processes. This belief is validated by the case study, which documents the fear and distrust between the various senior managers.

It is also believed that to directly investigate these issues would have resulted in "stonewalling" and lack of candor. This is partly validated in the case study which reported that the senior managers on the Executive Steering Committee (ESC) never responded to a request to perform an organizational self-assessment (see table 15). The reason given was that they were too busy, but the researcher speculates that the senior managers were unwilling to conduct

this group assessment. Especially since it would have involved a highly political, face-to-face discussion about how well they had collectively performed. The members of the ESC were willing to respond to the survey of individual manager's opinions regarding TQM implementation (see table 18) on an individual basis when it could be provided outside of the political arena.

The data gathering and analysis avoided the symbolic or cultural frame for two reasons: (1) many of the defenses and conflicts seen in the political frame would also have occurred and (2) the extent and amount of effort associated with researching within this frame. It is believed that the cultural aspects of organizational change at NSCL are just as large, complex and rich as the leadership aspects that were the focus of this dissertation. The culture issues are clearly outside the boundaries established for this dissertation. Research, from the cultural viewpoint at NSCL, has been addressed later in this dissertation by recommending it as a future research endeavor.

To summarize, it is believed that the use of the rational system and human resource frames provided adequate data. Further, a significantly different story would not have been obtained by explicitly using the other frames during data gathering. This is due to the belief that, intuitively, the data gathering and analysis were conducted through reframing, versus ignoring the political and symbolic frames. An

explicit attempt to obtain data from either the political or symbolic frame would have resulted in significant conflict and the additional data, most probably, would be supportive of the same findings.

Another consideration is not how the story would have been different, but what additional story elements might have been developed using the political and symbolic frames. Reflections on the research revealed questions that were not asked because of the desire to avoid the political frame. They revolve around asking about personal motivations associated with implementation concerns, once identified or validated. Such questions as:

1. Why did you and the other managers not "walk-your-talk";
2. Why are you and the other managers so determined to optimize your own organizational unit at the expense of the organization, as a whole;
3. What would it take to convince you and the other senior managers that TQM implementation should have high priority in the allocation of resources; and
4. What could I (the researcher in his insider role) and the Commanding Officer have done to be more effective in leading the implementation of TQM?

Most of these questions involved motivation and have, as their basis, a personal recognition that something that should have been done, was not accomplished. The avoidance of the political frame allowed the research to proceed without conflict and resulted in logical and, from the researcher's belief, accurate findings. However, it was obtained at the

cost of loss of candor and possibly a lack of recognition of some meaningful leadership roadblocks.

Bolman and Deal (1991, 323) have indicated how a number of issues associated with organizational change can be interpreted from the four frames. These are provided in table six above and, from a motivational view, the four frames can be applied as:

- \* Rational Systems -- Economic incentives
- \* Human Resources -- Growth and self-actualization
- \* Political -- Coercion, manipulation and seduction
- \* Symbolic -- symbols and celebrations.

The researcher did not attempt to gather data on any of these issues. A brief analysis of each of these views might be useful to highlight how additional issues, analyzed from all four frames could have revised the research, from a methodology viewpoint.

**Rational Systems -- Economic Incentives.** This would involve determining how the use of economic incentives could affect the activities and dedication of the managers and other employees in implementing TQM. Practically, for NSCL and other government agencies, the government's compensation mechanisms do not provide for a significant enough economic incentive to serve as a motivational factor. The largest bonus which a employee can realistically receive is only three percent of salary and the total bonus pool, due to financial constraints, is normally limited to one and one-half percent. The only economic incentive is one of long-term survival of the organization and the jobs of the employees. The

motivation of this long-term impact may be significant, but was not researched.

**Human Resources -- Growth and Self Actualization.** Employee growth and the self-actualization process is inherent to the concepts of TQM. It is a part of the process of empowering employees, however, this growth and self-actuation could be seen as occurring at the expense of the managers. Many managers may see that giving up authority and power, by empowering employees, is a loss of their power. The power loser (manager) could see this as anti-growth and anti-self-actualization, depending on their own individual perceptions of what constitutes personal growth and self-actualization. Research into this issue may have been useful in explaining why some managers are not seen as adequately empowering their employees.

**Political -- Coercion, Manipulation and Seduction.** The researcher did not address the coercion, manipulation and seduction that may have gone on. As the principle change agent, the researcher believes that he stressed the structural frame in leading the changes and minimized the use of the political frame. It would be interesting to understand the degree of coercion, manipulation and seduction that occurred between managers and employees, both in supporting TQM and setting up defenses to maintain the cultural status quo.

As a result of this analysis, a section has been added to chapter 15 to reflect on the dilemma between empowerment and the autocratic exercise of power to implement change.

Symbolic -- Symbols and Celebrations. Little data was gathered to understand motivation from a symbolic frame. However, it is interesting to note that the analysis showed recognition of cultural concerns involving the roles and responsibilities of managers and employees. These beliefs could serve as a motivational basis for employee actions, however, this was not researched.

Summary Regarding Research in the Four Frames. The above discussion reveals that the story could have been expanded by broadening the research to include other issues, such as listed in table six, and analyzing them from the viewpoint of the four frames. However, in any research there is always more that can be done. The issue is not one of exhausting the subject under research, but doing enough to obtain useful and valid results. The researcher believes that this has been accomplished and little return would result from expanding the research to emphasize a broader analysis of issues and aggressive use of all four frames.

### DATA ANALYSIS

Table 10 provided six ways of analyzing case study data. The iterative and reproducibility of data methods were most

frequently used. Much of the analysis of data occurred informally during the data collection process. The researcher would use his recollections to develop a picture of an event and then, as the associated explanations were considered (the analysis stage), the picture (data) and understanding were refined in an iterative manner. The researcher would frequently discuss his picture and analysis with others, who had a part, or were observers of the event, to obtain their insight. This is a form of reproducing the data and validating the analysis. Likewise, the model of figure 19, with its reflective mirroring as the results of looping between the researcher and reciprocators, is a form of the reproducibility of data analysis process.

One observation was that during the analysis stage the researcher had a tendency to want to use data that had not been documented, but had been observed over the implementation period. The problem is that the researcher, who had been an insider for the entire period and focused many of his doctoral studies on TQM, "knew" certain things to a level that they became part of his background knowledge. While extremely useful (and probably unavoidable) it is not part of the general knowledge of others. Thus, analysis and conclusions using this data cannot be validated during the peer review aspects of research. This situation caused the researcher to return to the case study and literature review chapters for further documentation during the report-writing stage.

During the initial planning stage, it was believed that the gap analyses between ideal and espoused, and espoused and actual would be done independently and the initial dissertation outlines were prepared in this manner. The reality was that once the formal analysis and documentation were in progress, it was impossible for the researcher to efficiently separate the analyses. The espoused served as a linking step between the ideal and the actual and the formulation of a revitalization plan really consists of moving from the actual to the ideal. This resulted in the process being changed as the analysis stage evolved to look at both gaps concurrently when considering a topic.

#### **PREPARING THE REPORT**

The report consists of two major parts, this dissertation and the verbal presentation to the NSCL Management Council. The literature suggests that a major problem would be to translate the organization's language to that of the researcher community. This was not a key issue in this dissertation. The researcher did not find significant differences between the language of the NSCL managers and the literature (and as a result, the researcher community) as far as the aspects of TQM are concerned. The only exception was that the Navy uses the term TQL, while the academic and most of the other users of the process use the term TQM. This was

resolved by referring to the process as TQM, except when the Navy's or NSCL's terminology was being evoked.

The very nature of reporting on qualitative research, such as this formative evaluation, is that a narrative format and anecdotes are normally used. This had a fortuitous impact on the preparation of the report. To the greatest extent possible, the dissertation was written concurrently with the research as a method of documenting the actual findings. Thus, the efforts associated with the actual report-writing stage were more of format and insuring consistency and documentation of data to support analysis and conclusions.

One observation is that the iterative process of research and concurrent documentation is that the researcher tended to spend a great deal of time reformatting the documentation. For example, the addition of data or a figure or table would change the pagination and cause the researcher to review the entire remaining document to ensure page breaks occurred at the correct points and that correct figures and table numbers were used and referenced. This is probably the result of an unfortunate quirk of the researcher, and a far more productive method would be to not worry about many of the mechanical issues and use a temporary figure and table numbering system until the very end, then fix it at one time.

## RESEARCHER'S ROLE

The researcher did not have the difficulty in maintaining objectivity and neutrality that was initially anticipated. This research represents a major assessment of the performance of all the senior managers, including the researcher. In many instances, the data and analysis indicated negative factors, which were extremely important to the research, because they had to be addressed and resolved if the organization was to successfully revitalize the program. However, the researcher had to be extremely cognizant of insuring that he would do no harm. The exercise was an extreme example of having to consider the political frame discussed by Bolman and Deal in part I.

The dissertation committee had very pointedly stated that they were not interested in this research being one of citing shortcomings of individuals and, from a revitalization viewpoint, such a recitation would be counterproductive. The case study revealed that the leadership weaknesses, while centered on all of the individuals involved, were not normally caused by deliberate actions. Rather, they were more of the outcome of the lack of adequate preparation for their new roles under TQM and many aspects of a non-supportive culture and background which had not been adequately recognized or dealt with during the earlier implementation. This was fortuitous because it allowed the researcher to dwell on the

shortcomings of the initial implementation process and not those of individuals. If this had not been true, the research would have been much more difficult.

The research initially envisioned the concern that employees would not be forthright with the researcher due to his prior and current position with the management structure. As the research unfolded, this was not a problem. There were sufficient reciprocators who were not intimidated that this just was not an issue.

### **PERSONAL OBSERVATIONS**

#### **Reflections**

Personal reflections over the dissertation process resulted in the realization that the research has been a profound learning experience, both from an academic and practitioner viewpoint. From an academic viewpoint, the learning experience is well understood, since everyone who has prepared a dissertation has had much the same experience. However, perhaps less well understood is the learning experience involved when a senior manager/practitioner conducts research of this nature and the impact that it potentially has on his own practice of management. There is no claim of universality for these observations, however, the researcher believes that others, with similar backgrounds, may have at least some of the same experiences.

### **The Opportunity to Reflect**

The practitioner, by the nature of his work, does not have the same opportunity as those in academia to reflect on his actions and their consequences. The research provided the opportunity for this academic-practitioner to reflect on what had occurred during the past five years and the results of his personal actions. This has made the researcher-practitioner more attuned to the nature of decisions made while serving as a change agent and the consequences of these decisions. It has served as a critical self-evaluation which, while painful on occasion, can only make for better practice in the future.

### **Supporting Commitment for TQM**

The basic premise of the Navy's TQL process and the recommendations contained later in this dissertation are that by attaining profound knowledge the practitioner will become more committed to the concepts of TQM. The practitioner will grow to believe that TQM is practical, applicable to their own organization and worthy of investing significant personal energy into "doing TQM". The researcher admits to moving toward obtaining profound knowledge, however, this experience has reinforced the importance and "rightness" of TQM and caused a recommitment to the process, beyond that which existed before the dissertation.

### **The Use of Multiple Frames and Reframing**

The research has provided the researcher with insight into the fact that he primarily used the rational system and

human relations frames in his normal dealing with others as NSCL's Technical Director. Reflection results in the belief that this may happen with other engineers who become managers, because of the highly rational engineering education and work process. Also, the investigator initially believed that when moving into the position of Technical Director, he should be above "petty office politics" and follow a management philosophy which purposely avoided the political frame. Likewise, the researcher had been promoted to his position from outside of the organization and was not initially attuned to the culture of the organization.

This research has convinced the investigator that no manager can ignore the political and cultural frames. In fact, these frames are of the utmost importance when serving as a change agent. It is now understood that changes have a poor likelihood of success if either frame is ignored.

### **Leadership Style**

The research caused reflection on the appropriateness of the various management styles. The researcher's reflections were that his initial experiences as a young manager were that an autocratic or authoritarian style was effective when dealing with day-to-day work, in an environment and culture which is supportive to this style. However, it is now recognized that the more participative management styles inherent to TQM can greatly improve organization performance. Empowering can result in realizing the full potential of each

employee, allowing a degree of commitment which supports world class operations.

The realization is that the participative style is represented by a continuum extending from consultative, through delegative, working together participatively, to the extreme of a totally self-directed work force. The lessons learned from this research are that the effective manager takes into consideration the degree of preparedness of the employees to become empowered. Likewise, the enlightened manager must work to equip his/her employees to become fully empowered -- supporting their alignment and input into the vision; possessing adequate knowledge, skills and assets; and obtaining mutual trust.

#### **Better Tools and Knowledge**

The research provided a better understanding of the concepts of TQM, a richer language to explain these concepts and improved tools to "do TQM". This will result in the researcher becoming a more effective practitioner, especially in view of coaching (from a leadership perspective) others.

#### **The Researcher's Ego**

The preparation of a dissertation by an experienced, senior manager is a humbling process, which clashes with his/her experiences and ego. The senior manager, by reason of the successes that he has experienced in arriving at his position and the prerogatives afforded this position, frequently develops an ego which can get in the way of the

research. For example, senior managers are accustomed to minimum review and criticism of their own outputs. Obviously, there are few higher in the organization to provide this oversight. This situation is not applicable to the doctoral student struggling to complete her/his dissertation. The dissertation committee is only too willing and obligated to provide significant review and criticism, which this researcher found uncomfortable. It clashed with his ego and was a real growing experience, especially when reflection revealed that the criticism resulted in an improved product. Hopefully, this learning and growth can be applied in the future, both in academic and practitioner roles.

#### **Time Line**

Another frustration that occurred during the research are that differences between the academic and practitioner's timelines (expectations over how long things take). Within the practitioner's environment, events occur quicker and with a much greater sense of urgency than within the academic environment. The nature of the academic is to be reflective and few situations have short-term deadlines with adverse results if they are not met. The mixed roles of researcher and practitioner encountered during this research frequently clashed on the time-line. The researcher, from his practitioner and production background, was frequently frustrated at how time-consuming and non-product producing the process of reflection can be. Likewise, from his academic

leaning, he was frequently frustrated over the need to produce products to support the sponsors of the research and their own practitioner needs.

A lesson to be learned, especially for the experienced practitioner, is that the dissertation process can be extremely frustrating. Many of the cultural norms in the working world are at odds with the practices of the academic world.

### **FORMATIVE EVALUATION VERSUS ACTION RESEARCH**

Both formative evaluation and action research have, as their basis, the improvement of an existing situation. The difference is one of degree of insider collaboration in the development of corrective actions. In the formative evaluation, the researcher formulates the corrective actions, without insider participation beyond the data gathering stage. In action research the investigator and insiders jointly collaborate with the development of the corrective actions. Using the concepts of TQM and empowerment, the collaboration inherent to action research results in greater commitment to the necessary changes. It is seen as the preferred approach to organizational change. Figure 19 illustrates collaboration in both data analysis and the development of changes to improve performance.

For this research, because of limitations in time and sponsorship as reported in chapter ten, the formative evaluation methodology was followed. However, the recommendations contained later in this dissertation are, in some cases, somewhat general and their detail development is left to the employees during the implementation. This is seen as a move toward action research and the introductory section to chapter 18 expands on this approach.

### **CONCLUDING OBSERVATIONS**

Patton's observation that the design and implementation of a research project is one of trade-offs was validated. The researcher was constantly frustrated by the trade-offs between developing detail plans and maintaining flexibility and coping with evolving circumstances. The research represented a compromise between time and thoroughness. The senior managers of NSCL and the personal plans of the researcher pushed for early completion, while the fact is, there is always more data and analysis that can and probably should be done. For example, the data suggests that culture plays an extremely important part in the leadership's interface with the various elements of TQM implementation. This suggests that a complete research project would include such a sub-study. However, it seemed clearly beyond the scope of this dissertation, as

proposed, and not within the time and support constraints provided by NSCL.

**PART IV**  
**ANALYSIS**

## CHAPTER 15

### IDEAL IMPLEMENTATION OF TOTAL QUALITY MANAGEMENT AT NAVAL SEA SUPPORT CENTER

#### INTRODUCTION

A review of the above literature research (Part I), reveals that there are both significant similarities and differences between the views, approaches and emphasis areas of the various TQM advocates. The guidelines for developing the U. S. Navy's TQL emphasizes that each organization should adopt a TQL approach that meets their specific requirements providing they follow the overall model, which consisted of four elements: (1) leadership, (2) the Deming Approach), (3) planning, and (4) establishing an organizational structure. Since NSCL is a Navy organization, this represents a formal requirement for the ideal TQM implementation methodology, and must be considered as part of this dissertation. It is the researcher's opinion that this requirement is entirely consistent with the other TQM advocates and does not unduly constrain development of an optimum or ideal implementation methodology.

In the case of the revitalization of an existing program, such as anticipated by this formative evaluation, the researcher must take into consideration where the organization is, on its path of continuous improvement. The ideal

implementation process would build on the organization's strengths and improve or replace the processes or roadblocks associated with their weaknesses.

### **MAJOR ELEMENTS OF THE IDEAL IMPLEMENTATION METHODOLOGY**

Review of the literature suggests four major elements, from a senior leadership view, that make up an ideal implementation of TQM. They are: (1) actions of a personal nature that each senior leader must take to prepare and accomplish their responsibilities under TQM, (2) actions of an organizational change agent nature, (3) implementing the policy planning and deployment and quality in daily work life processes and (4) establishing/maintaining the necessary organizational infrastructure. In reality, the first two elements are involved with the leadership aspects of deciding "what to do", while the last two are involved with the "how to do", management aspects of implementation.

### **LEADERSHIP'S PERSONAL ACTIONS**

#### **Introduction.**

John Betti was quoted earlier, as saying that management must be (1) convinced that change is necessary; (2) dedicated to wanting change and (3) their actions and words reflect the dedication. In addition, Deming's System of Profound Knowledge was discussed and figures 14 and 15 provided senior leadership functions from the Navy's viewpoint. These three

sources suggest four elements of personal actions which the manager must adopt in order to be an effective implementor of TQM. The manager must, in an ideal implementation of TQM:

1. Understand the principles and concepts of TQM -- he must acquire profound knowledge.
2. Be committed to applying the concepts of TQM principles and creating a supportive environment.
3. Practice his/her beliefs and commitments, based on this understanding.
4. Continuously improve his/her education, commitment and practice.

#### **Understanding the Principles of Total Quality Management.**

The senior leaders, to be effective change agents and implementers of TQM, must understand, on an intellectual and working basis, the concepts and principles of TQM. This requires both theoretical knowledge and the actual experience of applying these concepts. The senior leaders must serve as teachers and coaches to the entire organization by actively articulating their knowledge (one never truly understanding a subject until they have had to teach it!). Finally, the leaders must recognize that understanding and learning are a life-time requirement.

The senior leaders must recognize and accept that their understandings of the principles of TQM are a prerequisite to obtaining and exhibiting sufficient commitment to the process that long-term implementation will occur. Sustained commitment, to a level to act as a change agent, must be based on knowledge. The knowledge required for senior leadership was discussed in part I of this dissertation and is summarized in table 27.

Table 27. Knowledge Required of Senior Managers in a TQM Environment.

1. The ability to identify and understand how to achieve customer focus.
2. The relationship between quality and the customer.
3. Understanding the statistical variation associated with all systems and the associated common and special causes of this variance.
4. The concept of continuous improvement.
5. The role that process improvement plays in quality and organizational improvement.
6. The concept of policy management and deployment and the ability to develop the associated shared visions and strategic and tactical plans.
7. The psychology of individuals and groups, especially as it applies to motivation, empowerment and management of participation.
8. The concepts of leadership and management.
9. The concept of change, especially as it applies to the organization and the organization's culture.
10. The concept of knowledge. How one knows, management-by-fact, importance of measurement and the concept of the unknowable.
11. Organizational optimization and the alignment of subunits.

**Criteria for Commitment to TQM.**

Commitment, to a level to serve as an effective change agent, requires that the senior manager become bound, emotionally and intellectually, to the underlying principles supporting the change. The emotional commitment goes beyond purely intellectual acceptance or buy-in. The manager must believe that the concepts of TQM are applicable to her/his own job and to their organization. They must see the need for their organization to improve, using the concept of the Deming Chain described earlier. The manager must believe that TQM is "doable", it is not a "pie-in-the-sky" theory but a practical way for an organization to operate. Other supporting elements

to commitment are the recognition that (1) all stake-holders, including customers, owners, managers and employees, are better off by practicing TQM -- it is a Win-Win situation; and (2) that assets allocated to implementing TQM are not an expense, but a long-term investment.

A final prerequisite to commitment to TQM is a long-term organizational viewpoint. The literature abounds with references to the short-term viewpoint currently followed by much of the American economy and culture, with its emphasis on the current profit-loss statement. To be committed to TQM, is to be committed to the long-term good, often at the expense of short-term gratification.

#### **The Practice of TQM.**

The leader's practice of TQM can be seen from both a personal and organizational viewpoint. On a personal level, the manager must be willing to take the actions necessary to implement the knowledge acquired and live up to their commitment. Later in this chapter, the processes to be followed will be discussed. This is extremely important within the Navy, with its tradition and culture which emphasizes the coach and serving as an example and role model.

The leaders must be willing to make TQM methodology a part of their personal way of doing business. They must practice structured thinking, use the TQM tools, manage-by-fact, focus on quality as perceived by the customer, reduce waste, manage participation and empowerment and be willing to

allocate short-term assets to implementation. They must require subordinates, especially when they are interfacing with them, to use the TQM methodologies. From an employee's viewpoint, if the boss does not "practice what he preaches", then the topic is not really important.

In the personal role of change master, the senior leadership must commit themselves to creating an environment for change. This requires that he/she recognize their inherent responsibility to serve as a role model, mentor and coach. As the owner of the corporate assets, they must recognize that they are responsible for insuring that their organization continues to improve and survive. It requires the wise use of positional authority and power and the responsibility cannot be delegated to subordinates.

#### **The Leader's Continuous Improvement.**

An understanding of TQM provides the recognition that implementation is a process which continues indefinitely. The successful leader may have specific short-term objectives, (ie., developing and implementing this year's tactical plans) however, they recognize that these project-oriented activities fit into a continuum of applying the PDCA cycle. This requires that the leaders be personally committed to making TQM a way of life, applying the PDCA cycle to everything they do. Likewise, they do not approach TQM as a project which can be accomplished in a specific time-frame.

## ACTIONS BY THE LEADERSHIP - CHANGE AGENT'S ROLE

### **Creating and Deploying the Vision**

#### The Leadership Process.

It was reported, in chapter four above, that Kotter had summarized leadership as consisting of five steps. The steps were seen to fall into three major thrusts: (1) creating an agenda for change; (2) building an implementation network, (3) providing the alignment and motivation to those in the network to implement the agenda and (4) maintaining the commitment. This process is shown in figure 26.

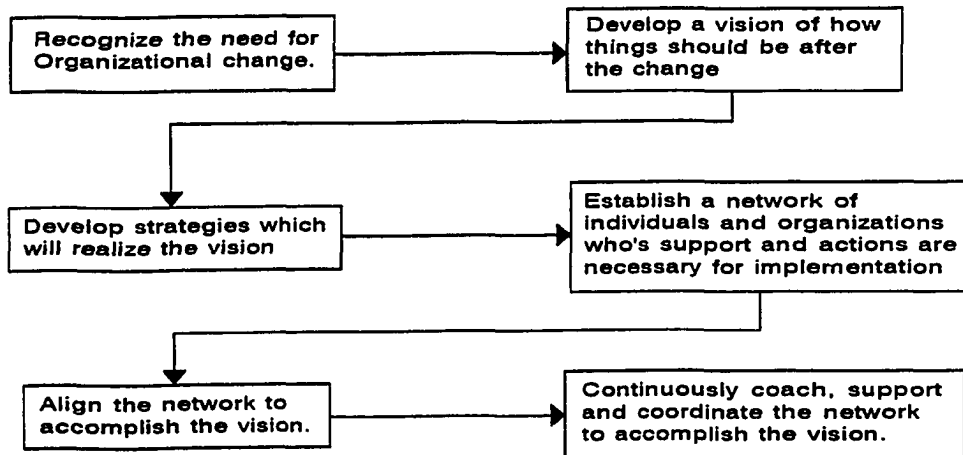


Fig. 26. Leadership Process.

#### Creating the Agenda for Change.

Creating the agenda is based on two elements: (1) establishing a vision of the organization as it will appear in

the future and (2) developing strategies to accomplish this vision. It is seen as establishing the framework and direction for organizational change and represents the essence of the leadership function -- determining what is to be done. The leaders must believe that they are able, to a great extent, to make their own realities. Through positive actions they can shape the future.

Ideally, the development of the vision and strategies would be accomplished in a collaborative manner by the senior leader and other stakeholders in the organization. The associated processes would lean heavily on empowerment, co-generation and shared-development of the visions and strategies. However, for NSCL and other Navy activities, this must be tempered with the realities of the Navy leadership style and culture reported earlier.

The Navy, by regulation and culture, charges the commanding officer with total accountability for his/her command and, in doing so, provides her/him with almost complete prerogative to do as he/she chooses -- answerable only to law, regulation and his/her higher authority. This was reported as non-negotiable within the Navy.

Therefore, any TQM process focusing on leadership within Navy activities must recognize this accountability/prerogative issue and the fact that commanding officers have the right to act in authoritarian ways. The processes developed later in the chapter attempt to reach a compromise between the ability

of the commanding officer to act unilaterally, while emphasizing participation.

#### **Building an Implementation Network.**

The leader must identify those individuals and organizations whose support is essential to implementing the desired changes. The leaders then establish relationships with these individuals and groups to facilitate enlisting their support in accomplishing their part of the vision. Normally, the leader should have established and maintained most of these formal and informal network elements well in advance of any specific vision implemented -- as a normal course of doing business.

From an organizational viewpoint, this goes beyond recognition of internal key players and establishing the ESC, QMBs and PATs. It includes developing working relationships, on an individual basis, with customers, sponsors and service or support providers in other organizations.

#### **Alignment of the Network.**

The leader obtains the commitment of those within the network to support implementation. Kotter called this alignment and it is similar to Senge's organizational alignment and obtaining shared vision. The leader's task is to get everyone to direct or align their actions toward accomplishing the same vision. As indicated earlier, this involves communicating the vision in a manner that shows its value to everyone involved. It involves enlisting them to

assist in refining the vision and strategic plans; in deciding how to achieve the details of the strategic implementation to a degree that they become aligned to the change.

As indicated in the literature research, this is best obtained by the senior leader working collaboratively with those to be aligned to arrive at a shared understanding. If the senior leader exercises his prerogative of dictating the vision, the alignment will be much more difficult and will result in some level of compliance versus the desired commitment or enrollment. The previous discussion on shared vision in chapter four is referenced to provide insight into this concern.

Alignment also involves coaching, providing assets, recognition, rewards and feedback and serving as a role model. It is important to recognize that it is very difficult for all of the major players within the network to develop the initial vision and strategy. This is seen as a key top leader responsibility which cannot be delegated.

#### Maintaining the Commitment.

The last step in the leadership process is to take the actions necessary to maintain the commitment and actions of those within the network who were aligned. This step is inherent to Deming's first obligation of management -- to create a constancy of purpose. It tells those in the network that the efforts that they were asked to perform were important enough that the senior leaders continue to care

about them. It requires the leadership's continuous involvement, coaching, teaching and providing feedback and recognition and rewards to reinforce positive behavior. The leader must follow up on assigned tasks -- generally being visible, supportive and involved in such a manner that the implementers of the change will maintain their commitment.

#### **Change Agent's Role - Creating the Environment**

The senior leadership must take the actions necessary to create a supportive environment for TQM. As discussed in chapter eight, TQM is associated with continuous improvement, which can only be produced by change. The changes associated with TQM can be anxiety producing for the participants when they have the feeling of loss of control and there is excessive uncertainty. It is the senior leadership's task to minimize these feelings, which is best achieved by empowering them to participate in the development and execution of the change.

#### **Participation and Empowerment.**

The foundation of creating a supportive environment to TQM is empowering employees to participate in the design of the changes. This requires that employees and managers be prepared for this role by training and education, both in the principles and concepts of TQM and in job skills. Employees must understand the concepts of TQM to be effective participants. Also, they need to know that they will be

afforded the opportunity to develop new work task skills as changes, especially technology-based, occur.

Reduction of the feeling of loss of control associated with organizational change is best accomplished by careful management of participation. A cornerstone of TQM is empowered and committed employees who have ownership in the changes that are being made. There is little loss of control when the employees recognize that the changes are being done by them, instead of to them. This has applicability to both policy planning and process improvement. As indicated earlier, an element of obtaining alignment by key players is to have them have a say in finalizing the needed changes, especially in its detailed execution. The very fact that those involved with executing a change have been part of its design, assures their understanding and facilitates obtaining their commitment and active support.

It is recognized that the degree of empowerment, especially for policy planning recommended in this ideal implementation approach, goes beyond that espoused by the TQL program and is counter to the cultural frame employed within the Navy, with its tradition of commanding officer's prerogative. This extension of empowerment is based on the recognition that many of the underlying principles associated with TQL do not apply to NSCL. The organization is primarily composed of civilians who do not change jobs frequently and who are reasonably senior, by Navy standards (ie., most

engineers and technicians at NSCL are equivalent to officers at the Lieutenant [0-3] level). With the exception of the Commanding Officer and Executive Officer, there is minimum turn-over in the top management structure. Thus, the critical mass concepts of the TQL program, focusing on the shipboard environment and only training managers are not applicable. The discussion later in this chapter attempts to resolve this issue.

#### **Establishing the Priority and Allocating Assets.**

The literature consistently indicates the importance of adopting TQM to an organization's long-term health. Survival in today's world class competition can only be assured by those organizations who adopt the challenges of the new management philosophies associated with TQM. This criteria for the private sector has a direct corollary for the public sector, especially in a time of downsizing. The organizations which have the greatest quality (customer acceptance) and have developed a constituency of support from these customers and the other stakeholders have a far greater likelihood of survival. This reality should make implementing TQM an extremely high priority for all organizations and their people.

Inherent to establishing an appropriate high priority is the recognition of importance of a long-range viewpoint and the willingness to invest in the future, at the expense of current assets and effort. This requires the top leaders to

make the personal investment to implement TQM along all of the eight fronts previously identified by Sink and Monetta. This requires the allocation of funds, personnel, personal and employee time and energy to implement the cultural and management style changes necessary.

**Senior Leadership Alignment and Team Work.**

An ideal execution of TQM necessitates that all of the top leaders be aligned to the same visions and objectives and function as a team. Obtaining this alignment is the responsibility of the Commanding Officer of a Navy activity such as NSCL, with the support of the senior civilian (Technical Director).

This alignment can only occur when the other senior managers are willing to subordinate their personal goals and work towards optimization of the organization. They must also be willing to bring to team activities the multiple frames cited earlier by Bolman and Deal. While all the frames are useful, TQM especially seems to emphasize the frames that have to do with organizational or structural and symbolic or cultural issues. This is illustrated on tables 7, 9 and 10 in chapter three. It is the researcher's observation that, too frequently, top leaders work in a political environment and become focused on the political frame, thus, they view most activities as win-lose and the application of power and control. Likewise, an ideal situation would be for the top leader to reframe his adoption of the Navy's culture frame

regarding command prerogatives and emphasize empowerment and participative decision-making.

### **Changing the Culture.**

The most important element for creating a supportive environment is to change the organization's culture, its system of shared beliefs and norms of behavior, so that it is conducive to implementing TQM. A review of the literature suggests that the TQM culture should be:

1. Customer and quality focused.
2. Supportive of continuous improvement and change.
3. Supportive of open communication.
4. Based on empowerment at all levels of the organization.
5. Based on a collaborative management approach and teamwork.
6. Based on respect for the individual and minimizing fear in the work place.

The senior leadership must recognize where the current organization is in terms of each of these dimensions and then prepare appropriate plans and take the actions necessary for the organization to start changing the culture. It must be recognized that cultural changes do not come quickly and require a significant investment in time, energy and perseverance.

Changing the culture is addressed through communications, which should not be seen as a simplistic statement. Covey (1991) was quoted earlier as equating communications to an iceberg. The small, exposed part of the iceberg represents the verbal statements, while the much larger, hidden part represents all of those nonverbal actions which communicate

the degree of commitment, support and importance that the change represents.

This is very important in the Navy, where the culture and tradition are expressed by a very rich set of symbols and rituals. The Navy's emphasis on leadership requires that the top leaders provide a visual example of the desired changes. He/she must serve as a role model, establishing personal actions and habits styled in the "new way". Thus, the senior leadership has the responsibility to both frequently articulate the principles of TQM and the organization's strategic plans to all levels of the organization and to exhibit those non-verbal role model examples which illustrate the new way. They must address why TQM is a priority item within the organization and "walk-their-talk".

A final observation regarding cultural change is that it is one of organizational subsystems or fronts identified earlier by Sink and Monetta. Implementation of TQM must appropriately change, in a concurrent manner, all of these organizational fronts. This can only occur through a systematically identified process, based on careful analysis. This issue will be expanded on later in this chapter.

#### **COMMAND LEVEL TQM PROCESSES**

Leadership actions are involved with accomplishing the "what to do" associated with vision development. Management

actions involve determining "how to do" and then "getting done" the functions necessary to accomplish the vision. In the earlier discussion, it was seen that senior management has both leadership and management actions as part of their overall work responsibilities. Earlier in this chapter the senior leader's role, from a leadership perspective, was discussed and this section addresses the management aspects of TQM implementation.

Both the TQL and QUALTEC processes indicated that TQM could be broken into two major elements: (1) policy management and deployment and (2) continuously improving quality in daily work. These are specific management-oriented processes that are inherently the responsibility of the senior leadership.

### **Policy Management and Deployment**

#### **An Overview and Underlying Considerations.**

The systems change perspective provided by Pava (1986) and discussed in chapter seven has application to the development of an ideal policy management process for NSCL. Pava indicates that when there is low social conflict and well-defined tasks, the master planning techniques are most applicable. The change strategies associated with this niche are based on corporate level strategic planning, budgeting, forecasting and other systematic and analytical techniques. The change methods are seen as very applicable to TQM under the indicated conditions.

The QUALTEC system is especially aligned to this master planning model of change. It emphasizes systematic discovery of the voices of the customer and business and the development of strategic and tactical planning based on a careful analysis of these voices.

Pava's incremental non-planning strategic methodology is recommended when there is high conflict between participants and low uncertainty. This is seen as closer to the VPC methodology, with its emphasis on negotiation by the nominal group technique to reach group consensus. This method was reported as suboptimum in relation to the master planning, however, most applicable when the conflict and lack of alignment conditions exist.

Review of the case study shows that significant conflict and a lack of alignment exists within senior management ranks. This was highlighted by the Senior Opinion Study as reported in chapter 13 and shown on table 17, question 4. Thus, Pava's incremental non-planning method, with consensus reached through negotiation and voting appears most applicable. It is proposed by the researcher that a process such as depicted by figures 27 and 28 be adopted as the ideal. As indicated in the following discussion, it addresses the conflict issue, while employing the master planning model.

The process is based on three major phases, the development of: (1) vision, planning assumptions and guiding principles; (2) strategic plans in the form of critical

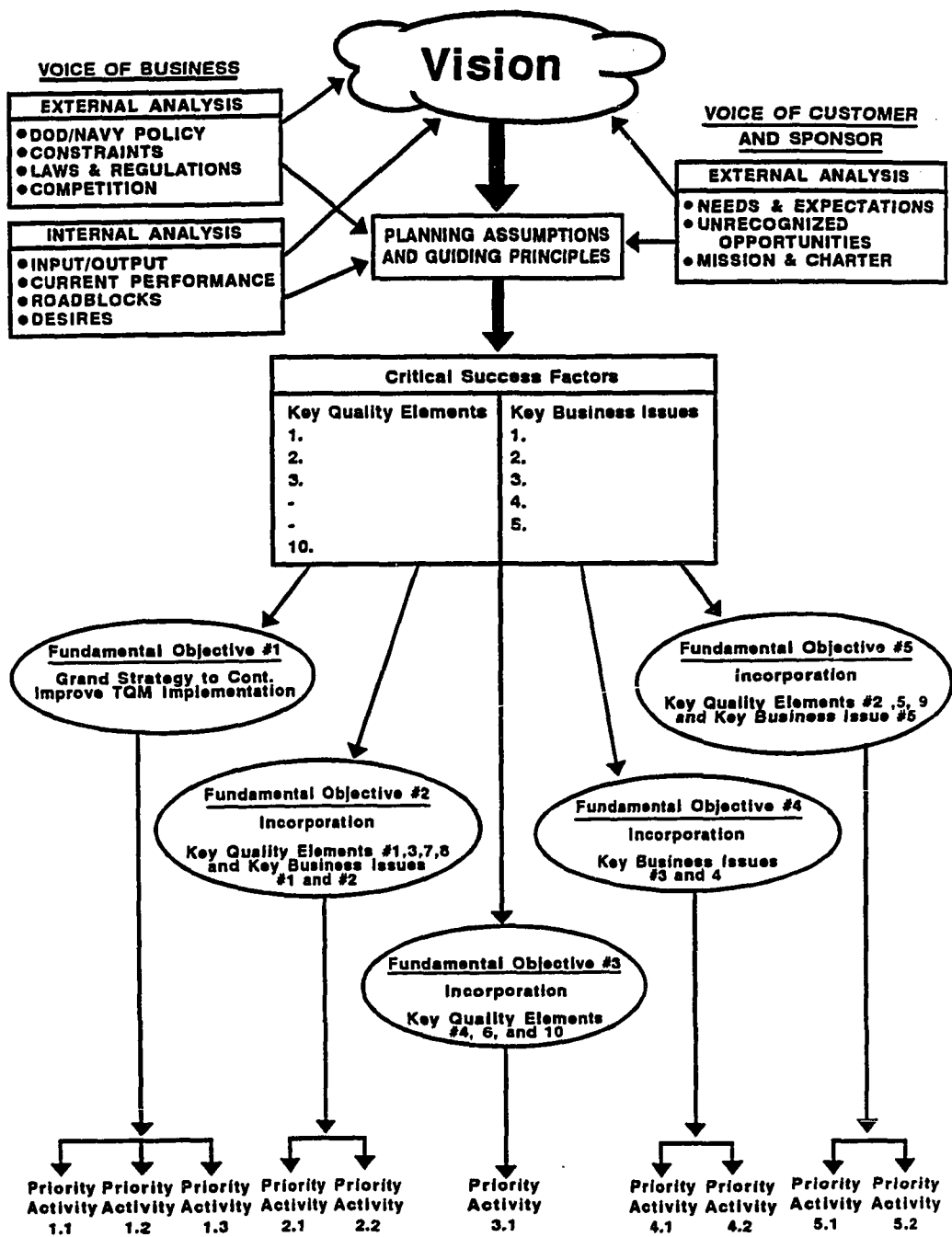


Fig. 27. The Ideal Policy Management and Deployment Methodology for NSCL.

success factors and fundamental objectives and (3) tactical plans in the form of priority activities.

#### **Visions, Planning Assumptions and Guiding Principles.**

As shown on figure 27, the development of the NSCL's planning assumptions and guiding principles is based on combining the VPC methods shown on figure seven, the QUALTEC method of figure nine and the TQL strategic planning model of figure 13. The proposed methodology includes developing a vision of what the organization should look like in the future. As illustrated in figure 28, this vision is based on the voices of the customers and sponsors and the voice of the business. From this vision, planning assumptions and guiding principles are developed which serve as the basis for the strategic plans. The strength of this method, over the VPC process, is that it uses the strong analytical frame of the planning model, while allowing the development of the vision, assumptions and principles in the more political environment of the ESC, thus, fostering management-by-fact based on the data provided.

#### **Voices of the Customer and Sponsor.**

The voices of the customers and sponsors consist of the: (1) expressed needs and expectations of the customers, (2) sponsor's dictated mission and charter and (3) the organization's own recognition of business opportunities which have not been articulated by either the sponsor or customer, but are within the overall business niche. This third issue

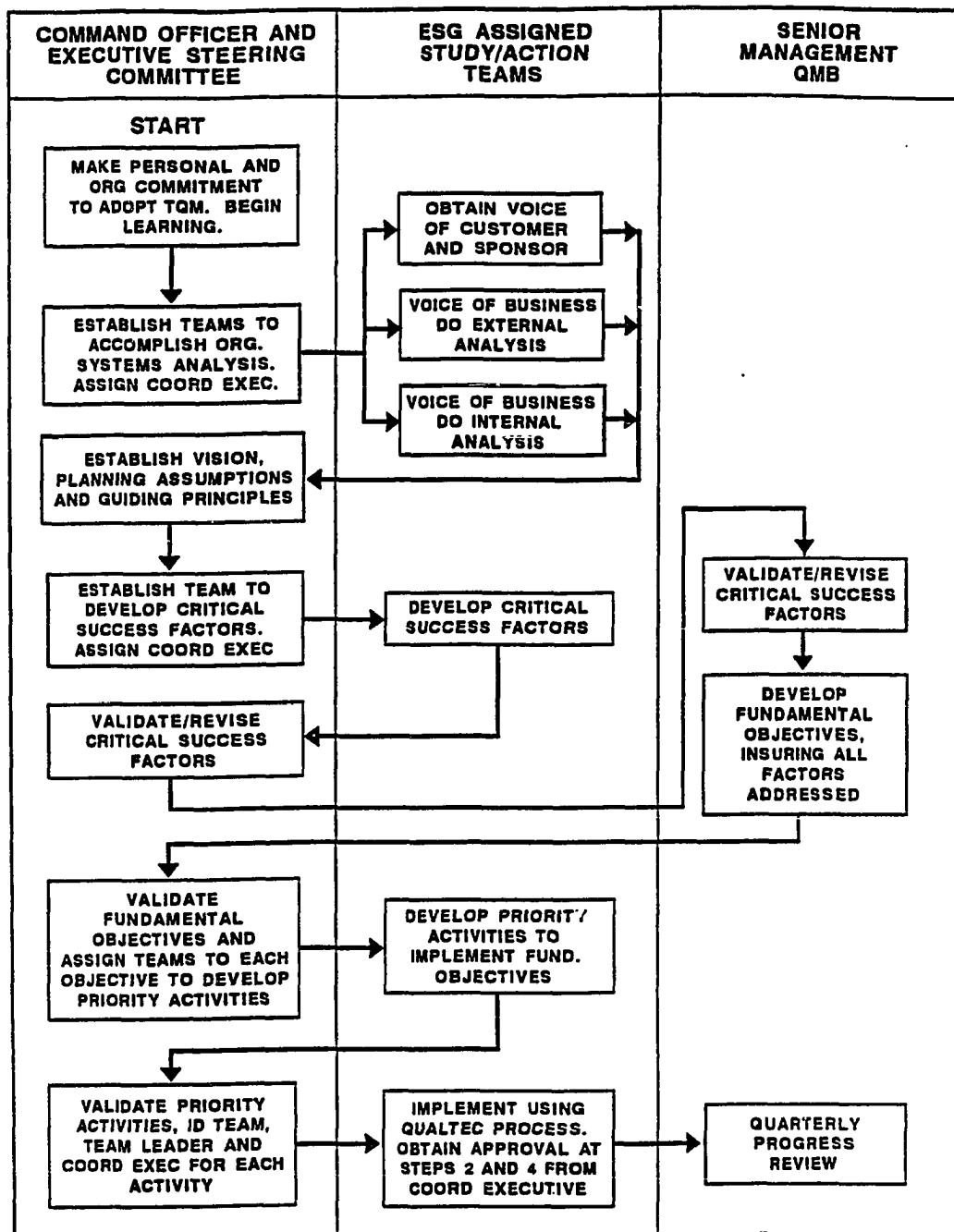


Fig. 28. Management Process for Policy Deployment

requires conducting interviews, surveys, examining formal mission charters and a degree of innovation to identify new and unrecognized business opportunities.

#### **Voice of Business.**

The voice of the business is based on a careful analysis of the internal and external environment in which the organization operates. For NSCL, it identifies the Department of Defense and Navy policies, laws and other regulatory constraints placed on the organization. It recognizes the competition and their strengths and weakness and the various trends within the business environment. The current Navy down-sizing is an example of an important issue.

The internal analysis is based on understanding the transformation processes within the organization and its associated inputs, outputs and sub-processes. The strengths and weakness are identified, especially as they apply to the level of quality, current performance and problem areas or roadblocks to excellence. This is analogous to the assessment process identified in the TQL literature. Finally, within this element of the process, the visions, desires and expectations of the internal stakeholders regarding the organization are recognized and articulated. This serves as an element of participation.

#### **Developing the Vision.**

The vision is an idealized view of a desirable and achievable future state. It describes where the organization

should be, business-wise, and what it should look like, five to 20 years in the future. This idealized view is based on the inputs from the analysis of the voices discussed above, as well as the top leadership's and other stakeholder's views and desires. It is the first step in the above change agent's role of creating an agenda for the future and is best accomplished collaboratively by a cross-section of managers. However, senior leadership is responsible for insuring that it is realistic and shared.

The ESC, using the master planning model, would carefully analyze the data from the committees and develop, in a highly rational manner, the visions, planning assumptions and guiding principles. This is a departure from the existing, espoused method of having the decision made by the Senior Management QMB. It reduces the decision-making process from about twenty to six managers which reduces the level of potential conflict and results in a more efficiently sized group to reach alignment. This step represents a compromise to the TQM literature which suggests maximum participation between the stakeholders and the realities of the current conflicts. It also affords the commanding officer to make unilateral decisions in a more private setting.

#### Resultant Visions, Planning Assumptions and Guiding Principles.

The planning assumptions are an articulation of top management's expectations about how future events, both internal and external, are likely to affect the achievement of

desired results -- in this case, the achievement of the vision. These assumptions are based on the analysis steps previously discussed and serve as expected boundaries and limitations that will be placed on the future planning stages.

The guiding principles are a set of statements about the values and philosophies of the organization. They serve to guide the behavior of its members toward each other, toward customers, sponsors and suppliers and the way that the organization approaches its work. In many ways, it is an articulation of the TQM cultural issues discussed above. This "philosophy of operation" serves as a boundary for planning.

#### **The Strategic Plan.**

The strategic planning portion of the proposed policy management and deployment process is based on the QUALTEC process and consists of identifying critical success factors and the fundamental objectives necessary to implement them. The critical success factors are further divided into two sets of elements or issues. The first are those key quality improvement elements necessary to satisfy and exceed the expectations of the customers. The second are those key business issues necessary to align the organization to respond to the business environment and opportunities portions of the earlier analysis. These critical success factors can be seen as operationalizing the vision -- stating those accomplishments which must occur to realize the vision.

The fundamental objectives represent a refinement of the critical success factors. They are objectives which, if realized, will allow the critical success factors to be accomplished. The fundamental objectives, as shown in figure 27, are identified in a manner that they support the accomplishment of multiple success factors. Using Sink and Monetta's grand strategy, discussed in chapter seven, one fundamental objective should be the organization's plan for the implementation and continuous improvement of TQM. This is shown as the first fundamental objective and represents strategic plans to implement TQM on all eight fronts concurrently and in a coordinated manner.

The suggested process, as depicted by figure 28, shows the development of critical success factors to be accomplished by a group of knowledgeable stakeholders who's alignment is critical to success. This effort is accomplished in the highly analytical and rational environment of the master planning technique. The results are moved to the ESC for validation, revision and adoption. The above discussion involving group size, conflict and commanding officer prerogative applies.

The critical success factors are then provided to the Senior Management QMBs as a strawman for their validation. The optimum method would be for them to be a "weak strawman", so that the entire group of senior and mid-level managers could have a major impact on the final results during the

validation process. At a minimum, within the Navy and other "top-down" management cultures, the senior leader should at least allow refinement and modification to support buy-in and eventual commitment.

The development of fundamental objectives is proposed as a collaborative effort based on their breadth and the need to obtain a wide-spectrum of knowledgeable input. It is important, at this level of detail, that wide-spread commitment be obtained, which is best accomplished through full participation and collaboration. It is recognized that alignment between participants must evolve during the process and the more negotiation methods of the VPC methodology may be required to initially reach consensus. The optimum would be to use analytical techniques to arrive at the objectives. The use of an outside and extremely able facilitator is highly recommended because of the size, political issues and complexity of the undertaking.

#### **Tactical Activities.**

An inherent part of every TQM model discussed in part I of this dissertation was the application of short-term, tactically oriented accomplishments which moves the organization toward accomplishing their strategic objectives. QUALTEC identified these as priority activities.

The process requires that those immediate actions or first steps necessary to move toward accomplishing the fundamental objectives be identified and accomplished. The

methodology to be used to accomplish the priority activities is discussed below under the process for improving quality of daily work. It follows the same technique described above, using teams of stakeholders to develop the detailed tactical plans based on in depth analysis. The validation process by the ESC/Commanding Officer discussed above, is applicable.

#### **Top Management Involvement in Policy Management and Deployment**

Implementation of policy management and its deployment is an inherent, top-down management responsibility and is best achieved in a collaborative manner, between senior management and others within the organization. Concurrently, the ideal implementation for NSCL must recognize the prerogatives of the Commanding Officer. The above discussion and figure 28 provided the proposed method of accomplishing the process shown in figure 27. As indicated, this process is based on the QUALTEC methodology, and utilizes much of the current NSCL process. It represents, hopefully, a reasonable compromise between the ideal and the Navy's top down management style as will be discussed later.

The process starts with the personal commitment of the top leader and those supporting him on the ESC. The Commanding Officer must determine that implementing TQM/TQL is a critical issue for his/her command, with sufficient priority to receive his full support and commitment. The initial steps in the process are to accomplish those analyses

necessary to hear the voices of the customer, sponsor and business. This is a major undertaking and it is proposed that study/action teams be assigned by the ESC to do the appropriate analysis in Pava's master planning context. A coordinating executive (a QUALTEC term) should be assigned to each of the teams. This executive serves as the link pin (the TQL term) between the ESC and Study or Process Action Team, coordinating and serving as the team advocate to the ESC. The use of teams of knowledgeable employees to study and document these issues is the first step in the participative management process.

The results of the analysis are reviewed by the ESC and the visions, planning assumptions and guiding principles for the organization are developed. Once the top leader (Commanding Officer) validates or revises them, the associated critical success factors must be developed. This would also be accomplished participatively, by an ESC assigned PAT, with a coordinating executive. The critical success factors are reviewed, revised as necessary, and validated by the ESC and Commanding Officer.

The critical success factors serve as the Senior Management QMB's source data. This group is currently in place at NSCL and is composed of the members of the ESC and the division head level (mid-level) (approximately 20) managers. The Senior Management QMB validates these and works with them sufficiently that they become aligned to their

accomplishment. This board then develops the fundamental objectives necessary to accomplish these factors. These are reviewed by the Commanding Officer and ESC, validated or refined as necessary. The Senior Management QMB reviews the board's progress on an as-needed basis with the coordinating executive to the PATs representing the ESC and QMB for day-to-day management support and coordination.

PATs are established for each fundamental objective to identify the priority activities necessary to accomplish them. Once they are accepted by the ESC, the PATs implement them, using the process for improving quality of daily work described later in this chapter.

The process preserves the authority and prerogatives of the Commanding Officer, while heavily involving other employees in the identification and development of the detail issues. This should result in shared beliefs between the senior and mid-level managers. As the process moves down the organization's hierarchy, as described in the next paragraph, the opportunity to operationalize these visions and plans by converting them to detail actions should result in, at least, buy-in by lower levels and eventually a shared commitment. Especially, if the Commanding Officer, ESC and Senior Management QMB are willing to allow refinement and improvement to their outputs to "bubble up" and be adopted.

### **Top-Down Deployment of the Management Process.**

One of the current strengths of the NSCL TQM program, as discussed in the case study, are the QMBs at the department and branch levels. These QMBs address their level's contribution to accomplishing the organization's strategic and tactical plans and problems and opportunities that are unique to their level of the operation. They also allow full participation in their planning and execution. Table 28 provides a structured approach for each of the hierarchical levels to support the organization and still address their own problems, from a bottom-up prospective. The ideal TQM implementation at NSCL would continue to use the multiple level approach, recognizing that each level must be aligned and linked to the next higher, hierarchical level. This method is consistent with the VPC and QUALTEC methods of policy implementation.

### **Recognized Deviations from the Navy's TQL Approach.**

Chapter five and figures 12 through 16 discussed the Navy's TQL approach from an organization and responsibilities viewpoint. The above proposed ideal methodology deviates somewhat from the TQL model.

**Top Leader's Bias in Management of Participation.** It is recognized that within the Navy, the prerogatives and authority of the Commanding Officer are non-negotiable, however NSCL's senior civilian leadership has served the organization for many years and represents a degree of

Table 28. Linkage of Organizational Structure to Implement TOM.

LEVEL OF MANAGEMENT	IMPLEMENTATION			SOURCE OF OPPORTUNITY FOR IMPROVEMENT
	IMPROVEMENT	CONTROL	MGT REVIEW	
<b>LEVEL 1</b> CO, XO, TD & DIRECT REPORTS	<b>POLICY MANAGEMENT</b>	<b>QUALITY SYSTEM OF ORGANIZATION</b>	<b>LEVEL 1 AND 2</b>	<b>CRITICAL SUCCESS FACTORS</b>
<b>LEVEL 2</b> DEPARTMENT & DIVISION HEADS	<b>DEPT. &amp; DIV. CONTRIBUTION TO POLICY MANAGEMENT</b>	<b>QUALITY SYSTEM &amp; QIDW</b>	<b>LEVEL 2 AND 3</b>	<ul style="list-style-type: none"> <li>• LEVEL 1 PRIORITIES TASK BY ESG</li> <li>• LEVEL 2 PROBLEMS</li> </ul>
<b>LEVEL 3</b> SUPERVISORS & MANAGERS	<b>BRANCH LEVEL CONTRIBUTION TO POLICY MANAGEMENT</b>	<b>QIDW</b>	<b>LEVEL 3 AND 4</b>	<ul style="list-style-type: none"> <li>• LEVEL 2 PRIORITY PROBLEMS TASK BY DEPT OR DIV HEAD</li> <li>• LEVEL 3 PROBLEMS ID BY BRANCH PERSONNEL</li> </ul>
<b>LEVEL 4</b> PERSONAL LEVEL	<b>INDIVIDUAL CONTRIBUTIONS TO POLICY MANAGEMENT</b>	<b>QIDW</b>	<b>NONE</b>	<ul style="list-style-type: none"> <li>• LEVEL 2 OR 3 PRIORITY PROBLEMS TASK BY SENIORS</li> <li>• PERSONAL SKILLS AND KNOWLEDGE</li> <li>• CONTRIBUTION TO PROCESS STEPS IN WHICH INVOLVED</li> <li>• IDEAS FOR IMPROVEMENT</li> </ul>

corporate knowledge and management experience that is not consistent with the Navy's TQL, shipboard-oriented model. The proposed process suggests that the Commanding Officer use a more collaborative approach to decision making and the development of policy than was probably envisioned by the developers of the TQL process.

This is not to suggest that the Commanding Officer is required to use a collaborative management style, nor does it suggest that authoritarian methods not be used when appropriate. Rather, it suggests that he/she manage the participation of NSCL with a bias toward greater management and employee involvement than would be used in a purely military organization.

**A Top-Down and Bottom-up Approach.** A second difference between the proposed ideal and TQL approach is the degree of bottom-up involvement. In chapter five, it was reported that because of the rapid turnover of personnel and difficulty in establishing a critical mass of "TQL literate" personnel, the Navy's TQL process is almost totally oriented to a top-down approach. Under the QUALTEC, VPC and current NSCL processes, there is significant bottom-up idea generation associated with process improvement. NSCL currently has approximately 85% of their personnel trained in the use of TQL tools and QUALTEC's method of process improvement which provides the required critical mass discussed above.

In TQL, the identification of process improvements is accomplished at the ESC level, planning for execution at the QMB level and executed at the PAT level. The QUALTEC, VPC and current NSCL processes allow QMBs to be established at the various hierarchial levels and these may be assigned actions from a more senior QMB. The QMB may also identify their own improvements, as long as they are consistent with and further the organization's critical success factors. In effect, the QMBs ask, what can we do to implement our part of the organization's critical success factors?

The PATs, under the proposed ideal process and using the current NSCL methodology, accomplish much of the detail planning for process improvement by the QMBs, reporting to the QMBs for guidance and concurrence. The QMBs act in more of a leadership role, deciding what is to be done and allowing the PATs to decide, in a management role, how the work is to be accomplished.

### **Improving Quality in Daily Work**

Inherent to every quality advocate's process reported in part I, was a systematic methodology to apply the PDCA cycle to process improvement. NSCL, as indicated in the case study, adopted the QUALTEC process shown on figure ten for the use of PATs in improving processes. They have put in place a support infrastructure of trainers and facilitators. This method is consistent with the TQL approach and could represent the proposed ideal method for NSCL, however, the more customer-

focused process developed by Boyette and shown in figure 25 must not be ignored. It is noted that both are based on the PDCA cycle.

A consolidation of the process shown in figures 11 and 25 would combine the strengths of the QUALTEC method, which most of the employees have been trained, and provide the customer focus shown in figure 25, the requisite management oversight and support the identification and allocation of needed assets. Figure 29 provides this consolidation and is proposed as the optimum methodology for NSCL.

Steps 1-5 in figure 29 are analogous to the first six steps in figure 25. They cause the PAT team to focus on the most important customers and associated key processes; their needs and current level of satisfaction; and translate this into output specifications which are further refined to identify a standard of excellence which will fully meet and delight the customer. Boyette's use of the "5-Star Standard" metaphor of the rating of world-class service establishments is excellent.

Step six in figure 29 translates to the first two steps by QUALTEC in figure 11 and steps seven and eight to QUALTEC's third and fourth steps. These collectively translate to Boyette's seventh through ninth steps and represent the detail planning for revision of the process, identification of quality and process measures and development of the implementation plan.

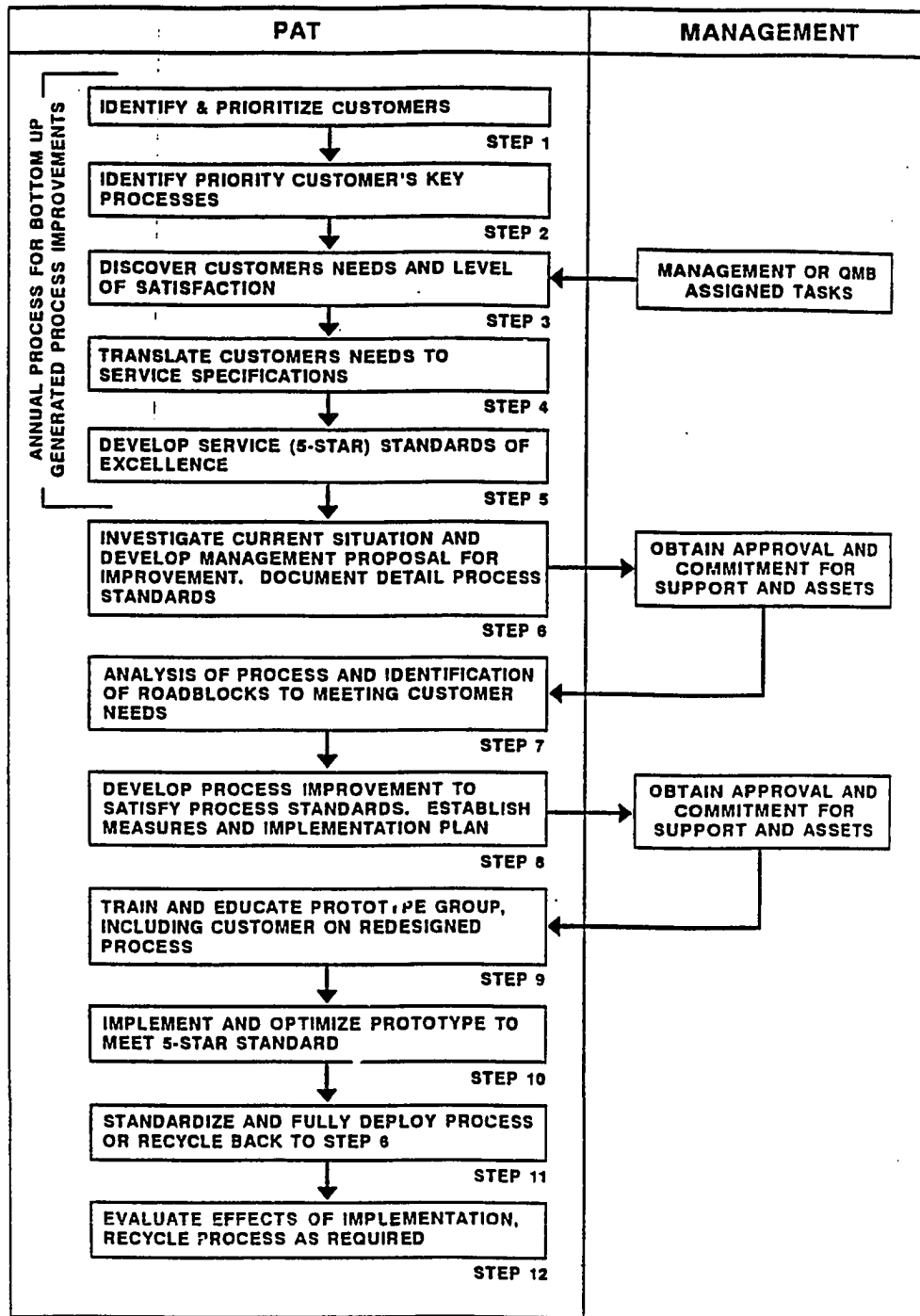


Fig. 29. Proposed Quality in Daily Work Improvement Process.

Steps nine and ten in figure 29 represent the Do step from the PDCA cycle and directly correlate to steps in both figures ten and 25. Steps 11 and 12 in figure 29 are analogous to the Check and Act steps of the PDCA cycle and also correlate to similar steps in the QUALTEC and Boyette models.

Figure 29 also recognizes that PATs can be assigned tasks from their QMB or managers, in lieu of being recognized through the prioritization of customer's key processes. Tasks of this nature also have major process improvement elements and would follow the same process, as shown.

One point emphasized by QUALTEC and figure 29, from a leadership standpoint, is that the manager cannot provide approval unless he/she is able and willing to provide the required assets and support. The approving manager is committing her/himself to providing the management support and coordination necessary to allow implementation and to buffer the PAT from the risk inherent in making changes. It is recognized that dependent on the nature of the issue, authority of the individual manager and degree of trust between managers, approval/disapproval may have to be withheld until the response can be coordinated with other managers. This process is seen as a method of obtaining upper-management commitment to bottom-up generated changes.

## THE ORGANIZATIONAL TQM INFRASTRUCTURE

An inherent responsibility of top management is to establish an organization and infrastructure which will support the implementation of TQM. The TQL, VPC and QUALTEC processes all recommend an infrastructure that consists of a top management steering committee, management and process action teams and professional TQM coordinators and facilitators. The current NSCL espoused organizational structure is believed to be ideal for the command.

The Commanding Officer and his senior managers make up the ESC. This should continue and have the responsibilities shown in figure 15. The existing senior management and department level QMBs should continue. They provide an opportunity for empowerment, support and participation by other managers within the organization. Their primary contributions are in supporting the ESC in developing the strategic goals, as described in figures 27 and 28, and for developing more detailed strategic plans for their own departments. Much of the efforts for guiding process improvement shown in figure 15, are also espoused and actually delegated to the QMBs. This is believed ideal and allows the senior management QMB to provide leadership and involvement with the improvement of intra-department and command level processes. Likewise, the department level QMBs are able to provide this leadership and involvement for the inter-division

and department level processes. The link-pin or coordinating executive philosophy between ESC, QMB and PAT as discussed above should continue.

The PATs can either be ad-hoc teams established to address specific actions identified by the ESC or QMBs or they can be a standing team associated with a specific major process or organization unit. The standing PATs should use the PDCA cycle as shown in figure 29, for continuous improvement of the process or their organizational unit, which provides for bottom-up participation, customer focus and allows empowerment.

An ideal implementation would establish and maintain The TQM coordinator and facilitator's positions, with the roles and responsibilities shown in figure 16. For organizations of greater than 500 employees, the TQL process recommends a full-time coordinator and QUALTEC, at several TQM presentations that the researcher attended, recommended that a full-time facilitator be provided for each ten operating PATs or one-part time facilitator for each three PATs.

The TQM coordinator should be sufficiently senior within the organization and have adequate experience such that they have credibility with the senior managers, know the processes and personnel and is given the time to acquire profound knowledge. They act as a primary change agent, as shown in figure 16. The TQM facilitators should be in adequate quantity to support the QMBs and PATs. They must be provided

adequate training and have similar functions as shown on figure 16, except that they support QMBs and PATs instead of the ESC and do not get involved with the strategic planning process.

The infrastructure also includes the training, tools, information systems and other assets needed to both support the implementation of TQM and TQM-related activities. This requires the allocation of assets which may not provide an immediate return on investment.

#### **EMPLOYEE PERFORMANCE APPRAISAL AND RECOGNITION**

To the casual reviewer, the works by Deming and employee recognition appear to be in conflict. Deming indicates that employee performance is based on many factors, over which the employee has no control. Thus, performance appraisal and recognition are seen to be divisive and counter-productive. This suggests that performance appraisals such as dictated for government organizations be discontinued.

At the same time, Deming indicates that a part of the leader's profound knowledge is an understanding of motivation and methods of learning. The literature clearly states that positive behavior should be recognized and rewarded. This, for some, represents a dilemma. If the employee's performance is controlled by factors outside of his control, why should positive performance be recognized and rewarded?

The answer lies in the motivation and the leaders' understanding of the efforts associated with performance. The ideal approach to employees' performance and recognition is to be recognized and rewarded for positive behavior, but not for the arbitrary variance of process dictated output. An inherent part of the leader's alignment and coaching efforts is to reinforce positive actions. The associated reward can be in many forms as long as it is recognized that the rewards are associated with positive behavior which the employee can control, not outcomes over which he/she has little control.

A formal employee performance appraisal system, such as included in most government organizations, is not ideal and is counter to the concept of TQM, however, the periodic and mandatory review of performance in a coaching and feedback format should be an inherent part of the recognition process. Otherwise, the formal reviews should not replace continuing management recognition and coaching associated with work performance.

## CHAPTER 16

### AN ANALYSIS OF THE ESPOUSED AND ACTUAL IMPLEMENTATION OF TQM

#### INTRODUCTION

The analysis of the espoused and actual implementation of TQM is one of understanding the differences between ideal and espoused and between espoused and actual implementation. An understanding of these differences and associated reasons or causes is the final step in the evaluation portion of this formative evaluation. Based on an understanding of these differences, the necessary acts to revitalize the TQM process at NSCL can be formulated.

#### LEADERSHIP'S PERSONAL ACTIONS

##### **Ideal vs. Espoused**

The espoused personal actions of the top leaders do not reflect the ideal methodology. In fact, there appears to be few actually espoused actions, other than a recognition that the top leaders are required to "Do TQM". They, until late 1991, espoused to follow the VPC Eight-step and QUALTEC processes which do not explicitly address the leadership models suggested by the ideal. These espoused actions tend to be management, rather than leadership-oriented.

The top leaders espoused the need to serve as role models, leading by example and "walking their talk", thereby showing commitment and application of the principles of TQM. This represents a dilemma, because there is no indication that they ever understood the requirement associated with the first step of the four-step TQL process cited in chapter 14 and repeated below:

1. Understand the principles and concepts of TQM -- acquire profound knowledge as defined by Deming.
2. Be committed to applying the concepts of TQM.
3. Practice these beliefs and commitment.
4. Continuously improve knowledge, commitment and application.

A roadblock to NSCL's senior leaders espousing this ideal has been the fact that the requirement has never been explicitly presented as part of their training. Initially, they recognized the need for commitment and practice, however, there was not enough follow-up education to acquire the knowledge necessary to become truly committed or effective change agents.

#### **Espoused vs. Actual**

As indicated above, the analysis of espoused personal actions of the top leaders showed that they recognized the need to participate and take an active part in the ESC and Senior Management QMB and to serve as role models. However, the data reported earlier and the researcher's personal reflections do not provide an explicit statement of actions associated with the role model duties. Implicitly, the top leaders recognized this to mean being visible and active in

support of the TQM principles, however, it is the researcher's opinion that this was not clearly understood.

They recognize the need to be customer focused, oriented to process improvement and measurement and practice a more participative management style. Review of the various surveys, studies and assessments reported in chapter 13 reveals that most employees and managers do not believe that the top leadership was very effective as role models and leaders of the TQM principles.

The roadblocks to implementing the espoused seems to fall into three areas: lack of recognition of the scope of change associated with TQM, inadequate training provided to top managers and cultural issues of a leadership orientation.

There is no indication that the top leaders recognized the enormous changes to leadership and management styles and techniques necessary to permit adequate adoption of TQM. This is a key issue, for the data reflects that the leaders tended to treat TQM as another project or thing to do. There was no recognition that a second order change in their own actions was necessary.

There is an almost total lack of education provided to the senior managers involving the concepts and principles of TQM, especially from a leadership and management viewpoint. It is noted that there is a lack of infrastructure and opportunities offered by the Navy for educating their managers, and by academia for the top leaders. The Navy's

senior leader's course has only been available for about two years and is less than a week in duration. The Navy depends on "just-in-time" training by the TQL Coordinator to support the education of the top leaders. While, perhaps realistic from an asset and getting started viewpoint, this is not likely to provide the degree of knowledge needed to foster the commitment and application necessary. Academia tends to provide training for the working manager in the form of short courses which are more appropriate to "doing TQM" than acquiring profound knowledge.

A final concern is that the researcher believes that the data suggests some basic cultural issues at NSCL that are leadership-oriented. There appears to be a "them vs us" attitude by lower levels directed to higher levels within the hierarchy. This may be due to the Navy's leadership paradigm which fosters unilateral and autocratic decisions. Further, the culture seems to focus on optimizing smaller work units, which is counter to the necessary organizational alignment. A formal study of the cultural aspects of the organization as part of the implementation of TQM is needed.

#### **ACTION'S BY THE LEADERSHIP -- CHANGE AGENT'S ROLE**

##### **The Leadership Process**

##### **Ideal vs. Espoused.**

The leadership process proposed by Kotter, discussed above and shown in figure 26, represents the ideal situation.

As indicated, the top leaders are responsible for creating an agenda for change (deciding what to do), building a network to support the change and providing the alignment and motivation of those within the network to allow the change. This is the classic role of the change agent.

The data in chapter 13 indicates that there is little evidence that the top leaders recognized this as a process. This is interesting because the espoused VPC eight-step process is designed to create the vision, strategic planning, networking and alignment required by the ideal. However, the espoused methodology made the Senior Management QMB collectively responsible for the process. Through the act of participating in the development of the visions and other policy elements, the responsibility for this effort was diluted beyond the top leadership. Thus, while the espoused process closely followed the ideal situation, it was compromised by making its development the responsibility of a much larger group. The ideal situation would have been for the top leaders to feel such a personal sense of responsibility for the policy plans that they would be committed to, and support them with zeal. This level of commitment and sense of responsibility apparently never occurred, perhaps because of the dilution discussed above.

The TQL and TQM processes can be seen to be somewhat at odds regarding the development of the policy planning. The TQL process suggests that the ideal methodology would be to

have the top leader(s) develop the vision and strategic planning and then allow the other senior and mid-level managers the opportunity to adjust and refine the policy plans as part of their buy-in/alignment process. The ideal processes, from a TQM perspective, would be for the top leaders to work with the other stakeholders in the actual development of the policies, from the very beginning.

It is interesting that the data shows that the process started out consistent with both the ideal and TQL processes. The Commanding Officer and Technical Director, as the top leaders and with the assistance of VPC, developed an initial planning strawman for the ESC and Senior Management QMB's refinement. This strawman did not carry the force of the senior leaders' development of policy inherent to TQL. After the initial start and until 1991, the previous year's policy planning efforts served as the base line for refinement during the annual recycle. Thus, the senior and mid-level managers maintained their participation in the policy planning process and were afforded the opportunity to continue their commitment. Starting in 1991, the mid-level managers were not included in the process, nor were the policy plans adequately promulgated and used to allow buy-in and compliance.

**Espoused vs. Actual.**

As indicated above, the espoused and actual leadership processes were in close agreement until late 1991. The Senior Management QMB collectively exercised the overall leadership

process espoused. After May, 1991, the data indicates that the espoused process was only partially implemented and then ineffectively. The December, 1991 top leadership retreat was not in accord with the leadership processes as it had evolved and was espoused. The change in process was not facilitated by an outside consultant, nor was its impact thought through.

The development of visions and guiding principles also departed from the previous methodology by being formatted to be consistent with that of the sponsor's, the Naval Sea Systems Command. Finally, there was a lack of alignment between members of the ESC. One example of this misalignment became apparent during the December, 1991 retreat. One facet of the ESC thought the vision and planning should be focused on reducing the size of the organization to meet the Navy-wide downsizing, while another facet felt that the work base and degree of market penetration could be expanded so that downsizing of NSCL would not be necessary.

This lack of alignment represented a profound impasse for the development of the organization's vision and business strategy. The strategic and tactical planning to gracefully downsize vs. maintain or grow through increased market penetration are at opposite ends of the spectrum. In reality, they are mutually exclusive. Both facets of the argument are seen by the researcher as valid, when viewed from a single reference or frame as described by Bolman and Deal. There was significant pressure to downsize within the Navy and it was

not politically acceptable to most senior management to talk of growth or maintenance of size. Thus, from a political frame, downsizing was the appropriate vision. From the structural frame, the facts suggested the potential for increased market share. The geographic advantage, expertise and cost factors represented tangible issues which could be used to gain market share at the expense of other government agencies and contractors, thus saving local jobs. From a business and local view of human resources viewpoint, growth seemed a realistic and attainable vision.

The final result was a compromise in which the organization would "right-size". Unfortunately, this did not provide a clear vision. Depending on an individual's frame of reference this could mean entirely different things and require significantly different actions. A far more productive outcome would have been for both groups to be willing to reframe or work in both frames and adopt a vision that would take the political realities as well as the business opportunity into consideration.

During the ESC meeting of December, 1991, there was inadequate recognition of the degree of change and effort needed to adequately restart the program. It is the researcher's recollection, validated by several ESC members, that there was no recognition, and thus no consideration, given to the new formatting of the policy development procedures. This resulted in not enough time being allotted

and no specific approach to align the mid-level managers to the new process developed. Likewise, the lack of alignment regarding downsizing plagued the discussions. For a number of reasons, perhaps centered on the lack of consistency of purpose and inability to reach agreement on vision, the organization has not recovered from this recycle.

### **Customer Focus**

#### **Ideal vs. Espoused.**

The ideal TQM process, from a leadership viewpoint, is for the top leader to recognize that their efforts must be centered on satisfying both internal and external customers. The internal customers are their immediate and other subordinate employees and the organization as a whole, and the outside customers are those people and organizations which receive the products and services of the organization. This can include both the immediate receivers, as well as those others who are impacted. Top leaders must work with their peers in the external customers' and other stakeholders' organizations. This cannot be delegated, since subordinates would not be working from an adequate power position to affect the necessary coordination within the Navy culture.

The espoused position regarding the top leaders' customer focus addressed the external customers and stakeholders, but did not consider the internal customers. The data indicates that there was little observation of the top leaders looking at the organization, as a whole, and their subordinates as

customers of their leadership and management processes. Obviously, some of the top leaders have exercised internal focus to some degree but it is not seen as an espoused policy of the organization. The data consistently reflects the tendency of the department heads to view their department, instead of the entire organization, as their customer. This shortcoming is believed to be due to the current management style prevalent in the entire Western economy and the lack of focus on this issue by the original training. This resulted in the organization operating from Pava's incremental non-planning niche. This will be discussed later in this analysis.

**Espoused vs. Actual.**

The data reflects little difference between espoused and actual customer focus by the top leaders. Further research is necessary to determine if the customer focus was in adequate breadth and depth to truly satisfy the requirement, however, the top managers were clearly involved with external customers, with a focus on recognizing and satisfying requirements and obtaining needed assets. From an internal customer focus, many of the top leaders, as part of their inherent management style, may have used the metaphor of provider/customer but this is not clear to the researcher.

## **Employee Participation and Empowerment**

### **Ideal vs Espoused.**

The ideal for employee participation and empowerment is for managers to carefully manage employee involvement. There is general agreement within the literature that the ideal is for each member of the organization to personally make those decisions that are appropriate to their level and knowledge. For TQM this requires a bias toward the participative management styles discussed in chapter three.

TQM thinkers propose that all decisions should be made at the lowest possible level, by those that have the most information. It is recognized that top leaders frequently do not have the information or specific process experience to make decisions, especially for improvements in quality of daily work.

The literature also indicates that for participation and empowerment to occur, the employees must be ready -- by reason of training and alignment to achieve the desired vision.

The implementation of participation is espoused to be through use of the command's TQM processes at NSCL. All senior and mid-level managers are involved with the policy-planning process through their involvement with the Senior Management QMB. As indicated in figure 21, department management (including the first, supervisory level) are part of the department QMB. As such, they participate in the

department's planning process in order to determine the needed local changes to become aligned to the command policy.

The espoused processes for improvements in the quality in daily work involve the working level employees following the QUALTEC methodology, redesigning for improvement. NSCL espouses to place decision making at the lowest possible level in the hierarchy and permits employees' teams (branch QMBs and PATs) to make any change which only affects their work group and does not require additional assets.

There was an espoused recognition that employees had to be familiar with the concepts of TQM, especially as they apply to the changes in quality of daily work. This resulted in the requirement for team leader or member training for all employees at NSCL. The data does not indicate that the need for alignment, especially to the degree to reach commitment versus compliance, to the objectives associated with the change was recognized or espoused.

In summary, there is good indication that the espoused employee participation and empowerment processes are closely aligned to the ideal.

**Espoused vs. Ideal.**

The data reflects that the espoused processes, as described above, were implemented and in progress until sometime in 1991. After that point, the data shows significant waning in most of the TQM specific activities, including employee involvement. There is, however, indication

that some employees and groups have made many of the principles of TQM, including involvement, a part of their normal day-to-day work.

The Presidential Award for Quality Self-Assessment data shown on figure 15 indicates that NSCL has reached the second level of performance involving employee empowerment and teamwork. Thus, there is the belief that NSCL has the beginning of a sound, systematic TQM approach in some parts of the organization.

The data also reflects that little real application of the policy planning and the process of improving quality in daily work are currently in progress. This would imply that while those involved in the Presidential Award self-assessment believe that they have a sound, systematic approach and the data shows some are following the concepts, there is relatively little empowerment and participation currently being accomplished. The surveys, studies and assessments clearly indicate that most employees believe that this is due to top leadership's poor execution of their aspects of the process.

#### **Relative Priority of TQM Implementation and Asset Allocation**

##### **Ideal vs. Espoused.**

The ideal situation is for the top leaders to clearly and forcefully espouse and implement the concepts of TQM, recognizing that they are not implementing a project. Rather, they are changing the culture, focus and processes of their

organization and their management style. This represents a long-term investment in funds and other assets and a commitment to life-time changes on their own part.

The data reflects that NSCL's top leaders initially espoused that the adoption of TQM has an extremely high priority, however, this appears to no longer be true. The top leaders no longer publically espouse the system, there is no policy planning in progress, few employee-initiated PATs are working and there are few assets allocated to implementing TQM.

The process appears to continue to receive Navy-wide emphasis and there is no apparent reason for the waning of the process other than a lack of constancy of purpose by the top leaders. It was reported in chapter 13 that one mid-level manager had stated the belief that the waning of the top leaders' support to TQM was due to the fad nature of most management practices. He believed that the organization should now sit back and allow the TQM seeds planted to grow. This metaphor ignores the fact that farmers are not finished when they plant their seeds, rather they must continue to cultivate and care for their crop. The crop metaphor may be a useful one to implementing TQM, when it is realized that crops, like TQM, requires continuous application of the equivalent to the PDCA cycle and if the seeds stop being planted and nurtured annually, the process of harvesting stops.

### **Espoused vs. Actual.**

The actual assignment of, and espoused, priority and assets for adopting TQM appears to have closely tracked with the waning of the entire process. As seen elsewhere, there is frequently a difference between the espoused and actual, however, in this case the difference does not exist. The lack of asset allocation, especially for employee salary, is seen by many first and mid-level managers as a statement concerning the priority of TQM. A cultural expectation is that important projects are properly funded, not hidden in other funded tasks.

Again, the reason may be a lack of constancy of purpose by top leaders, however, this seems to be an oversimplification. It is also likely that it is in response to the lack of leadership recognition and appropriate personal and change agent role actions cited earlier. If the TQM process is to be revitalized, the espoused and actual priority assigned to implementation must be addressed.

### **Senior Leadership Alignment and Team Work**

#### **Idea vs. Espoused.**

As indicated in chapter 14, the ideal situation is when the top leaders are aligned to meet the same organizational objectives and are willing to subordinate or adjust their personal goals accordingly. This requires that they act as a team and be mutually supportive. The data in chapter 13 reflects that this has not occurred. The top leaders, while

not espousing non-alignment, do not appear to espouse alignment.

**Espoused vs. Actual.**

The discussion in the case study is very critical of the lack of actual alignment among top leadership. The researcher reported interpersonal friction and distrust; lack of alignment between objectives; differing management styles; conflicts over roles; and disagreements of a philosophical nature went unchallenged during the validation process of the case study.

The causes for these difficulties were seen to possibly be cultural in nature and based on the use of the political frame, with its win-lose and control orientation, by most of the top leaders. If the organization is to successfully adopt TQM, this issue must be overcome. It was reported in part I that Deming and Senge both state that an organization's key elements, including their top leaders, must be aligned to the same objectives if they are not to waste energy and assets and sub-optimize their organizational performance. This is seen as a critical roadblock to implementing TQM and will be discussed, in detail, later in this analysis. It also impacted on the ideal policy planning and deployment policy.

## COMMAND LEVEL TOM PROCESSES

### **Policy Planning and Deployment**

#### **Ideal vs. Espoused.**

Figures 27 and 28 in chapter 15 provided the ideal policy planning and deployment process. As discussed earlier, it brings together the advantages of the VPC, QUALTEC and Navy TQL methodologies and the work of Pava. It was seen as compatible with the VPC training, providing the more structured approach associated with QUALTEC and the leadership emphasis associated with TQL. These processes are based on Pava's Master Planning niche, with its highly rational and analytical processes. The processes also recognize that there is a lack of alignment between managers and attempts to limit those necessary to develop the initial vision and supporting issues -- thus some of Pava's work on incremental non-planning has been considered.

NSCL espouses to follow the VPC Eight-step process shown on figure seven. The difference between the ideal and espoused is important. The espoused process relies heavily on the Nominal Group Technique to reach consistence between approximately 20 managers. It stresses the active participation of the mid-level managers in the actual development of policy planning. The organizational analysis, planning constraints and strategic plans portions of the VPC model are generated by the NGT, with its brainstorming and prioritization techniques described earlier. The researcher

has observed that the NGT are consistent with Pava's incremental non-planning processes, especially for the voting and bargaining. However, the results are often compromised and decisions are based on inadequate knowledge and special interest by the participants, all of whom have the same vote. While very useful for gaining participation and rapidly gaining agreement between divergent groups, the results are compromised, especially compared to the ideal method proposed.

The policy plan in the ideal process is the result of a structured investigation and analysis of the voices of the business and customers which are used by the top leaders to develop their vision, planning assumptions and guiding principles. Then critical success factors and fundamental objectives are also developed, systematically, by a management team and validated by the top leaders and Senior Management QMB. Participation and commitment are obtained and facilitated by the use of study teams to conduct the systematic studies and the validation of the Senior Management QMB. The realities of the need to use the bargaining and voting techniques associated with the non-alignment are limited to a smaller number of participants at the ESC for the visioning and to few issues for the Senior Management QMB. In the future, as greater alignment occurs, this process should be revised to allow greater involvement by mid-level managers in actually develop the vision, providing the Commanding Officer is willing to accept this participation.

This policy planning process somewhat addresses the framing problems between managers discussed earlier. The process is developed from the structural frame shown on table six, with planning and decisions based on rational sequences. The process supports the decision-making to follow all four of the frames, involving only six individuals. Likewise, during the Senior management QMB validation and development of fundamental objectives, the processes focus on both the structural and human resources frames, allowing rational sequences to produce the decisions in an open process which foster commitment. It is seen as consistent with Pava's Master Planning niche for systems change discussed in part I and expanded upon later in this analysis.

The current process is for the entire Senior Management QMB to develop the visions, planning assumptions and guiding principles. This represents approximately twenty individuals, each working from their own frames, which the researcher believes to be primarily political. The quantity of people, working in conference, is believed to be unproductive and the outputs too much of a compromise. The reality is that the change system must recognize the lack of alignment between senior managers and also use Pava's incremental non-planning niche.

#### **Espoused vs. Actual.**

The data reflected that the espoused process was closely followed until 1991. At that time, the process was changed

and the required meetings to obtain mid-level and department level QMB alignment were not held. There appears to be no policy planning conducted at this time.

The roadblocks causing this difference in espoused and actual implementation may also apply for the ideal process, if adopted, as part of the process revitalization. It is important that they be recognized and addressed.

The data in chapter 13 suggests that the Commanding Officer was not adequately knowledgeable or comfortable with the VPC methodology and the Technical Director was too busy to document the process. This appears to be an oversimplification. Taking the case study in total context, there are indications that the lack of constancy of purpose within the entire top leadership, the lack of alignment between managers, various cultural issues, lack of priority and lack of role modeling and leadership by the entire top management team are all contributing factors. These factors may be symptoms of the bigger problem associated with inadequate leadership preparation and involvement cited earlier. This issue can be addressed by implementing the leadership's personal and change agent responsibilities reported earlier. The researcher believes that if these are addressed and resolved, adequate policy planning and deployment will be a natural by-product.

## Quality in Daily Work

### Ideal vs Espoused.

The ideal process for obtaining quality in daily work is shown in figure 29. This process was developed by the researcher, based on the QUALTEC and Boyette models currently in use within the organization. This process emphasizes using a customer focus to identify key processes, management involvement and the systematic QUALTEC application of the PDCA cycle.

The QUALTEC method, with the exception of the management review and link-pin processes, is the espoused process by most of the organization. These elements of the process were not provided as part of the training. The QUALTEC process follows the PDCA cycle, is consistent with the Navy's TQL process and does not violate the VPC methodology. One division, Code 610, recognized that the process did not adequately address the issue of choosing the most critical processes to improve. Based on this, figure 25 was developed and is being actively followed.

The only major difference, from an organizational viewpoint, between the ideal and espoused methods are the management review and customer focus steps. The ideal method requires management representation on the PAT/QMB (the link-pins) and formal approval at two points in the process. This approval can only be made when the manager is able and willing to provide adequate assets and support to the proposal. This

implies that he/she has the authority, from her/his seniors and peers (assigned or coordinated), to grant the approval. The ideal process also requires a customer focus on critical processes which is not included in the espoused and assures that the PATs address their actions toward improving the quality and acceptance by the services provided to the key customers.

#### **Espoused vs. Actual.**

Chapter 13 reports that there has been a significant reduction in the number of PATs actively following the process. While there are indications that some elements of the organization may be using parts of the total methodology, it is observed that the actual performance is significantly different from the espoused.

The employees and managers indicate that the primary roadblock to TQM performance is the lack of visible commitment to TQM by the top leadership. This would imply that the culture of the organization is such that people believe that management-driven activities are only important if the top leaders are actively displaying commitment, as role models and participants. There is an adage among senior managers that "you get what you watch for". People are willing to comply with the bosses bidding, if they believe the boss really wants it and is willing to personally show this desire. This appears to be a key issue throughout this research and must be

addressed as part of the formulation of a revitalization strategy.

### **Organizational TQM Infrastructure**

#### **Ideal vs. Espoused.**

The ideal TQM organizational infrastructure for NSCL consists of the ESC, Senior Management QMB, Department and Branch QMBs and supporting PATs, coordinators and facilitators. The roles of each of these bodies are described above and need not be repeated. The infrastructure uses a method of interconnecting the various boards and PATs by the use of a coordinating executive, a link-pin, which belongs to both the senior and subordinate units, representing and coordinating each to the other.

The infrastructure must also include supporting issues such as an information processing system which is networked throughout the organization to support both recording of TQM improvements and support the financial and day-to-day operations of the business, trained facilitators and their training aids and the willingness to allocate other tools and assets as necessary to facilitate the TQM activities.

This infrastructure and the associated roles have been implemented, as espoused. The data contained in chapter 13 does not reveal any differences of substances, other than the responsibilities of the coordinating executive or link-pin. It is interesting to note that this function is included in figure 21, however, there is no indication that it was

recognized as a management work function, with the associated responsibilities for coordination, representation and collaboration. The development of an information processing system to support recording TQM performance and the TQM library was espoused as part of the Five-year TQM Implementation Plan developed during the first recycle discussed in chapter 13.

**Espoused vs. Actual.**

The data reflects that the actual execution of the process was initially aligned closely to the espoused. The QMBs are in place and the processes are available to establish the PATs, however, since 1991, few are actively working and few QMBs are actively meeting. A review of the computer-based information system revealed no apparent additions of data in the past year and the TQM technical library is very poorly utilized.

The reduction of dedicated and near dedicated staff, especially at the Deputy Technical Director level is seen as a significant deviation from the initially espoused methodology. These TQM coordinators and facilitators serve as a catalyst to the entire process and help the managers maintain the constancy of purpose proposed by Deming.

The difference in the espoused and actual are believed by the researcher to be symptomatic of the entire TQM execution. Senior leadership is not personally involved in the processes and day-to-day TQM activities and is not making it happen.

The early quote by Rosabeth Moss Kanter comes to mind, where she said that organizations are like automobiles -- to make them go you must have a driver and someone to step on the gas. This is the function of the top leadership and it is just not being done.

### **Employee Performance Appraisal and Recognition**

#### **Ideal vs Espoused.**

The ideal performance appraisal system recognizes and reinforces positive behavior. It recognizes the realities of individual motivation and does not address variation in performance which is inherent to the process, the support received from management and quality and nature of services received as input.

NSCL's espoused system, developed in 1991, removes the arbitrary rating associated with the previous process, by giving nearly everyone within the organization the same rating. The case study did not indicate an espoused process for addressing recognition of positive behavior other than informal observation.

The lack of a formal methodology and formal and informal espoused processes of recognizing and rewarding positive behavior is seen as a roadblock to execution that needs to be addressed.

#### **Espoused vs. Actual.**

The espoused process of giving everyone the same performance evaluation and rating has been followed and the

data reflects few individual awards. The emphasis appears to be on group awards, where they are given. There are no systematic processes for top leadership to recognize and reward positive behavior, other than personal observation and recognition. Until 1992, this was accomplished by periodic program reviews by senior managers, however, these were discontinued due to more pressing matters and lack of interest by many involved.

A more systematic study of this issue, outside of the pure leadership factors, is needed. There are cultural and legal ramifications which must be considered. From a TQM involvement, the literature research in part I above frequently referred to employees asking, "what's in it for me?" This, in view of our Western culture, appears to be a valid question which should be addressed as part of the revitalization.

## **OTHER OBSERVATIONS**

### **Introduction**

The above analysis recognizes numerous differences between ideal, espoused and actual implementation. Each difference serves as a starting point for the formulation of a revitalization strategy for TQM at NSCL. The organizational fronts provided by Sink and Monetta suggest that the leadership issues discussed are all part of a larger system.

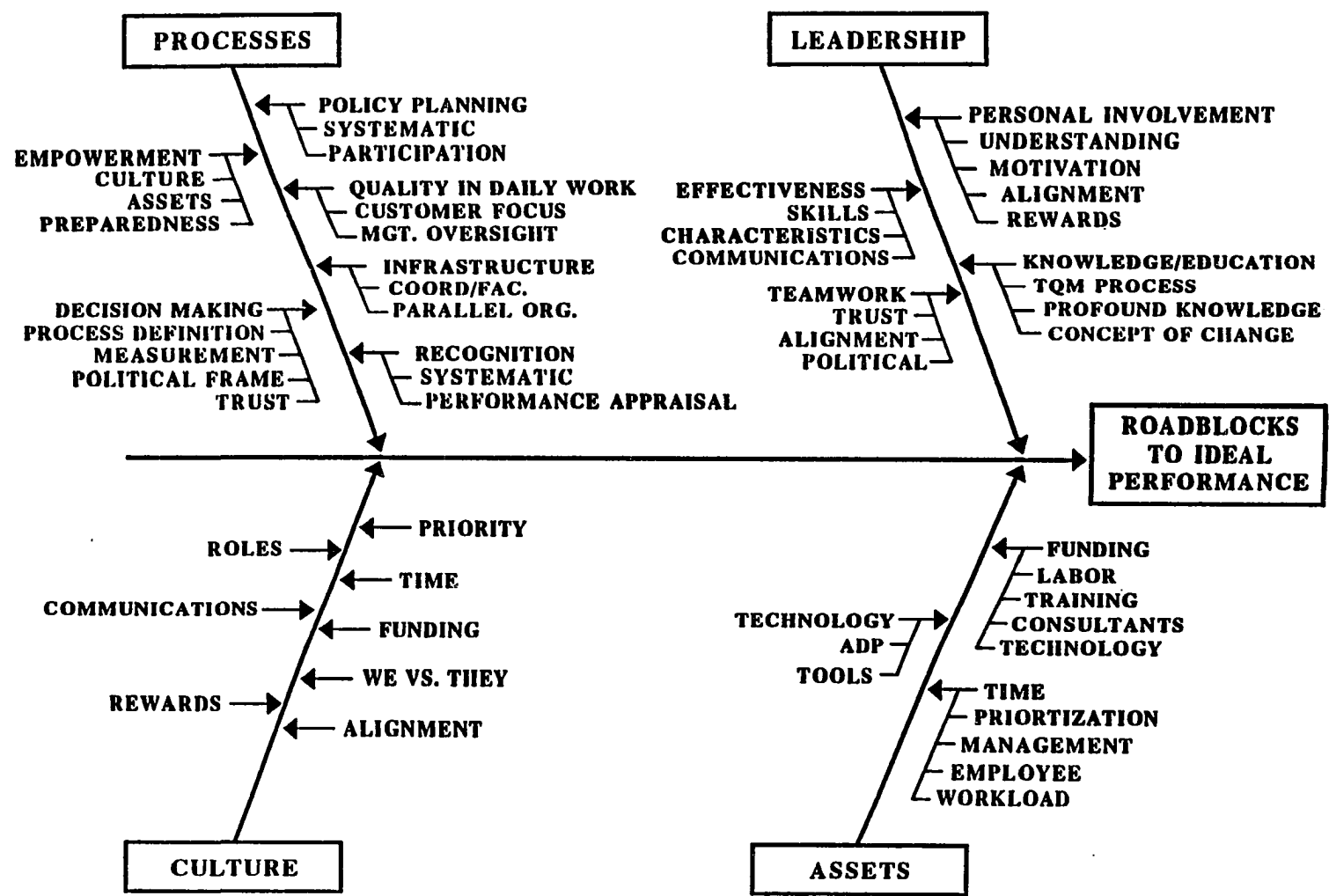
In order to effectively implement TQM, the top leaders must devise strategies and support changes in each of these fronts, which include: (1) planning, (2) infrastructure, (3) culture, (4) measurement, (5) education and development, (6) motivation, (7) satisfying stakeholders and (8) technology. Each of these elements is viewed as having a leadership element and has been included in the ideal processes and implementation included in chapter 14. The data suggests that at various points of implementation, NSCL has focused on most of the fronts, but seldom more than two or three at a time. There is no indication that the cultural and motivational fronts have ever been systematically considered nor has implementation planning been developed to address these issues.

### **Roadblocks**

A review of the case study in its entirety indicates that roadblocks to implementing TQM exist in at least four categories: leadership, TQM and management processes, culture and asset allocation. Figure 30 summarizes, in a cause-effect diagram, the researcher's identification of the various roadblocks. Only two of the categories, leadership and the associated processes, were addressed to a significant degree as part of this research.

**Leadership.** The analysis indicates that the greatest roadblock to implementing TQM is the lack of adequate

Fig. 30. Cause and Effect Diagram of Existing Roadblocks to TQM Performance



involvement and "leadership" (in its broadest definition of deciding what to do and then getting it done). A review of part I of this research suggests four areas under leadership which relate to this category: the lack of personal involvement and top leader's effectiveness; teamwork and alignment issues; and inadequate knowledge by the senior leaders and managers (division head level and above).

Lack of personal involvement in the change process is seen to be based on four reasons: (1) lack of top leaders' understanding of what they must do, (2) lack of motivation to make the effort, (3) being non-aligned and therefore not committed to the changes and, finally, (4) inadequate personal rewards. Any combination of one or more of these factors is believed to represent roadblocks to TQM implementation at NSCL.

The issue of team work among senior leaders is a theme that appears throughout the case study. The senior leaders are seen to be non-trusting of each other, non-aligned for issues which will sub-optimize their own or their department's agendas and primarily working from only a political frame in their relationships. This overall issue is seen to have a profoundly negative impact on the united front necessary to implement organization-wide changes.

The issue of the top leader's individual and group effectiveness suggests the question -- Do the top leaders demonstrate the skills and characteristics necessary to

effectively communicate and align the organization's people and others to their visions? The data suggests that they have not effectively demonstrated them. This may be a subset of the personal involvement issue, however, the data reflects that the alignment efforts are just not being accomplished. Covey compared leadership communications to an iceberg, where the verbal statements were analogous to the exposed parts of the iceberg. It is what people hear. The non-verbal actions of the communicator, like the hidden part of the iceberg, are seen to be far more important than the exposed portions. The top leaders' personal actions speak louder than their words. The adage of "walking your talk" is seen as a total communications effort. To fully communicate, the leader must talk and follow-up by exhibiting appropriate supportive actions. This appears to be a major roadblock .

The TQL model for leadership implementation stressed the need for the leader to have sufficient knowledge of the Deming concepts and the TQM processes that they develop a belief in them, to a level that they adopt them as the right thing to do. The data clearly shows that, to a large degree, the top leaders have not been afforded, nor have they made, the opportunities to obtain the profound knowledge. This can be seen as a "chicken or egg" exercise, in which it is only through obtaining the knowledge that an understanding for the need and associated motivation becomes apparent. In any case, it is a top leader(s) issue. The Commanding Officer and

Technical Director must (autocratically if necessary) make, implement and personally lead the decision that top and mid-level managers will obtain sufficient training to acquire the required knowledge. Until the leaders understand the concepts of organizational change, it is unlikely that they will be truly committed and effective.

The last issue, senior leadership knowledge and education, may be the most important issue in the entire study. If the top leaders become possessors of profound knowledge, they are far more likely to become personally involved, exhibit teamwork and become effective in their efforts.

**Management and TQM Processes.** The research, focusing on leadership functions, included those management and TQM processes with which leaders directly interface. These are shown on figure 30 and are separated into six processes: policy planning, quality in daily work, infrastructure, employee recognition, empowerment and the decision-making.

The data indicates that both the policy planning and quality in daily work processes were not as effective as they could have been. The managers, when interviewed, indicate that the problems were primarily due to lack/inadequate execution and/or management oversight/involvement. The processes themselves, while needing improvement, are not seen to be a major contributor to the lack of TQM performance.

Pava's work again suggests this to be a top management alignment problem, vice a problem with the processes.

The espoused infrastructure process was also seen to be effective and very close to the ideal. Again, the data indicates that the primary fault is not using the processes available and not adequately staffing the coordinator and facilitator positions, which would have served as a catalyst for the entire process.

The literature reported Pieter's opinion that establishing a parallel system to support TQM is a mistake. The TQM processes, according to Pieter, should be embedded as part of the day-to-day work. Pieter argues that having a special TQM meeting suggests that improvement is not part of the organization's normal work. The literature does not normally support Pieter's work, although it seems applicable. The research did not dwell on this issue and there is no data to support a conclusion.

The process of empowerment was seen to be embedded in the infrastructure issue. The data reflects that the primary mode of empowering employees is for them to serve on the QMBs and PATs. Again, the data suggests that the process is adequate to support the issue of empowerment, however, insufficient execution of the infrastructure served as a roadblock to allowing full participation.

The literature also indicated that empowerment cannot occur if management does not provide adequate assets and

management support. Employees are not empowered if they lack the resources and support to implement their actions. The data reflects this to be a roadblock, especially, funds for salary to allow the employees to participate in the process.

The decision-making process, as followed by NSCL, is related to the infrastructure and empowerment issues to a degree that they could have all been included under one heading. The data illustrates that the decision-making process is to empower the QMB or PAT to make appropriate decisions. However, the employee comments included in the data and the researcher's own observations show that employees believe that management often ignores or overrules their recommendations, without adequate justification. These issues serve as major roadblocks.

**Culture.** Significant additional research in the entire issue of culture and its impact on TQM is necessary, however, it is outside the scope of this dissertation. The following cultural issues are suggested by the data and the researcher's observations:

- (1) The data suggests that the culture believes that important things are done quickly (like a repair on a ship) and long-term issues, such as TQM, are not all that important to the mission of the organization.
- (2) Priority and important issues are given management attention and allocated adequate funding and time for their accomplishment.
- (3) Important issues have their own dedicated funding.
- (4) The data suggests there is "we vs. they" culture between employees and management and between levels of management.

(5) The culture does not appear to support alignment of sub-elements of the organization. Each element believes it is, for the most part, autonomous and does not believe sub-optimizing its own performance for the greater good is a valid issue.

(6) The culture defines roles of the various levels of the organization (management and non-management) in ways which inhibit empowerment and teamwork.

(7) The culture does not foster communications, especially when recognizing the conflicts and desire for autonomy prevailing within the organization.

(8) The culture involving performance evaluation and rewards is not clear, other than many segments of the organization are unhappy with the current process.

Each of these issues present, to some degree, roadblocks to implementing TQM. Again, these should be addressed by future research.

A major issue is the Navy's leadership style which is embedded in the tradition and culture of the Navy. The promotional system, stressing that the leader must "make a difference" and the accountability/prerogative issue both represent significant culture issues which impact on implementing TQM. It is recognized that the leadership culture does stress the top leader serving as a role model, which facilitates the proposed processes, once he/she becomes committed to TQM. The ideal policy development system proposed in this dissertation has taken these cultural realities into consideration, however, further research may reveal improvements.

**Allocation of Assets.** The data, while incomplete, reflects inadequate allocation of assets to support TQM. The

allocations of funding and employee time are, for the most part "hidden" in the "real work" of the command and is therefore not accurately quantified. As indicated above, the results of this method of support appear to be counter to the culture of the organization and sends negative signals about the importance of TQM. The data indicates inadequate assignment of TQM coordinators and facilitators and funds for training. During the implementation of TQM the organization's computer-based management and financial systems were upgraded, however, it is the researcher's observations that the ADP system development was significantly compromised by the lack of funding.

A major issue of assets is the lack of time to "do TQM" by all levels. The managers believe this to be a major issue and is tied to the concept that TQM is something extra, not part of the daily routine. The processes and "state of TQM art" support this belief. Adequate implementation can only occur when employees believe that "doing TQM" (systematically improving quality and performance) is part of their day, like reading the mail or coordinating a project. Conway's previously reported work indicates that about 40% of most peoples' time is spent on non-value added activities. This suggests a strategy for addressing this roadblock -- identify and stop doing non-productive and time wasteful work, thus freeing up time to build the organization.

### **Strengths of the Current Implementation.**

The data reflects that NSCL has the beginning of a sound, systematic TQM approach in some parts of the organization for some issues and a well-planned, sound and systematic TQM approach implemented in many parts for many other issues (see tables 16 and 17). Thomas' research shows good acceptance of the TQM concepts by the working employees and the researcher has observed that the organization has a great deal of customer focus and is composed of outstanding employees and managers.

The suggestions contained in the ideal implementation purposely attempt to build on this base, making no radical departure from the current processes, only improving the senior management's involvement.

### **Trends and Leading Indicators.**

The proposal to this dissertation indicated the desirability of leading indicators which could serve to identify trends regarding TQM performance. Unfortunately, the data, as maintained by NSCL, is not sufficiently quantified to provide this analysis. However, the data and analysis suggest that trends regarding funds allocated, frequency and number of meetings focusing on "doing TQM", numbers and activity of coordinators and facilitators, degree of employee and management training and currency of policy planning, all could serve as leading indicators if the data was maintained. This suggests that an organization implementing TQM should

establish measures which could provide indicators of TQM activity.

**CHAPTER 17**  
**ANALYSIS OF METHODOLOGY ISSUES**  
**VALIDATION OF THE METHODOLOGY**

The research methodology was that of a formative evaluation for the purpose of revitalizing an existing program. The results of the research validate this method. In fact, it is found to be inherently necessary that the researcher totally evaluate the current execution of the program, in order to formulate a plan to make the meaningful improvements required of a revitalization effort.

The gap analysis method of comparing ideal to espoused and espoused to actual fully supported the formative evaluation. The gap between ideal and espoused was found to represent deficiencies in the design of the implementation process, while the other gap represents deficiencies in execution. In both cases, analysis of the cause-effect relationships associated with the differences allows the formulation of a plan which addresses both issues.

**THE LITERATURE SEARCH**

Both the results of the methodology portion of the literature research and the espoused methodology recognize the

multi-disciplinary nature of identifying the body of knowledge associated with TQM implementation. Chapter 11 recognized and focused on the research questions, leadership perspective and unique aspects of NSCL's earlier implementation. The data associated with the methodology finding recognizes the difficulty in maintaining research focus when there is an extensive body of knowledge. Thus, from an analysis viewpoint, there were few meaningful gaps between the ideal and actual efforts. The actual data did recognize the impact of the large degree of inter-relationships among the various factors of TQM and leadership. The process of developing a strawman, once a critical mass of information is identified and then revising it as more data is identified, was seen to be useful.

#### **THE DESIGN PHASE**

Analysis of the data in chapter 14 suggests that the espoused design was not sufficiently detailed to facilitate the actual research. Rather, the design evolved throughout the research -- especially that part dealing with the impact of the researcher being a knowledgeable insider. The actual design in chapter 11 was reviewed and found to be based on the twelve design issues identified in chapter nine. Unfortunately, the design was never stated explicitly, in operational terms, in chapter ten. If it had, a somewhat

tighter research plan may have been developed. This is seen as an oversight of the researcher.

It is noted that neither the initial literature research nor the espoused design phase anticipated the difficulties found with the process of exploratory research by an informed insider. The initial methodology of developing a picture and associated explanations through exploratory-based mutual mirroring was unsatisfactory as reported earlier. The methodology evolved during the research and resulted in a new design which addressed the informed insider issue.

#### **DATA COLLECTION**

The ideal and espoused data collection processes were based on identifying and using information-rich sources. They stressed using multiple data sources, following collaborative or mutually looping and mirroring methods. The analysis shows that the data collection process closely followed the final espoused process shown in figure 19. The data was collected from in-house documentation and records, surveys and information-rich interviews.

The major difference between the initially espoused and actual methodology is the development of the method of having multiple reciprocators validate the observations of the researcher by interviews or by "chopping" strawman documents. This method was not found in the literature and may represent

a new methodology. The metaphor of "chopping" may be unique to organizations such as NSCL, however other, similar metaphors may be equally applicable. For example, the metaphors of a teacher grading exams; a colleague commenting on a developing research paper or a parent checking their child's homework may all equally apply.

The analysis shows that the value of the research diary was seen in the actual execution of the research, however, the gap associated with constancy of using the diary represents a roadblock that must be guarded against. The recognition of the need for self-discipline and need to address even mundane issues was not adequately addressed in the literature under the memoing concept nor in the espoused plan.

Reframing from the political to the rational system and human relations frames was very effective. It resulted in data gathering without the conflict that would have been highly likely if it was gathered in the political frame. It was seen that there was a loss of recognizing the "why" behind actions, which questions of a "personal motivation" nature may have provided. This compromise minimized conflict and seems to have been reasonable and effective, without major impact on the results.

## DATA ANALYSIS

The initially espoused methodology anticipated a greater amount of model building through analysis of gathered data than was realized. There was inadequate recognition in both the literature findings and the espoused plan of the information-rich situation which exists when an insider is consciously conducting research on situations in which he has been personally involved. The reflective looping and mirroring process that evolved during the data gathering and analysis stages appears to have greatly facilitated the research.

Combining the gap analysis associated with both planning and actual execution was more efficient than conducting them separately. It is noted that the literature review emphasizes recognition of the difference between espoused and actual, but did not address the differences between the ideal or academic methodology and that espoused. Both gaps are important. The difference between ideal and espoused represent a planning gap, while the difference between espoused and actual is due to roadblocks hindering implementation. Both have underlying causes which must be addressed during a formative evaluation.

Reframing from the political and cultural to the rational system and human relations frames was discussed in detail in chapter 14. In general, the reframing is seen to be very effective, resulting in data gathering without the conflicts

that would have been highly likely if it were gathered in the political and cultural frames. It was seen that this was accomplished at the expense of a more complete picture or story. However, it is believed that the picture resulting from the data analysis is adequate for the purposes of this investigation.

### THE REPORT

An analysis of the literature review, research plan and data gathering process indicates that the method of documentation of the research was not recognized in advance, rather it evolved. The report was written as the data was gathered and represents the research documentation. The researcher did not recognize that this was occurring until caused to reflect on the methodology. The data and researcher's reflections suggest that this is an effective method of documenting the research since it reduces the effort that would have been necessary to prepare research records and then the report. It also assures that the data and associated analysis are plausible and complete. The concurrent writing of the report highlights deficiencies in chain-of-evidence, plausibility and completeness report stage. It is also recognized that this had a downside, for the researcher found he was constantly revising his previously "finished" report.

The concurrent writing and research can only occur when the researcher has a mental model or picture of the results. The situation of being an insider allowed this to occur, however, the methodology has weaknesses. The data gathering is "steered" by the researcher's model because he/she is looking for supporting data, vice trying to find new data. This is less likely to result in new findings and limits the viewpoint and frames of reference used by the research. The alternative approach of avoiding forming a model and report writing until data is discovered to allow it to logically be developed would minimize this problem, allowing a much higher probability of obtaining a broader perspective. However, the earlier discussion reported the frustration of the researcher and inefficiency associated with trying to discover what he already knows. The selection between the processes represents a compromise, gaining of efficiency at the cost of the potential of not challenging preconceived notions, pictures and models. A major factor of this selection is the willingness of the researcher to be honest with him/herself and the degree of aggressiveness in validation through the mutual mirroring techniques.

Chapter 14 also indicates that a plan to accomplish this concurrent development, especially to consider the impact of the evolutionary nature of the data gathering, is desirable. The researcher spent an inefficient amount of time

reformatting data because this issue had not been thought through in advance.

An analysis of the lack of having to translate between NSCL and academic/research language is seen as unique to this particular circumstance. Employing widely-used outside processes such as VPC, QUALTEC and TQL caused NSCL to use the more universal TQM language. This may not be applicable in other similar research environments.

### **THE RESEARCHER'S ROLE**

The researcher did not encounter the difficulty anticipated in the early chapters with maintaining objectivity and neutrality. An analysis of this situation suggests that this may be due to the methodology developed during the research and shown on figure 19. The method of documenting the researcher's beliefs in a manner that would be politically satisfactory caused a reframing to occur, taking both the political and structural frames, as summarized on table six, into consideration. This allowed leadership concerns to be addressed in a more rational, focused and less emotional manner.

**PART V**  
**FUTURE DIRECTION**

## CHAPTER 18

### FORMULATION OF A REVITALIZATION PLAN

#### OVERVIEW

The last step in the formative evaluation process is the development or formulation of a plan to resolve the issues initiating the study. In this case, this means to formulate a revitalization plan for the implementation of TQM at NSCL. The revitalization plan must resolve the design deficiencies and roadblocks to performance that were identified as part of the gap analysis in chapters 15 and 16. That is, the plan must resolve the underlying causes for the gaps between ideal and espoused and between espoused and actual implementation. To resolve only one gap will minimize the effectiveness of the revitalization effort.

The revitalization plan suggested here is from the viewpoint of the top leadership and the major TQM-related processes. A part of the plan should include the changes in the eight organizational fronts discussed earlier. This will require additional research and detail planning for each of these elements.

The revitalization plan is not intended to be a check-off list of things to do. The issues are entirely too complex. Rather, the plan addresses the key outcomes and roadblocks in such a manner that the policy planning efforts will be able to

address their accomplishment/removal as part of development of the "Grand Strategy". This was previously discussed by Sink and is included as one of the fundamental objectives shown in figure 27.

These recommendations provide only the major elements of the revitalization plan and leave the detail planning to be addressed by the organization as part of their implementation of the policy planning process. This is an important issue. In order to obtain buy-in and alignment to the detail actions necessary to achieve the outcomes, the participants must be a part of their development. There is a motivation for the researcher to "tell them what to do", after all of his work to develop this understanding, however, it does not support long-term implementation. For a researcher to say that someone must "do it" is not enough, the doers must buy-in and become part of the planning.

### **A STRATEGY FOR CHANGE**

#### **Exercise of Management Power versus Employee Empowerment**

The literature research, case study and analysis provide an interesting dilemma for implementing TQM. On one hand, management power is required to serve as a catalyst or forcing functions to initiate and maintain change, while on the other, TQM requires employee empowerment.

The literature clearly states that employee empowerment is a key element of TQM. Likewise, changes are best made when

everyone is committed to accomplishing the same vision. A major responsibility of leadership is to obtain the necessary alignments so that everyone becomes dedicated to accomplishing these mutually-shared visions. This alignment is best obtained through empowerment.

Part of the dilemma is that many authors (e.g., Kanter (1983) and Bennis and Nanus (1985)) see the need for senior management to exercise power -- to provide direction and serve as a change agent. This can be seen as limiting the empowerment of the employees, since the manager must pass some of his authority and responsibilities to lower echelons within the organization. Further, the U. S. Navy's history and culture is one of an authoritarian management style, which does not fully support the concepts of participation and empowerment.

Finally, Tenner and DeToro (1992) provide three dimensions which are necessary for employees to be empowered. These include: (1) an agreement between management and those empowered over the organization's visions and objectives; (2) the personal capacity of the employees to be empowered, which is associated with their level of knowledge, skills and assets to support the change; and (3) mutual trust between managers and employees.

The case study and above analysis reveals that, while espoused, the exercise of power has not moved down the organizational structure (employee empowerment). This is an

issue which must be resolved if TQM is to be effectively implemented. The reasons for empowerment not occurring are suggested by Tenner and Detoro's three dimensions.

#### **A Situation of Non-Synoptic System Change**

The data and analysis indicate deficiencies in all three of Tenner and Detoro's dimensions. There is no alignment or agreement on NSCL's vision and the necessary actions to accomplish them. Top management has not agreed on the vision or associated strategic actions, so there cannot be agreement at the lower levels. The data shows that since 1992 there has been little effort to implement the espoused elements of policy planning and deployment. Obviously, it is impossible to attain alignment and agreement on visions and the implementation of plans which do not exist.

The data also shows that training has generally been limited to introductory, process-oriented information with little encouragement to practice the processes. Thus, there has been inadequate effort to provide and maintain the managers and employees with the knowledge and skills necessary to support implementing TQM. Likewise, the data indicates that assets, in the form of free time and funds for salaries, have not been provided to support empowerment.

Lastly, the analysis shows significant distrust among managers and between managers and employees. As discussed elsewhere, there seems to be a culture of "Them versus Us"

between levels of the hierarchy. From this analysis, it is concluded that failure to implement change is to be expected.

The researcher believes that to revitalize TQM at NSCL, all three dimensions must be addressed. However, to obtain alignment in an atmosphere of reduced resources, changing mission and significant conflicts is a complex technical issue. The work by Pava, reported in chapter seven above, suggests a course of action and strategy for implementing change when both complexity and conflict are high. He reported that this situation falls into a niche called "Non-synoptic Systems Change" and changes are best made through incrementalism. That is, piecemeal steps must be taken which are based on themes aimed at accomplishing the desired state.

#### **A Strategy for Change using Incrementalism**

As indicated in the above overview section, the strategy to revitalize TQM at NSCL must be based on two major elements. These elements are changing the actions of the individual managers and the adoption of processes which foster empowerment and support policy planning and deployment and improvements in quality of daily work. The concept of incrementalism suggests that initiation of these changes must be made on a less than complete start, which represents a compromise between the ideal situation of "just doing it" and moving toward "doing it".

The Navy's culture of authoritarian management style, while not desirable in the long-run, may serve as a starting

point to a revitalization strategy. It is suggested that the Commanding Officer and Technical Director make the decision to revitalize TQM and require (dictate) the actions necessary by the other managers and employees to support the changes in roles, actions and processes. The literature research indicates that, at best, this will result in compliance -- which is seen by the researcher as an incremental start.

This start must include all of the top and middle level managers in policy planning and study to obtain Deming's "profound knowledge". It may also include those lower level groups that have a high likelihood for success. A big part of this incremental start is for the entire ESC to "walk their talk", i.e., to show by actions and words constancy of purpose and the importance of implementing the concepts of TQM.

This strategy assumes that, as the managers obtain knowledge and successes, they will start to move from compliance to commitment and becomes more aligned and less distrusting. Incrementalism occurs by the top managers recognizing that, as the employees and other managers obtain the three dimensions necessary for empowerment, decisions and self-direction to implement TQM can be moved down the organization.

The below sections discuss the leadership and process changes believed necessary and recommended to revitalize TQM.

## **LEADERSHIP'S ACTIONS - AN OVERVIEW**

The leadership's actions fall into the two categories: their personal actions and serving as change agents. The senior managers must make the personal actions associated with learning, becoming committed, practicing and continuously improving as discussed in detail in chapter 15. Secondly, they must serve as change agents, following the Kotter model. These two models are obviously related. The practicing or doing element of the personal actions model is executed by following the Kotter steps.

A major concern of this recommendation is the removal of roadblocks to this implementation. The plan is provided in two elements, a brief restatement of the ideal outcome that must be accomplished and strategies to address the roadblocks identified in chapter 16.

## **LEADERSHIP'S PERSONAL ACTIONS**

The personal actions have been summarized before, but will be repeated here. They include:

1. Understand the principles and concepts of TQM -- to acquire profound knowledge.
2. Be committed to applying the concepts of TQM principles and creating a supportive environment.
3. Practice his/her beliefs and commitments, based on this understanding.
4. Continuously improve his/her education, commitment and practice.

These actions represent personal effort on the part of top management. It must start with the Commanding Officer and Technical Director. They must be personally committed to lead the way and to serve as role models for the other managers. They must require that all members of the Senior Management QMB start studying and acquiring profound knowledge. The adage of the "chicken or egg" cited earlier, is very applicable. The typical manager is not likely to expend the energy to obtain the requisite knowledge until they have obtained sufficient knowledge to understand the need. A formal training plan, based on table 27, must be developed and assets allocated to support its implementation. It is recognized that the top manager may have to provide autocratic direction to force the other managers to make the initial efforts towards attaining the required knowledge. Once they obtain a critical mass of profound knowledge, they will recognize the need for continuing their education and will become self-motivated.

It will also be necessary for top leaders to dictate that the revitalization be initiated. Once adequate education and commitment are obtained by the other managers to allow the process to be self-sustaining, the senior leaders will be able to use more participative methods to sustain long-term implementation.

Building trust, alignment and expanding the senior manager's frame in order to achieve teamwork is a difficult

endeavor. The proposed policy planning and deployment process is based on the work by Pava and attempts to account for this concern. The more systematic application of policy planning suggested provides sufficient participation to build commitment if nurtured by the top leaders. It is recognized that improving interpersonal trust may be greatly facilitated by the assistance of an outside industrial psychologist, much in the same manner that a family psychologist might help resolve conflicts between parents and children. The researcher suspects that the "we vs. they" cultural issues exist between the department heads and the "front office".

An interview with Captain Pitt, a previous Commanding Officer of NSCL, to obtain insight from a currently non-involved but knowledgeable manager identified several key issues which the top leaders must address. He suggested that managers must be confident in their position and authority and feel free of fear of actions by their top leaders and peers. There must be open communications, a willingness to support each other and mutual trust. Finally, they must all be aligned to the organization's visions. These issues are not addressed easily, but clearly, the top leaders are responsible for resolving them. It need not be a formal, published policy planning issue, but must be addressed in a long-term manner as a critical concern within the ESC. Considering that the Commanding Officer has only one year left to his tour, and these changes will take significantly longer, it is suggested

that the Technical Director, with the full support of the Commanding Officer, assume responsibility for this issue.

#### **ACTIONS BY THE LEADERSHIP - CHANGE AGENT'S ROLE**

The command must implement the ideal leadership process shown in figure 26. This process consists of developing the vision and associated strategies; establishing networks of stakeholders and individuals whose support is necessary to implement the visions; aligning and motivating them to implement the required changes; and providing the continuing coaching, support and coordination of the network to maintain their efforts. This process is an inherent part of all change agent's roles and requires personal involvement by all of the managers.

The top leaders are responsible to insure that the visions are developed, that the mid-level managers and other stakeholders are in their network and their alignment is obtained by allowing/empowering them to refine and develop the details of implementation. The mid-level managers, in turn, must then practice the same leadership/change agent process for their subordinates and others within their community.

Again, this effort is easy to state and difficult to implement, especially in light of the leadership roadblocks discussed above and the cultural roadblocks which must be addressed. Implementation must start at the top and may

require some, hopefully minor, degree of autocratic direction that was suggested as part of the leadership's personal actions discussed above. The implementation will be facilitated by the educational program suggested above and the processes suggested in chapter 15 and addressed below. These processes lend themselves to guiding the individual leaders in their actions. There are many TQM details of implementation which are discussed in part II and as the managers increase their knowledge, they will identify with and become more comfortable in their role as change agents. Many of the details associated with implementing the change agent efforts are included in the "grand strategy" discussed earlier, which becomes an inherent part of the fundamental objectives cited in the policy planning process.

#### COMMAND LEVEL TQM PROCESSES

The analysis, in chapter 16, indicated that the major concerns with the command processes were not in design, but execution -- primarily due to a lack of constancy by the leadership. Improvements were suggested in chapter 15 and supported by the analysis as consistent with the strengths of the current process. The major processes fall into three categories: policy planning, quality in daily work, and the organizational infrastructure. There were a number of other

management and TQM issues identified in this research and they will be addressed as part of the policy planning issue.

### **Policy Planning and Deployment**

Figures 27 and 28, table 28 and the associated discussion in chapter 15 provided the recommendations concerning policy planning associated with revitalization of TQM. This process requires the top leader(s), in concert with the other ESC members, to develop the necessary analysis of the voices of business and the customer, the visions and guiding principles and then have them validated and refined by the Senior Management QMB. The process requires more systematic and deliberate study for the analysis and development of the "products" than the current VPC Eight-step process. It also requires the collaboration and empowerment of the other stakeholders in the policy developments.

A number of critical success factors involving business and quality issues are then identified, based on the earlier efforts, and from these, fundamental objectives are developed. The current espoused process includes the development of a TQM Implementation Plan and it is recommended that this remain a mandatory fundamental objective, using the eight fronts recommended by Sink and Monetta and reported earlier. This effort is critical because it allows focusing on many of the key management issues and processes discussed throughout this dissertation.

Culture is one of the fronts and has been frequently cited as a critical area requiring further study. It must be addressed to successfully implement TQM.

A second front is motivation. The empowerment and recognitions and rewards issues discussed earlier are components of this front and should be specifically addressed. It was recognized that commitment is seen as a by-product of empowerment and the decision-making process inherent to the use of the participative infrastructure suggested below. The concept of allowing the participants to design the change so that they are doing the change to themselves instead of having it done to them was discussed in the literature review and is extremely important.

The measurement front is based on the concept of management-by-fact instead of intuition and is really a subset of the decision-making process. Likewise, the management-of-participation issue is also an inherent component of this front. The emphasis on decisions by the lowest appropriate level in the hierarchy, using the facts gained through systematic measurement and understanding of the related processes, is a form of participation. It should be recognized that the lowest appropriate level may be, and frequently is, the top leaders. Likewise, participation was defined as a spectrum of management styles including consultation, collaboration and delegation.

The front involved with the infrastructure will be highlighted below, but involves implementing the existing ESC, QMB, PAT process, which supports the empowerment and decision-making issues.

The education and development front was extensively discussed above from the senior and mid-level managers' viewpoint. This front should also recognize the importance and needed assets to support continuing education of all employees for both job and TQM skills. The concept of the PDCA cycle is entirely applicable to the education and development process.

The roadblocks identified in the analysis section really involved constancy of purpose by the senior management. The policy-planning process was just not followed. It is recommended that the organization's instruction regarding TQM be up-dated to include the key elements of these recommendations and followed.

#### **Quality in Daily Work**

The quality in daily work process was described in figure 29 and the associated text. This process was based on the QUALTEC and Boyette models and is recommended for adoption. It is consistent with the current training and "customer focus" orientation stressed by TQM and recognizes the need for management oversight and participation.

Like the policy-planning process discussed above, the major roadblock identified was the lack of constancy of

purpose by the leaders and should be addressed in the same manner. There were cultural issues also suggested in the analysis that impact on the implementation of this process. These should be addressed as part of the cultural aspects of the grand strategy fundamental objective discussed above.

#### **The Organization's TQM Infrastructure**

The recommended TQM organizational infrastructure is based on the ESC, QMBs, PATs and coordinators/facilitators as described in chapter 15 and illustrated on figure 21. The roles and responsibilities of these units is described on figures 14, 15 and 16. This recommendation reflects no change in the current structure which is believed to be entirely consistent with the needs of the policy planning, quality in daily work, decision-making and empowerment processes.

The roadblocks identified included a lack of constancy of purpose in using the processes, coupled with a lack of staffing and/or support for the coordinator and facilitator positions. The lack of a dedicated management representative, such as the position of Deputy Technical Director, serving as the TQM coordinator was seen in the analysis as a critical roadblock. This position was seen as a key catalyst for implementing the entire TQM process, as well as supporting the education efforts of the managers. The revitalization should include this position being filled by an existing high potential mid-level manager on an extended, but temporary basis. It would serve as a management development

opportunity, with the by-product of having a respected and knowledgeable manager serving as the key TQM advocate, while also giving that manager an opportunity for personal growth beyond his current stovepipe experience. It will also support the dedicated educational experience necessary to attain profound knowledge, which will support TQM implementation after he returns to his normal line duties.

The infrastructure also must include the appropriate tools to support the processes. The existing ADP system is seen as compromised and should be up-dated to support the information needs for both maintaining TQM implementation and providing the data and information to support the decision-making processes. The major roadblocks are allocating assets and the detail study and planning to adequately define the system parameters.

## CHAPTER 19

### RECOMMENDATIONS CONCERNING METHODOLOGY FOR QUALITATIVE RESEARCH AND FORMULATIVE EVALUATIONS

#### INTRODUCTION

The research was unusual in two instances: it was conducted by an insider, totally involved for the entire duration of the events being studied; and the researcher served as the principle change agent and Chief Operating Officer for the organization during the TQM implementation. The literature review did not reveal a similar situation. It appears to be unusual that a top leader of an organization would conduct research and report on it in the rigorous manner required of a dissertation, especially for changes that he had led.

Guidance for conducting research when the investigator was also an informed insider and change agent, was not found in the literature search. It is necessary to develop a new methodology. The innovations and procedures which evolved are reported and are recommended as starting points for future similar situations.

## THE APPLICATION OF GAP ANALYSIS

The literature provided guidance for comparing espoused to actual with the recognition that the causes for differences are very important. The differences represent, from a TQM revitalization viewpoint, roadblocks that must be addressed. If they are not, they will continue to hinder the TQM processes. The literature did not address the gap between the ideal and espoused and this additional approach used in this research may be an advance to this form of methodology.

The espoused plan represents the change agent's best knowledge, coupled with identified constraints that had to be levied against the ideal, before starting implementation. In a field expanding as rapidly as TQM, it is obvious that the underlying theory used to develop the espoused plan and actions will become obsolete over time. Likewise, initial constraints will change. Thus, the change agent should periodically compare the espoused implementation process with the current body of knowledge. This methodology is recommended for future formative evaluations. It also suggests that the change agent should recognize that periodic formative evaluations are necessary to determine if performance is being limited due to an outdated espoused method of implementation.

## A METHODOLOGY INVOLVING MUTUAL MIRRORING

The concept of reflexivity provided by Steier had application to this research. Reflexivity recognizes that the researcher, as an active participant, becomes part of a circular loop, between himself and the insiders. The insiders become participants, called reciprocators, and it is through a sharing of understanding (a reflexive and reciprocal activity) that a story describing the situation under study is developed and becomes understood.

Steier provided an analogy of mutually mirroring to further describe the process and concept of reflexivity. The researcher, as an insider and participant, cast an image (as in a mirror) of their understanding. This understanding is reflected back to reciprocators who are able to assist in refining the image. Together, they co-construct the understanding. This process seemed especially applicable to this research, where the researcher is a key insider and participant for the situation under study.

The concepts of reflexivity and the Scandinavian style of participative research reported in chapter ten were combined by the researcher to develop a research methodology model which specifically addressed the situation. The situation of an insider and participant conducting research on issues with which he is very familiar resulted in the methodology shown on

figure 19 and described in chapter nine. This methodology is recommended for future application.

### THE RESEARCH DIARY

The maintenance of a research diary was found to be an extremely valuable part of the methodology. It provided the researcher a forum for personal and private reflections. The diary became a focal point for recognizing and planning the evolving methodology and research issues. Maintenance of a research diary should be a mandatory part of all qualitative research.

The experience with the diary revealed two situations which future users should recognize. A great deal can be learned by reflecting, in a systematic manner, on apparently mundane occurrences. For example, reflecting on the mundane development of an interview schedule to be provided to the dissertation committee chairman forced/allowed the early realization that the basic methodology of exploratory interviews was flawed. The researcher found himself scheduling too much time to find out what he believed he already knew. In view of the time constraint associated with the research and the magnitude of work, with little expected payback, the exploratory process seemed to be very flawed for this particular research.

### **THE LITERATURE SEARCH**

All formal research requires understanding the associated field(s) of knowledge. This requirement becomes a key issue when the research includes a gap analysis of the ideal versus the espoused. The ideal situation is normally based on the literature, operationalized to meet the unique and applicable conditions of the organization. Future similar research must recognize and emphasize this part of the methodology.

The process of developing a strawman narrative of the findings of the literature research, concurrent with the reading, was found to be valuable and is recommended for future similar research, provided the researcher is cognizant of the previously discussed weaknesses. The strawman narrative, in the form to appear in the research report, served as a useful method of documenting the findings without undue duplication of effort. It also allowed the researcher to develop an understanding of the chain-of-logic associated with the elements of the field of study and the relationships among the various writers.

### **CONDUCTING THE CASE STUDY**

The analysis showed a constant concern over insuring that the researcher did not bias the data gathering and analysis efforts toward his own views. The data, to be valid and

acceptable to other managers and the research community, must not be a one sided view, leading the research to substantiate a preconceived and only partially correct picture. This can be somewhat overcome by insuring a wide distribution of the strawman or obtaining validation from a good cross-section of reciprocators. Also, the researcher must constantly challenge his/her own viewpoint, asking -- How would others see this situation? The researcher must be willing to conduct exploratory research if he is not very comfortable with his answers.

One warning associated with this methodology is that the strawman must be continuously updated, which can be very time-consuming if the researcher is determined to prepare the strawman and updates in a "ready to submit" form. The researcher must recognize that a final step in the process would be to attend to the literary content of the narrative. A method for temporary numbering of figures and tables is needed. The very iterative nature of the research causes figures and tables to be added and the others renumbered. The researcher should address this issue as part of the research plan.

The use of reframing from the political and symbolic to the rational system and human relations frames, when there is high potential for significant conflict, is recommended. This is especially applicable for data-gathering and formulation and reporting of improvements which are highly dependent on

interaction between the researcher and the participants. This reframing is seen as somewhat limiting of the details that appear in the story or picture that is developed by the research, however, frequently the details are adequate for the intended application. If it is not, obviously the story must be expanded by enlarging the research.

### **WRITING THE REPORT**

The above discussion suggested that the report be written concurrent with the literature research. The same methodology evolved for the case study and analysis sections of the research. The researcher found that maintaining research records describing data collection and analysis in a format consistent with the final report greatly facilitated both the research and report generation. For example, the description and data associated with the various surveys, assessments and studies in chapter 13 were done separately and in a "free-standing" manner. They were later merged into the report with little or no effort. The researcher was able to complete the initial draft of the section titled, "Review of Studies and Assessments" in chapter 13 (a total of 33 pages) in about four hours, by merging the earlier prepared documentation.

If this methodology is used, the researcher must plan ahead to identify the narrative format and likelihood of relationships between topics and account for them in the

writing. This was not always done and as the research evolved the researcher found that it was necessary to revise previous work so that it could merged.

### **RESEARCH PLANNING**

The literature stresses the compromises between tight and loose planning of the research. This represented a dilemma to the researcher throughout the effort. The overall research plan and methodology were developed early and, with the exception of the model previously discussed, were generally followed. This portion of the research plan was fairly "tight", however, the detail planning was loose and evolutionary in nature. The adage "the devil is in the details" was very applicable to this research. The complex and multi-aspects of the research made it almost impossible for the researcher to systematically plan the details.

One impact on the research plan was that the basic research model of exploratory interviews discussed earlier was found to be unsatisfactory. One facet of this finding was that an interview schedule was very difficult to plan and establish, if the researcher was using the exploratory model. The interview questions and appropriate person to interview would be constantly evolving as the "picture" was developed. After the methodology shown in figure 19 was developed, it was much easier to plan the next steps.

## RESEARCH IMPACT ON WORK ROLES

As indicated earlier, the researcher believes that the formal research had a profound impact on his knowledge in both his academic and practitioner roles. An endeavor such as this research is recommended for all practitioners, not to make him/her an academic, but to provide better insight into their own work domains as managers.

### SUMMARY

There were numerous findings associated with the research methodology in this particular research which have applications to similar efforts. One final observation is that the model of the change agent doing his own detail research with the rigor of a dissertation is not realistic under normal condition. The researcher would not have been able to dedicate the time and energy necessary to conduct the research, while continuing with his normal duties.

The situation of the change agent retiring or making a major career change is not unique and research such as this is an excellent way for the researcher to leave a legacy for both the organization and the field of knowledge involved. This should be considered as part of a graceful employment change, allowing the organization to "pick the brains" of those who will no longer be available. It is recommended. Finally, the

process of research, such as conducted in this dissertation,  
is seen as an excellent learning experience for the practicing  
manager.

**CHAPTER 20**  
**FUTURE RESEARCH DIRECTIONS**  
**INTRODUCTION**

This research suggests further investigations of a TQM orientation, both within the service industry at large and NSCL. The finding also suggests further research into the methodology used herein. Each of these areas will be discussed below.

**FURTHER TQM ORIENTED RESEARCH**

Learning occurs from many sources, one of which is the evaluation process used in this research -- to learn from the experience of others. The research did not reveal a significant body of literature addressing organizational experience implementing TQM, especially for service organizations. None was found regarding the revitalization of an existing TQM process. The literature provides significant theoretical insight, but is sparse on case studies showing the results of applications. The availability of summative and formative evaluations of existing TQM implementations would provide this insight and is suggested.

The revitalization issue, inherent to this formative evaluation, is of special interest as future research. The formative evaluation represents a form of applying the PDCA cycle at the organizational level which has not been adequately applied to TQM and suggests future research, i.e., How do organizations apply the PDCA cycle at the organizational level, especially for the implementation and continuous improvement of TQM?

This research represented a unique perspective, i.e., the research being conducted by the change agent and top leader. It would be valuable to determine if the finding would be replicated if other perspectives had been applied, i.e., from an outsiders, TQM coordinator/facilitator or first level supervisor's viewpoint.

Chapter four reported the results of the literature research involving the various leadership styles. None of those reported, or discovered, specifically address leadership in a TQM environment. The concepts of management-of-participation, from both theory and experience viewpoints, needs to be expanded and reported.

One key issue confronted throughout the research was the lack of adequate language to differentiate between management and leadership activities and positions. The research showed that most positions in the organizational hierarchy have both leadership and management functions as part of their duties. The higher in the hierarchy, the greater the proportion of

leadership to management functions. The difficulty was that frequently the literature used the terms senior leader and senior manager as synonyms, which did not facilitate referring to the senior person conducting only one of these roles. It is recommended that the reader consider the context of the discussion to determine which role is being referred to. The development of more systematic language is needed and recommended as an issue for future research. For example, what terms are used to refer to a mid-level manager generically, when planning "what to do" and when planning "how to do".

#### **FURTHER TQM RESEARCH AT NSCL**

As indicated above, the results of this formative evaluation represent the starting point of a new rotation through the PDCA cycle. The evaluation of the effectiveness of the suggestions contained herein and their execution should be made part of the check portion of the cycle. This suggests further research, ie., to conduct a summative and possibly a new formative evaluation of TQM implementation in approximately the next 18 months.

The research and associated data was focused on implementing TQM, from a top leadership perspective. As such, all of the organizational sub-systems described by Sink and

Monetta in their work on organizational fronts were considered, especially at their interface to the top leaders. The data suggests follow-up research is required to better understand the cultural sub-system at NSCL and within the Navy. The culture appears to have many elements which are not supportive of necessary changes and, as such, it is a major roadblock that must be accounted for in the planning and execution of TQM implementation. This effort was beyond the scope of this research and is highly recommended as a future and immediate endeavor. The results should be included as part of the organizational analysis data collected during the policy planning stage of the revitalization.

The data sends mixed signals concerning the concepts of performance evaluation, recognition and rewards. The literature does not clearly differentiate between Deming's positions regarding performance evaluation and his, and other's, positions regarding reinforcing positive behavior and other motivational actions. Likewise, the data showed employee dissatisfaction regarding recognition and rewards, however, this was not seen as a significant factor affecting TQM implementation by many of the supervisors. Further research and clarification is suggested, both at NSCL and within the field, at large.

### FUTURE DIRECTIONS REGARDING RESEARCH METHODOLOGY

This research developed a unique application of the concepts of mutually mirroring and the Scandinavian participative research model to account for the situation in which the researcher has in-depth insider information. Future research in the application of this model is suggested. The entire concept of in-house employees conducting formal research, especially to "pick their brains" and leaving a legacy before they leave their organization needs further consideration.

Likewise, the TQM concept of empowerment of employees suggests the use of in-house summative and formative evaluations. The proposed methodology, in which the insider conducts the necessary literature research to obtain an academic frame and then follows the validation process, seems to be an important step in decisions based on facts. More experience with this process, using knowledgeable insiders to evaluate their programs to identify improvements is necessary and should be fostered/supported by the academic community.

The literature suggested the concept of understanding the differences, from a cause-and-effect relationship, between that which is espoused and actually done. This research expanded that model to include studying the difference between theoretical based ideal and the espoused. Further application

and refinement of this methodology, especially for formative evaluations, is recommended.

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Appendix One  
Federal Quality Institute TQL Survey - Work Force  
Questionnaire and Key to Topics

<u>Topic</u>	<u>Survey Questions</u>
<b>Strategic Focus</b>	1 - 14
Awareness of Strategic Challenge	1 - 3
Vision of the Future	4 - 6
Innovation	7 - 8
Quality Policy/Philosophy	9 - 11
Value Systems/Ethics	12 - 14
<b>Leadership and Management</b>	15 - 28
Leader's Involvement	15 - 17
Leader's Visible Commitment to Goals	18 - 20
Supv's Role in Quality Improvement	21 - 23
Supv's Concern for Improvement	24 - 26
System/Structure for Quality Improvement	27 - 28
<b>Work Force</b>	29 - 46
Awareness of Prod. and Quality Issues	29 - 30
Attitudes/Morale	31 - 33
Cooperation	34 - 36
Involvement	37 - 38
Perception of Work Environment	39 - 41
Social Interaction	42 - 43
Task Characteristics	44 - 46
Reward/Recognition	47 - 51
<b>Customer Orientation</b>	52 - 55
<b>Communication</b>	56 - 58

## Appendix One (Cont.)

### WORK FORCE MODULE

A list of statements will be presented. Use the following scale to indicate your answers.

<del>strongly</del> <del>disagree</del>	<del>disagree</del>	<del>somewhat</del> <del>disagree</del>	<del>somewhat</del> <del>agree</del>	<del>agree</del>	<del>strongly</del> <del>agree</del>
1	2	3	4	5	6

There are no right or wrong answers. Circle the number 1, 2, 3, 4, 5, or 6 that you feel best indicates your extent of agreement with the statement.

	<del>strongly</del> <del>disagree</del>	<del>disagree</del>	<del>somewhat</del> <del>disagree</del>	<del>somewhat</del> <del>agree</del>	<del>agree</del>	<del>strongly</del> <del>agree</del>
1. People in the organization are aware of its overall mission.	1	2	3	4	5	6
2. People in the organization are aware of how their jobs contribute to the organization's mission.	1	2	3	4	5	6
3. It's in everyone's best interests that the organization be successful.	1	2	3	4	5	6
4. People in the organization try to plan ahead for changes (such as in customer expectations) that might impact the organization's future performance.	1	2	3	4	5	6
5. People in the organization try to plan ahead for technological changes (such as new developments in computer software) that might impact the organization's future performance.	1	2	3	4	5	6
6. People in the organization regularly work together to plan for the future.	1	2	3	4	5	6
7. Creativity is actively encouraged in the organization.	1	2	3	4	5	6
8. Innovators are the people who get ahead in the organization.	1	2	3	4	5	6

		strongly disagree	disagree	somewhat disagree	somewhat agree	agree	strongly agree
9.	The quality of work produced is the primary focus of the organization.	1	2	3	4	5	6
10.	People in the organization see the continuing improvement of work produced as essential to the success of the organization.	1	2	3	4	5	6
11.	The organization emphasizes doing things right the first time.	1	2	3	4	5	6
12.	People in the organization live up to high ethical standards.	1	2	3	4	5	6
13.	People in the organization like to do a good job.	1	2	3	4	5	6
14.	People in the organization help each other get the job done.	1	2	3	4	5	6
15.	Leader(s) in the organization ask people about ways to improve the work produced.	1	2	3	4	5	6
16.	Leader(s) in the organization encourage people to voice their concerns.	1	2	3	4	5	6
17.	Leader(s) in the organization follow up on suggestions for improvement.	1	2	3	4	5	6
18.	Leader(s) in the organization set examples of quality performance in their day-to-day activities.	1	2	3	4	5	6
19.	Leader(s) in the organization regularly review the organization's progress toward meeting its goals and objectives.	1	2	3	4	5	6
20.	Leader(s) in the organization attempt to find out why the organization may not be meeting a particular goal or objective.	1	2	3	4	5	6
21.	People in the work unit turn to their supervisors for advice about how to improve their work.	1	2	3	4	5	6
22.	People in the work unit know that their supervisors will help them find answers to problems they may be having.	1	2	3	4	5	6
23.	People in the work unit are challenged by their supervisors to find ways to improve the system.	1	2	3	4	5	6

# Appendix One (Cont.)

		strongly disagree	disagree	somewhat disagree	somewhat agree	agree	strongly agree
24.	Supervisors in the work unit make the continuous improvement of the work produced top priority.	1	2	3	4	5	6
25.	Supervisors in the work unit regularly ask the customers about the quality of work they receive.	1	2	3	4	5	6
26.	Supervisors in the work unit ask people for their opinions and ideas about their work.	1	2	3	4	5	6
27.	The structure of the organization makes it easy to focus on producing quality work.	1	2	3	4	5	6
28.	People know how the work produced in their work unit fits in with the work produced by other work units.	1	2	3	4	5	6
29.	People in the work unit can describe the organization's quality and/or productivity policy.	1	2	3	4	5	6
30.	People in the work unit know how to define the quality of work they produce.	1	2	3	4	5	6
31.	People in the work unit take pride in their work.	1	2	3	4	5	6
32.	People in the work unit share responsibility for the success or failure of the work produced.	1	2	3	4	5	6
33.	People in the work unit believe that their work is important to the success of the organization.	1	2	3	4	5	6
34.	There are good working relationships between work units in the organization.	1	2	3	4	5	6
35.	A spirit of cooperation and teamwork exists in the organization.	1	2	3	4	5	6
36.	The organization has good working relationships with other organizations.	1	2	3	4	5	6
37.	People in the work unit look for ways to improve their work.	1	2	3	4	5	6
38.	People in the work unit often discuss ways to improve the work produced.	1	2	3	4	5	6

# Appendix One (Cont.)

	strongly disagree	disagree	somewhat disagree	somewhat agree	agree	strongly agree
39. The work unit has appropriate personnel to get the job done properly.	1	2	3	4	5	6
40. Work expectations for the work unit are fair.	1	2	3	4	5	6
41. People in the work unit are expected to produce high quality work.	1	2	3	4	5	6
42. People in the work unit are friendly with one another.	1	2	3	4	5	6
43. People in the work unit enjoy their co-workers.	1	2	3	4	5	6
44. The right tools, equipment, and materials are available in the work unit to get the job done.	1	2	3	4	5	6
45. The distribution of work among the people in the work unit is well balanced.	1	2	3	4	5	6
46. There is ample time for people in the work unit to perform jobs in a professional manner.	1	2	3	4	5	6
47. The pay scale is fair for people in the work unit.	1	2	3	4	5	6
48. Attempts are made to promote the people in the work unit who do good work.	1	2	3	4	5	6
49. People in the work unit receive promotions because they earn them.	1	2	3	4	5	6
50. There is quick recognition for people in the work unit for outstanding performance.	1	2	3	4	5	6
51. The organization rewards the people in the work unit for working together.	1	2	3	4	5	6

# Appendix One (Cont.)

		strongly disagree	disagree	somewhat disagree	somewhat agree	agree	strongly agree
52.	People in the organization know who their customers are.	1	2	3	4	5	6
53.	People in the organization care about their customers.	1	2	3	4	5	6
54.	In general, customers know that the organization cares about what they think.	1	2	3	4	5	6
55.	The organization's customers are asked for their opinions about the work (services, products) they receive from the organization.	1	2	3	4	5	6
56.	Effective communication channels exist between work units in the organization.	1	2	3	4	5	6
57.	People in the work unit do not have to rely on "the grapevine" or rumors for information.	1	2	3	4	5	6
58.	The facts and information needed to do a good job are available to people in the work unit.	1	2	3	4	5	6

Appendix Two  
Federal Quality Institute TQL Survey - Staff  
Questionnaire and Key to Topics

<u>Topic</u>	<u>Survey Questions</u>
<b>Improvement Activities</b>	<b>1 - 32</b>
Diagnosis	1 - 2
Quality Focus	3 - 4
Quality/Productivity Process	5 - 10
Definition (leaders)	11 - 14
Definition (Work Units)	15 - 18
Definition (Workers)	19 - 22
Internal Customer Activities	23 - 24
External Customer Activities	25 - 26
Planning	27 - 32
<b>Enhancement Approaches</b>	<b>33 - 49</b>
Organizational Streamlining	33 - 34
Investment in Technology	35 - 37
Methods and Process Improvement	38 - 40
People-Oriented (Idea)	41 - 43
People-Oriented (Creativity)	44 - 47
People-Oriented (Training)	48 - 49
<b>Processes</b>	<b>50 - 68</b>
Measurement	50 - 51
Evaluation	52
Feedback	53 - 54
Rewards System	55 - 64
Performance Appraisals	65 - 66
<b>Tools</b>	<b>67 - 78</b>
Assessments	67 - 68
Definition (Teams)	69 - 70
Measurements/Process Analysis	71 - 73
Organizational Development	74 - 76
Awareness/Communications	77 - 78
<b>Outcomes</b>	<b>79 - 104</b>
Work flow/Delays	79 - 80
Waste	81 - 82
Tools/Equipment	83 - 84
Safety	85 - 86
Health	87 - 88
Staffing	89 - 90
Facilities	91 - 92
Training	93 - 94
Supplies/Parts	95 - 96
Work Priorities	97 - 98
Quality	99 - 100
Timeliness	101 - 102
Reliability	103 - 104

## Appendix 2

### Measurement Areas Definition

The following are the questions that are inherent to the measurement area. The higher the score, the "better" the answer.

Diagnosis -- Does the organization use methods to identify the need for quality and productivity improvement?

Quality Score -- Does the organization have a formally developed and deployed quality policy?

Quality/Productivity Process -- Has the organization's top leadership established a central focal point for quality leadership?

Definition (Leader's) -- Has top management clearly defined the organization's mission, goals, objectives and performance measurements?

Definition (Work Units) -- Do the various work units within the organization know how top management defines quality and productivity improvements, goals, objectives and performance measures?

Definitions (Workers) -- Can the individual workers specify what goals and objectives they are working towards? Do they know how these goals, objectives and performance measures relate to their own work unit's mission?

Internal Customer Activities -- Does TQM process recognize that internal recipients of intermediate outputs (material and information) are equally important to those of external customers?

External Customer Activities -- Does the TQM processes provide methods to recognize how external customers perceive the quality of the organization's products and services?

Planning -- Does the command have a thorough planning process for specific quality and productivity issues?

Organizational Streamlining -- Does the organization work to find opportunities for streamlining that can enhance the organization's ability to support its mission?

Investment/Technology -- Are people provided with adequate, technically current, equipment and processes? Do they receive adequate training in their use?

Appendix 2  
Measurement Areas Definition (Continued)

Methods/Process Improvements -- Are work processes and methods reviewed on a regular basis for the purpose of restructuring to increase quality and productivity?

People-Oriented (Good Ideas) -- Do the employees have vehicles for recommending improvements?

People-Oriented (Creativity) -- Does the organization have processes in place which will encourage and stimulate employee creativity?

People-Oriented (training) -- Has everyone been provided adequate training to do his/her work?

Measurers -- Does the organization use measurements as part of their formal quality process?

Evaluation -- Are measures evaluated or compared against meaning standards?

Feedback -- Does the quality process inform the people involved on the results of the measurements and evaluation?

Reward System -- Does the organization use an adequate recognition and rewards system?

Performance Appraisal -- Does the performance appraisal system include evaluating people's efforts in the improvement process?

Assessment -- Are employees' opinions and inputs regarding quality and productivity improvement solicited and acted upon?

Definition (Teams) -- Are tools involving group participation used to define missions, goals and objectives.

Measurement/Process Analysis -- Are tools to measure and analyze processes used?

Organizational Development -- Are tools, such as team building, used to obtain employee buy-in regarding changes associated with quality and productivity improvement?

Awareness/Communication -- Are their adequate methods in use to keep everyone aware of quality and productivity improvement processes and to publicize successful results?

Appendix 2  
Measurement Areas Definition (Continued)

Work flow/Delays -- Are work delays and/or work flow a problem for the organization?

Waste -- Is waste of materials and supplies a problem for the organization?

Tools/Equipment -- Are the tools/equipment used by the organization adequate for the tasks?

Safety -- Has the organization experienced safety problems?

Health -- Do employees experience excessive health problems?

Staffing -- Does the organization do a good job using the staff available?

Facilities -- Are facilities adequate? Do they represent a problem for quality and productivity?

Training -- Do employees receive adequate training to do their job?

Supplies/Parts -- Does the organization experience difficulties with the quality and/or timeliness of receipts of supplies and materials?

Work Priorities -- Do people often have to shift work priorities and/or redo tasks in order to get the job done?

Quality -- How do your customers perceive the quality of your work?

Timeliness -- Is your work provided to your customers in a timely manner?

Reliability -- Do your customers find errors in what they receive? Is your work quality inconsistent?

- |  |            |                    |
|--|------------|--------------------|
|  | <u>YES</u> | <u>NO/NOT SURE</u> |
|--|------------|--------------------|
1. The organization attempts to determine whether improvements in quality and/or productivity are needed.
- |  |   |   |
|--|---|---|
|  | 2 | 1 |
|--|---|---|
- (If no or not sure, skip to question 3)
2. In order to make the above-described determination, the organization : (check all that apply)
- a. \_\_\_\_\_ asks organizational members using a survey (excluding present survey).
  - b. \_\_\_\_\_ asks organizational members at scheduled interviews.
  - c. \_\_\_\_\_ informally asks organizational members.
  - d. \_\_\_\_\_ asks established "team" members to report periodically. (Teams are usually composed of volunteers who meet to discuss quality concerns.)
  - e. \_\_\_\_\_ asks senior management for their opinions.
  - f. \_\_\_\_\_ analyzes data that are collected for this purpose.
- 

- |  |            |                    |
|--|------------|--------------------|
|  | <u>YES</u> | <u>NO/NOT SURE</u> |
|--|------------|--------------------|
3. The organization has a quality and/or productivity improvement policy.
- |  |   |   |
|--|---|---|
|  | 2 | 1 |
|--|---|---|
- (If no or not sure, skip to question 5)
4. The organization's quality and/or productivity improvement policy: (check all that apply)
- a. \_\_\_\_\_ is written.
  - b. \_\_\_\_\_ has specific goals and objectives.
  - c. \_\_\_\_\_ has been seen by all organizational members.
  - d. \_\_\_\_\_ is taken seriously by all organizational members.
  - e. \_\_\_\_\_ holds people accountable for success or failure.
-

	<u>YES</u>	<u>NO/NOT SURE</u>
5. The organization has a formally defined quality and/or productivity improvement process in place.	2	1
	(If no or not sure, skip to question 11)	
6. Quality and/or productivity improvement concerns are monitored by the organization at least on a quarterly basis.	2	1
7. Managers at all levels have clearly defined roles in the quality and/or productivity improvement process.	2	1
8. The organization uses "teams" that are actively involved in quality and/or productivity improvement projects. (Teams are usually composed of employees who meet to solve problems.)	2	1
9. The organization has a data base or tracking system for relevant quality and/or productivity improvement information.	2	1
10. Managers at all levels are responsible for the success or failure of quality and/or productivity improvement efforts.	2	1
<hr/>		
	<u>YES</u>	<u>NO/NOT SURE</u>
11. The leaders at the top level of the organization have agreed upon a definition of quality and/or productivity improvement.	2	1
	(If no or not sure skip to question 15)	
12. The leaders at the top level of the organization have set long-term goals concerning quality and/or productivity improvement.	2	1
13. The leaders at the top level of the organization have set short-term objectives concerning quality and/or productivity improvement.	2	1
14. The leaders at the top level of the organization have defined performance measures to monitor progress toward reaching quality and/or productivity improvement-related objectives and goals.	2	1
<hr/>		

How many work units in the organization:		none	very few	some	many	most	all
15.	know how the organization defines quality and/or productivity improvement?	1	2	3	4	5	6
16.	have set long-term goals concerning quality and/or productivity improvement?	1	2	3	4	5	6
17.	have set short-term objectives concerning quality and/or productivity improvement?	1	2	3	4	5	6
18.	have defined performance measures to monitor progress toward reaching their quality and/or productivity improvement-related objectives and goals?	1	2	3	4	5	6

---

How many organizational members:		none	very few	some	many	most	all
19.	can specify, if asked, what goals or objectives they are working toward?	1	2	3	4	5	6
20.	were invited to participate in setting goals or objectives related to their work?	1	2	3	4	5	6
21.	know how the goals or objectives they are working toward relate to the organization's mission?	1	2	3	4	5	6
22.	know how performance measures relate to monitoring their accomplishment of goals and objectives?	1	2	3	4	5	6

---

	<u>YES</u>	<u>NO / NOT SURE</u>
23. The organization attempts to find out what its internal customers think about the work (products, services) they receive.	2	1
	(If no or not sure skip to question 25)	

24. In order to find out what its internal customers think, the organization: (check all that apply)
- a. \_\_\_\_\_ uses surveys.
  - b. \_\_\_\_\_ informally asks the customers.
  - c. \_\_\_\_\_ collects comment cards.
  - d. \_\_\_\_\_ monitors complaints.
  - e. \_\_\_\_\_ asks the employees who have contact with the customers.
- 

	<u>YES</u>	<u>NO / NOT SURE</u>
25. The organization attempts to find out what its external customers think about the work (products, services) they receive.	2	1
	(If no or not sure skip to question 27)	

26. In order to find out what its external customers think, the organization: (check all that apply)
- a. \_\_\_\_\_ uses surveys.
  - b. \_\_\_\_\_ informally asks the customers.
  - c. \_\_\_\_\_ collects comment cards.
  - d. \_\_\_\_\_ monitors complaints.
  - e. \_\_\_\_\_ asks the employees who have contact with the customers.
-

Long-range planning in the organization includes:		<u>YES</u>	<u>NO / NOT SURE</u>
27.	integration of quality and/or productivity improvement planning into general business planning.	2	1
28.	prioritizing quality and/or productivity improvement issues.	2	1
29.	customer input.	2	1
30.	employee input.	2	1
31.	quality and/or productivity improvement implementation strategies for all work units.	2	1
32.	a means for monitoring quality and/or productivity improvement effectiveness over time.	2	1

	<u>strongly</u> <u>disagree</u>	<u>disagree</u>	<u>somewhat</u> <u>disagree</u>	<u>somewhat</u> <u>agree</u>	<u>agree</u>	<u>strongly</u> <u>agree</u>
33. The organization's information flow runs smoothly up and down the chain of command.	1	2	3	4	5	6
34. People in the organization get the timely information they need to do their jobs.	1	2	3	4	5	6
35. The organization has a realistic schedule for replacing outdated equipment.	1	2	3	4	5	6
36. People in the organization are adequately trained to use the equipment they have.	1	2	3	4	5	6
37. Before equipment is bought by or issued to the organization, plans are made concerning how it will be used and who will use it.	1	2	3	4	5	6

	strongly disagree	disagree	somewhat disagree	somewhat agree	agree	strongly agree
38. Efforts are made to update work methods in the organization (e.g., the way work is organized and the tools or materials used to accomplish it).	1	2	3	4	5	6
39. People in charge of similar work units frequently share information about their work methods and practices.	1	2	3	4	5	6
40. Updating work methods can be key to quality and productivity improvement.	1	2	3	4	5	6
<hr/>						
Organizational members with good ideas are likely to:						
41. formally submit them through a suggestion system.	1	2	3	4	5	6
42. tell their supervisors.	1	2	3	4	5	6
43. be asked periodically what they think.	1	2	3	4	5	6
<hr/>						
44. The organization rewards creative thinkers.	1	2	3	4	5	6
45. The organization rewards people for taking calculated risks.	1	2	3	4	5	6
46. Managers at all levels have the authority to try a promising new approach.	1	2	3	4	5	6
47. A promising new approach is likely to be approved quickly for a trial.	1	2	3	4	5	6
<hr/>						
48. The future strength of the organization is dependent on the continuing growth of its members through appropriate training.	1	2	3	4	5	6
49. Training is easily available to those organizational members who require it.	1	2	3	4	5	6

	<u>YES</u>	<u>NO / NOT SURE</u>
50. The organization monitors data to keep track of how it's doing.	2	1

(If no or not sure skip to question 53)

51. The organization monitors data about its: (check all that apply)

- a. \_\_\_\_\_ efficiency.
  - b. \_\_\_\_\_ effectiveness.
  - c. \_\_\_\_\_ productivity.
  - d. \_\_\_\_\_ quality of work produced (services, products).
  - e. \_\_\_\_\_ timeliness of work produced.
  - f. \_\_\_\_\_ innovativeness.
  - g. \_\_\_\_\_ quality of working life for the members.
  - h. \_\_\_\_\_ finances.
- 

52. The data that the organization collects: (check all that apply)

- a. \_\_\_\_\_ are tracked over time.
  - b. \_\_\_\_\_ are compared with goals, standards, or objectives.
  - c. \_\_\_\_\_ are compared with other similar organizations.
  - d. \_\_\_\_\_ are evaluated at least quarterly.
  - e. \_\_\_\_\_ are used to identify problems/barriers.
  - f. \_\_\_\_\_ are evaluated by a team or task force.
  - g. \_\_\_\_\_ are used to identify opportunities for quality and/or productivity improvement.
-

	<u>YES</u>	<u>NO / NOT SURE</u>
53. Work unit supervisors are informed about how their work units stand in relation to goals, objectives, or standards.	2	1
54. Organizational members are informed about how their work units stand in relation to goals, objectives, or standards.	2	1

---

**Top-performing managers at all levels in the organization:**

55. can expect a monetary bonus/award.	2	1
56. can expect an award.	2	1
57. can expect to be recognized by leaders at the top level.	2	1
58. can expect to be told they are doing a great job.	2	1
59. can expect increased responsibility.	2	1

**Top-performing organizational members:**

60. can expect a monetary bonus/award.	2	1
61. can expect an award.	2	1
62. can expect to be recognized by leaders at the top level.	2	1
63. can expect to be told they are doing a great job.	2	1
64. can expect increased responsibility.	2	1

---

65. The performance appraisals of managers at all levels include quality and/or productivity improvement criteria.	2	1
66. The performance appraisals of organizational members include quality and/or productivity improvement criteria.	2	1

---

67.	The organization uses surveys to gather information from its members (excluding present survey).	<u>YES</u>  2	<u>NO / NOT SURE</u>  1
		(If no or not sure skip to question 69)	

68. The surveys are designed to assess: (check all that apply)
- a. \_\_\_\_\_ employee opinions about the organization's practices or policies.
  - b. \_\_\_\_\_ "where" and/or "what" in the organization needs improving.
  - c. \_\_\_\_\_ the outcomes of the organization's work.
  - d. \_\_\_\_\_ the quality of the organization's work.
  - e. \_\_\_\_\_ employee opinions about the goals or objectives they are working toward.
- 

69.	The organization uses teams. (Teams are usually composed of employees who meet to solve problems.)	<u>YES</u>  2	<u>NO / NOT SURE</u>  1
		(If no or not sure skip to question 71)	

70. The teams are used to: (check all that apply)
- a. \_\_\_\_\_ define or clarify the organization's mission and/or work unit missions.
  - b. \_\_\_\_\_ define long-term organizational and/or work unit level goals.
  - c. \_\_\_\_\_ define short-term organizational and/or work unit level goals.
  - d. \_\_\_\_\_ identify obstacles to goal or objective accomplishment.
  - e. \_\_\_\_\_ define performance measures to track progress toward goal attainment.
-

How many work units in the organization:		none	very few	some	many	most	all
71.	use charts or graphs to track data over time? (example: statistical process control)	1	2	3	4	5	6
72.	use diagrams or flow charts to highlight potential causes of problems? (examples: fishbone diagram - Pareto chart)	1	2	3	4	5	6
73.	evaluate their office and work space design?	1	2	3	4	5	6

---

How many work units in the organization:		none	very few	some	many	most	all
74.	use techniques to improve group member relationships? (example: team building)	1	2	3	4	5	6
75.	encourage their members to work together to get the job done?	1	2	3	4	5	6
76.	have established quality improvement teams?	1	2	3	4	5	6

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**PLEASE NOTE**

**Page(s) not included with original material  
and unavailable from author or university.  
Filmed as received.**

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		strongly disagree	disagree	somewhat disagree	somewhat agree	agree	strongly agree
83.	Tools and/or equipment in the organization are maintained and operated at peak efficiency.	1	2	3	4	5	6
84.	Tools and/or equipment in the organization rarely require repair.	1	2	3	4	5	6
85.	The organization's safety and accident record is excellent.	1	2	3	4	5	6
86.	Organizational members are aware of safety regulations.	1	2	3	4	5	6
87.	Absenteeism in the organization is at a minimum.	1	2	3	4	5	6
88.	Organizational members rarely complain about their jobs being stressful.	1	2	3	4	5	6
89.	The organization has sufficient personnel to accomplish its mission.	1	2	3	4	5	6
90.	The organization's turnover rate is low.	1	2	3	4	5	6
91.	Working conditions (noise, heat, light, dirt) in the organization are excellent.	1	2	3	4	5	6
92.	Work facilities (bathrooms, cafeterias, conference rooms, etc.) in the organization are excellent.	1	2	3	4	5	6
93.	Organizational members are well trained.	1	2	3	4	5	6
94.	Organizational members receive the guidance and assistance they need to accomplish their work.	1	2	3	4	5	6

		strongly disagree	disagree	somewhat disagree	somewhat agree	agree	strongly agree
95.	Organizational members rarely need to wait for needed materials and supplies to arrive.	1	2	3	4	5	6
96.	The organization's materials and supplies meet quality specifications.	1	2	3	4	5	6
<hr/>							
Organizational members rarely need to:							
97.	shift work priorities in order to get jobs done.	1	2	3	4	5	6
98.	re-do a job or task.	1	2	3	4	5	6
<hr/>							
In general, the organization's customers:							
99.	are satisfied with the quality of work (services, products) they receive from the organization.	1	2	3	4	5	6
100.	seldom complain.	1	2	3	4	5	6
<hr/>							
In general, the organization's customers:							
101.	receive what they need (or order) from the organization by the promised or expected due date.	1	2	3	4	5	6
102.	are satisfied with the promised or expected due dates.	1	2	3	4	5	6
<hr/>							
In general, the organization's customers:							
103.	find minimal errors or defects in the work (services, products) they receive from the organization.	1	2	3	4	5	6
104.	find the work (services, products) they receive from the organization to be consistent.	1	2	3	4	5	6

APPENDIX THREE

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**PRESIDENTIAL AWARD**

**FOR QUALITY**

**SELF-ASSESSMENT GUIDE**

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United States  
Office of  
Personnel  
Management

Federal  
Quality  
Institute

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## Scoring Procedures

The numbers next to the item responses (0-5) in the Team-Based Assessment (which begins on page 14) are the points that are used to calculate scores. Use the scoring summary sheet on page 8 to compute the team's responses to each item. The instructions below refer to the columns in the scoring summary sheet. An itemized answer sheet is provided at page 13 to facilitate computation of the scores.

1. Total the points beside the responses selected for items within an element. Record in Column A.
2. Divide this sum by the total possible points for the element, as shown in Column B. [The total possible points is the sum of the number of items in that element, multiplied by the highest scoring level (five points).] This result is the percentage points for an element; it should be rounded to the nearest percent and recorded in Column C.
3. Multiply the percentage points by the weight assigned to that element, as shown in Column D. This product is the element score. Record in Column E.

**Example:** The team has completed the self-assessment, and wishes to score the first element, Top Management Leadership and Support. The responses to the items are as follows:

I.A., 3 points	I.D., 2 points	I.G., 3 points
I.B., 4 points	I.E., 4 points	I.H., 2 points
I.C., 3 points	I.F., 4 points	I.I., 0 points

The total is 25 points. This is divided by the total possible points for this element (45), and expressed as a percentage - 56%. This percentage is multiplied by the element's weight of 20 points. In this example, the organization "earned" 11 points for Top Management Leadership and Support.

4. Total the element scores as shown in Column E. This sum is your organization's composite score, and can be compared to a perfect score of 200 points.

*Please note that the fourth element, Training and Recognition, has two separate sections with separate weights. Each section should be scored, recorded, and analyzed separately.*

[For more information about scoring procedures, contact Ms. Paula Sommer at (817) 334-2621.]

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## CHAPTER II

# TEAM-BASED ASSESSMENT

### Introduction

**What is the Team-Based Assessment?** This tool is designed to be used by a team, tasked specifically by top management to evaluate the organization's TQM efforts. The Team-Based Assessment will be a composite picture of the organization.

**Who should be involved?** The team could be the Quality Council or Executive Steering Committee itself, or composed of specially selected individuals who are knowledgeable about TQM and who are representative of the organization. This might include managers and employees at various levels of the organization and from various functional groups. Thought should be given to including union representatives. The team should have at least four members, but probably not more than eight. Larger groups become much harder to work with.

Regardless of the team's composition, however, top management should assume ownership and responsibility for the assessment process. This includes allocating sufficient resources (time, materials, and meeting space), and ensuring that the team has access to pertinent data and information. Provision of these items will greatly facilitate the self-assessment process.

**How should the Team-Based Assessment be used?** The team (chartered by top management and provided with all it needs to successfully complete its task) should complete the assessment using consensus decision-making. This means ensuring that all team members' opinions are heard and understood. A discussion of all points of view will facilitate the process of deciding upon the appropriate response for each item in the assessment. All members of the team must agree with, or at least feel comfortable with, the decision. Consensus is a bit more time consuming than majority voting, but promotes participation by all team members. It is important to solicit all the team members' opinions, because they represent the (perhaps) varied states of TQM implementation throughout the organization.

It would also be helpful to have a trained facilitator work with the team. The facilitator should not contribute to the content of the assessment, but should manage the team process. A trained facilitator can make the consensus process much more efficient and effective.

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## **PRESIDENTIAL AWARD FOR QUALITY TEAM-BASED ASSESSMENT**

### **I. Top Management Leadership and Support**

This element examines how all levels of senior management create and sustain a clear and visible quality value system along with a supporting management system to guide all activities of the organization.

#### **A. Roles of Senior Management**

- 0) Rate as 0 points if not at level 1.
- 1) Top executives are beginning to support quality-related activities. Their support is tentative rather than whole-hearted and active.
- 2) Some top executives and managers are supportive of or interested in quality improvement.
- 3) Many top executives and managers fully support quality efforts. Senior management has contact with employees, customers, and suppliers on quality issues.
- 4) Most top executives are directly, visibly, and actively involved in quality-related activities. Senior management frequently meets with employees, customers, and suppliers on quality issues. Unique, effective leadership approaches are employed across most of the organization. Senior managers stay abreast of major changes and new directions in TQM.
- 5) Top executives are directly, visibly, and actively involved in quality-related activities. Senior management is accessible to or has routine contact with employees, customers, and suppliers. Unique, innovative, and effective leadership approaches are employed. Senior managers continuously update their TQM knowledge.

---

## **B. Ownership of Quality Policy**

- 0) Rate as 0 points if not at level 1.
- 1) A few key managers support quality improvement activities. Quality awareness is present in some parts of the organization. "Ownership" of quality efforts is just beginning in the organization.
- 2) Quality awareness is present across most of the organization. Some groups are convinced that quality improvement is important. Senior management supports quality improvement projects; most are aimed at specific, short-term objectives or payoff. "Ownership" of the quality effort is evident in some groups within the organization. Managers and supervisors are encouraged to improve quality. Plans are being developed to incorporate quality objectives into performance evaluation systems.
- 3) Quality improvement is a significant priority in many parts of the organization. Effective strategies are used to involve many managers and supervisors in quality. Senior management supports long-term quality improvement and some quality improvement projects that have long-term payoff. "Ownership" of the quality effort is evident and reinforced in many parts of the organization. Managers' performance evaluation systems include measurable quality improvement objectives.
- 4) Quality improvement is the number one priority across most of the organization. Effective strategies are used to involve most managers and supervisors in quality. Senior management is committed to long-term quality improvement goals and many quality improvement projects with only long-term payoff. "Ownership" of the quality effort evident, reinforced, and assessed at most organizational levels across most of the organization. Managers' performance evaluation systems recognize quality as a major priority; management behavior at all levels reflects this.
- 5) The organization's policy is that quality improvement is the number one priority and the key to success. Effective strategies are used to involve all managers and supervisors in quality. Senior management commitment is for the long term. There are no short-term compromises that are counter to quality. "Ownership" of the quality effort is evident, assessed, and reinforced across the organization at all levels. Accountability for improving systems/processes and products/services is established throughout the organization.

---

### **C. Communicating Quality Vision**

- 0) Rate as 0 points if not at level 2.
- 2) Senior management is attuned to the extent to which quality values have been adopted throughout the organization.
- 3) Many top executives and managers communicate the organization's quality vision and values.
- 4) Senior management communicates the organization's quality vision and values. Actions across most of the organization reflect quality values.
- 5) Senior managers communicate the organization's quality vision and values. Actions across the organization reflect quality values.

### **D. Value System and Environment**

- 0) Rate as 0 points if not at level 2.
- 2) Belief in continuous improvement permeates some parts of the organization.
- 3) The environment created by management results in pride in work, continuous improvement, and trust in many parts of the organization. Belief in continuous improvement permeates many parts of the organization. The extent to which quality values have been adopted throughout the organization is occasionally evaluated.
- 4) The environment created by management results in pride in work, continuous improvement, and trust. Belief in continuous improvement permeates most of the organization. The extent to which quality values have been adopted throughout the organization is evaluated on a periodic basis.
- 5) The environment created by management results in innovation, pride in work, continuous improvement, and trust. Belief in continuous improvement permeates the organization. The extent to which quality values have been adopted throughout the organization is evaluated on a routine basis.

---

#### **E. Allocations to TQM Efforts (e.g., funds, staff, time, facilities, equipment)**

- 0) Rate as 0 points if not at level 1.
- 1) Few resources are allocated to quality improvement.
- 2) Some resources are allocated to initiate quality improvement in some parts of the organization.
- 3) Some resources (time, training, and dollars) are invested to improve quality.
- 4) Adequate resources (time, training, and dollars) are invested to improve quality throughout the organization.
- 5) Management provides significant resources (time, staffing, and dollars) that are necessary to improve quality throughout the organization. Plans exist for future allocations.

#### **F. Actions to Ensure Cooperation**

- 0) Rate as 0 points if not at level 1.
- 1) Communication from senior management is primarily top-down. Cooperation across departments occurs when problems or crises arise.
- 2) Communication with senior management is usually top-down. Managers and supervisors are encouraged to cooperate across departments and share information.
- 3) Communication with senior management is often two-way, clear, and consistent. Many departments cooperate to achieve quality objectives.
- 4) Senior management ensures communications are two-way, clear, and consistent. Information is shared across most departments. Most departments cooperate to achieve continuous improvement.
- 5) Senior management ensures open communication (vertically and horizontally), information-sharing, and cooperation across departments.

---

**G. Removing Barriers to Excellence (e.g., de-regulating work, encouraging risk taking and innovation, delegating authority, and discouraging short-cut, quick-fix solutions)**

- 0) Rate as 0 points if not at level 2.
- 2) Managers are beginning to remove barriers to excellence.
- 3) Managers remove barriers to excellence in many areas.
- 4) Managers remove barriers to excellence across most of the organization.
- 5) Managers play an active role in removing barriers to excellence across the organization.

**H. Union Relationship**

- 0) Rate as 0 points if not at level 1.
- 1) Senior management has not considered union participation.
- 2) Senior management is considering taking actions to involve the union in quality improvement efforts.
- 3) Senior management reacts positively to union overtures regarding quality improvement efforts.
- 4) Senior management has developed a vision of a relationship with the union and takes every opportunity to develop that relationship.
- 5) Senior management has developed an effective strategy for gaining union support, cooperation, and participation.

---

**I. Commitment to Public Health and Safety, Environmental Protection and Ethical Conduct**

- 0) Rate as 0 points if not at level 2.
- 2) Quality policies reflect a commitment to public health and safety, environmental protection, and ethical conduct.
- 3) Quality policies reflect commitment to public health and safety, environmental protection, and ethical conduct. Improvement efforts across many parts of the organization reflect this commitment.
- 4) Quality policies reflect commitment to public health and safety, environmental protection, and ethical conduct. Improvement efforts across most of the organization reflect this commitment.
- 5) Quality policies reflect commitment to public health and safety, environment protection, and ethical conduct. Improvement efforts across the organization reflect this commitment.

---

## **II. Strategic Quality Planning**

This element examines the organization's quality planning process, quality plans, and how all key quality requirements are integrated into overall planning.

### **A. Operational and Strategic Goals and Objectives**

- 0) Rate as 0 points if not at level 1.
- 1) General strategic and operational plans contain elements of quality improvement.
- 2) Goals and plans for quality improvement are established for key functional areas, but do not require major effort and change in the organization.
- 3) Operational and strategic goals and plans for quality improvement are established across the organization and are central to mission. Goals require more improvement each year.
- 4) Operational and strategic goals and plans for quality improvement are established across the organization that relate directly to mission, vision, and values. Goals will be relatively difficult to achieve.
- 5) Operational and strategic goals and plans for quality improvement are established across the organization that relate directly to the mission, vision, and values of the organization. Goals require the organization to "stretch".

### **B. Operational Quality Plans**

- 0) Rate as 0 points if not at level 1.
- 1) General strategic and operational plans contain specific examples of quality improvement.
- 2) Plans for quality improvement are established for key functional areas.
- 3) Operational plans are developed at key sub-organizational levels to link with the strategic plan. Managers are held accountable for attaining major objectives.

---

4) Operational plans are developed at most sub-organizational levels to link with the strategic plan. Managers are held accountable for attaining major objectives.

5) Operational plans at sub-organizational levels provide clear details for the strategic plan. Managers are held accountable for attaining the objectives.

**C. Process for Developing, Implementing and Managing Quality Goals and Objectives**

0) Rate as 0 points if not at level 2.

2) A process is used to develop quality improvement goals for key functional areas. Senior management approves the quality improvement goals.

3) A formal process is used across the organization to develop quality improvement goals. Senior management approves the strategic plan.

4) A formal planning process is used across the organization to develop quality improvement goals. Quality improvement goals and objectives are included in the overall strategic planning and budgeting process. Senior management provides input to development of and approves the strategic plan.

5) The strategic planning and budgeting process is formally used to develop quality improvement goals throughout the organization. Senior management is actively and personally involved in the development of the strategic plan.

**D. Employee, Customer, and Supplier Participation**

0) Rate as 0 points if not at level 2.

2) Management is responsible for quality improvement planning. Customer needs are generally known and considered in the planning process.

3) Employees participate in the planning process. Customers and suppliers provide input to the planning process.

4) Employees, customers and suppliers participate in the planning process.

5) Employees, customers, and suppliers are full participants in the planning process.

---

**E. Evaluating and Improving Planning Process (i.e., how customer-contact employees are empowered to resolve problems)**

- 0) Rate as 0 points if not at level 3.
- 3) A procedure for evaluating the planning process exists, and results in corrective actions being taken.
- 4) The planning process is formally evaluated as needed and corrective actions are taken.
- 5) The planning process is formally evaluated on a regular basis. Corrective actions are taken to improve the process.

**F. Planning Data, Information and Analysis**

- 0) Rate as 0 points if not at level 1.
- 1) Customer needs may not be routinely considered during the planning process.
- 2) Some customer requirements and process capabilities are used in planning in some parts of the organization.
- 3) Some types of quality data, information, and analyses (customer requirements, process capabilities, and supplier data) are used in planning in many parts of organization.
- 4) Principal types of quality data, information, and analyses (customer requirements, process capabilities, supplier data, and benchmark data) are used in planning in most parts of organization.
- 5) Principal types of quality data, information, and analyses (customer requirements, process capabilities, supplier data, and benchmark data) are used in planning throughout the organization.

---

### **III. Customer Focus**

This element examines the organization's overall customer service systems, knowledge of internal and external customers, as well as responsiveness and ability to meet expectations.

#### **A. Methods for Obtaining and Using External Customer Requirements**

- 0) Rate as 0 points if not at level 1.
- 1) Many parts of the organization have identified external customers and begun to determine needs/expectations.
- 2) Most external customers are identified. Customer needs/expectations are determined through ad hoc processes rather than systematic methods.
- 3) Effective feedback systems are used to obtain knowledge of external customer requirements/expectations for many products/services. Methods used to obtain knowledge of external customer requirements/expectations elicit important quality features for many products/services.
- 4) Effective feedback systems are used to obtain knowledge of external customer requirements/expectations for most products/services. Methods used to obtain knowledge of external customer requirements/expectations elicit important quality features for most products/services.
- 5) A variety of effective and innovative methods are used to obtain knowledge of external customer requirements/expectations for all products/services. Methods used to obtain knowledge of external customer requirements/expectations elicit important quality features for all products/services.

---

## **B. Methods of Obtaining and Using Internal Customer Requirements**

- 0) Rate as 0 points if not at level 2.
- 2) Most internal customers are identified. Customer needs/expectations are determined through ad hoc processes rather than systematic methods.
- 3) Effective feedback systems are used to obtain knowledge of internal customer requirements/expectations for many products/services. Methods used to obtain knowledge of internal customer requirements/expectations elicit important quality features for many products/services.
- 4) Effective feedback systems are used to obtain knowledge of internal customer requirements/expectations for most products/services. Methods used to obtain knowledge of internal customer requirements/expectations elicit important quality features for most products/services.
- 5) A variety of effective and innovative methods are used to obtain knowledge of internal customer requirements/expectations for all products/services. Methods used to obtain knowledge of internal customer requirements/expectations elicit important quality features for all products/services.

## **C. Customer Feedback Systems**

- 0) Rate as 0 points if not at level 1.
- 1) Some parts of the organization are initiating methods for determining customer requirements and soliciting feedback. Customer complaints are the major method for obtaining customer feedback in some parts of the organization and may not be used systematically to improve products/services.
- 2) Customer feedback systems report on general satisfaction/dissatisfaction with products/services. Customer feedback is used in some parts of the organization to take corrective action.
- 3) Effective systems are in place for many products/services linking internal and external customer feedback to groups that can act on the information. Data from customer feedback systems are sent to individual managers to plan and carry out corrective actions.

- 
- 4) Effective systems are in place for most products/services linking internal and external customer feedback to groups that can act on the information. Customer feedback is acted on at the appropriate levels, and data are used to take corrective action and improve processes.
  - 5) Effective, well-defined systems are in place linking internal and external customer feedback to groups that can act on the information. Products/services requiring improvement (based on customer feedback) receive priority attention. Corrective action plans are developed and implemented.

#### **D. Customer Service Standards**

- 0) Rate as 0 points if not at level 1.
- 1) Service standards focus on reducing known problems.
- 2) Some customer service standards are in place. Customer service standards for some products/services are reviewed and revised occasionally.
- 3) Service standards (based on customer feedback) are set and tracked for many products/services. Internal and external customer service standards for key products/services are reviewed and revised as needed. Many employees are aware of customer needs/expectations; they understand and generally fulfill customer service standards.
- 4) Service standards for most products/services are based on expectations of internal and external customers. Progress toward these standards is tracked and used to ensure that customer needs are met. Internal and external customer service standards for most products/services are reviewed regularly and revised as needed. Management ensures that employees are aware of internal and external customer needs/expectations. Employees understand and generally fulfill customer service standards.
- 5) Service standards are aimed at exceeding internal and external customer expectations. Performance relative to the standards are tracked and used to ensure customer needs are met. Internal and external customer service standards are reviewed regularly and revised as needed. Management actively seeks ways to ensure that all employees are aware of internal and external customer needs/expectations, as well as understanding and fulfilling customer service standards.

---

#### **E. External Customer Interface Practices**

- 0) Rate as 0 points if not at level 3.
- 3) Customer interface practices are used in many areas. Training on customer interface practices is provided for customer-contact employees.
- 4) Systematic customer interface practices are used across most of the organization. Support is provided to assist customer-contact employees. Specific training on external customer interface practices is provided for customer-contact employees.
- 5) Systematic customer interface practices are used across the organization. Technology and logistics support are provided to assist customer-contact employees. Training is designed for customer-contact employees that produces desired attitudes and behaviors.

#### **F. Evaluating and Improving Customer Interface Processes**

- 0) Rate as 0 points if not at level 3.
- 3) The organization evaluates and improves the effectiveness of some of its different customer interaction processes. Validity of the processes is ensured.
- 4) The organization evaluates and improves the effectiveness of most of its different customer interaction processes. Validity of the processes is ensured.
- 5) The organization evaluates and improves the effectiveness of all its different customer interaction processes. Validity of the processes is ensured.

---

## **IV. Training and Recognition**

This element examines the organization's efforts to develop and utilize the full potential of the workforce for quality improvement, and its efforts to use rewards and incentives to recognize individuals.

### **Training**

#### **A. Education and Training Strategy for Quality Improvement**

- 0) Rate as 0 points if not at level 1.
- 1) The organization has plans to increase quality training.
- 2) The organization is developing a systematic education and training strategy that considers quality objectives.
- 3) The organization is implementing a systematic, documented education and training strategy that considers quality objectives.
- 4) The organization has implemented a systematic, documented education and training strategy that supports quality objectives. The training strategy is integrated into the organizational sub-components' operational quality plans.
- 5) The organization has implemented a systematic, documented education and training strategy across the organization that supports quality objectives. The strategy is fully integrated into organization-wide strategic quality plans.

#### **B. Systematic Needs Analysis**

- 0) Rate as 0 points if not at level 3.
- 3) Managers developed an education and training strategy that may be based on a needs analysis.
- 4) The education and training strategy is based on a systematic needs analysis.
- 5) The education and training strategy is based on a comprehensive, systematic needs analysis conducted across the organization.

---

### **C. Types of Training for Managers**

- 0) Rate as 0 points if not at level 1.
- 1) Managers in some parts of the organization are trained in quality awareness and group problem solving to support continuous improvement. Training is also offered to upgrade technical skills.
- 2) Managers in many parts of the organization are trained in quality awareness and group problem solving to support continuous improvement. Ongoing training in technical skills is offered.
- 3) Managers in most of the organization are trained in quality awareness and group problem solving to support continuous improvement. Technical skills are upgraded to overcome identified deficiencies.
- 4) Most managers are trained in support of the organization's vision and goals. Training focuses on continuous improvement. Technical skills are upgraded.
- 5) Nearly all managers are provided quality training in support of the organizations's vision and goals. Training focuses on continuous improvement. Technical skills are continuously upgraded.

### **D. Types of Training for Employees**

- 0) Rate as 0 points if not at level 1.
- 1) Employees in some parts of the organization are trained in quality awareness and group problem solving to support continuous improvement. Training is also offered to upgrade technical skills.
- 2) Employees in many parts of the organization are trained in quality awareness and group problem solving to support continuous improvement. Ongoing training in technical skills is offered.
- 3) Employees in most of the organization are trained in quality awareness and group problem solving to support continuous improvement. Technical skills are upgraded to overcome identified deficiencies.
- 4) Most employees are trained in support of the organization's vision and goals. Training focuses on continuous improvement. Technical skills are upgraded.

- 
- 5) Nearly all employees are provided quality training in support of the organization's vision and goals. Training focuses on continuous improvement. Technical skills are continuously upgraded.

**E. Fiscal Investment in Education and Training**

- 0) Rate as 0 points if not at level 1.
- 1) Minimal resources are committed to quality training.
- 2) There is an increasing fiscal commitment to quality training.
- 3) There is a significant increase in the training resource commitment compared to the period before TQM was implemented.
- 4) There is a continuing commitment of significant resources to training.
- 5) The training investment shows clear evidence of commitment to quality and human resource development.

**F. Effectiveness of Education and Training**

- 0) Rate as 0 points if not at level 4.
- 4) The effectiveness of quality education and training is periodically evaluated.
- 5) The effectiveness of quality education and training is evaluated and improved on a continuing basis.

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## **Recognition**

### **G. Contribution to Quality Goals and Objectives**

- 0) Rate as 0 points if not at level 1.
- 1) Rewards and recognition may not be focused on quality improvement. Rewards and recognition are primarily given for individual effort. Some changes are planned for recognizing teamwork.
- 2) Rewards and recognition at some levels are tied to quality goals/objectives. Rewards and recognition are heavily focused on individual efforts, though some teams are also recognized and rewarded.
- 3) Employees are evaluated, recognized, and rewarded for contributions. The reward/recognition system is tied to the organization's quality goals/objectives, is broad-based, includes peer recognition, and encompasses many levels of the organization. Managers in many parts of the organization regularly recognize individuals and teams for their contributions. Individuals and teams are recognized for achievements.
- 4) A process is in place to evaluate, recognize, and reward employee contributions. The process is reviewed and improved. The reward/recognition system is tied to the organization's quality goals/objectives, is broad-based, includes peer recognition, and encompasses most levels of the organization. Managers at most levels personally, regularly, and visibly recognize individuals and teams for their contributions. There is increased emphasis on recognition of teamwork.
- 5) A formal process is used to evaluate, recognize, and reward employee contributions. The process is evaluated and improved continuously. The reward/recognition system is tied to the organization's quality goals/objectives, is broad-based, is innovative, includes peer recognition, and encompasses all levels of the organization. Managers personally, regularly, and visibly recognize individuals and teams for their contributions. There is increased emphasis on recognition of teamwork, and balance has been achieved between individual and team recognition.

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## **H. Methods for Developing Reward and Recognition System**

- 0) Rate as 0 points if not at level 1.
- 1) The reward/recognition system may not be valued by employees.
- 2) Some employees do not value the reward/recognition system.
- 3) Employees do not participate in the development of the reward/recognition system, but do value it.
- 4) Selected employees participate in the development of the reward/recognition system. Employees across the organization value the system.
- 5) Employees across the organization participate in the development of the reward/recognition system and value it.

## **I. Recognition Trends**

- 0) Rate as 0 points if not at level 1.
- 1) The number of people recognized is relatively constant.
- 2) The number of people recognized for quality is increasing.
- 3) There is increasing recognition of employees and managers.
- 4) There are generally favorable trends in the percent of employees and managers recognized for team and individual contributions.
- 5) There are consistently favorable trends regarding the percent of employees and managers recognized for team and individual contributions.

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## **V. Employee Empowerment and Teamwork**

This element examines the effectiveness and extent of workforce involvement in TQM, and the approaches used to enhance employee empowerment.

### **A. Strategy for Involving and Empowering Workforce**

- 0) Rate as 0 points if not at level 1.
- 1) Managers in some parts of the organization are beginning to involve employees. Some managers support employee involvement. There are only general plans to expand employee involvement.
- 2) Managers in some parts of the organization involve and empower employees (including union members). Many managers support employee involvement; trust and respect is growing in these units. Plans focus on increasing employee involvement and expanding the means for employees to become involved.
- 3) A majority of managers support employee contributions and teamwork. Trust and respect between management and employees are growing. Efforts to involve and empower employees (including union members) are delegated to program managers. Managers in many parts of the organization involve and empower employees. Approaches are used to involve customers and suppliers in the improvement of some products/services. Future plans address how to increase involvement of the entire workforce in many parts of organization.
- 4) An effective strategy for involving and empowering the entire workforce is used. The strategy is tied to the strategic quality plan. Effective approaches are used to involve customers and suppliers in the improvement of major products/services. Senior management and most middle managers support employee involvement, contributions, and teamwork. Trust and respect between management and employees are typical in most of the organization. Future plans specifically address how to increase the involvement of the entire workforce.

- 
- 5) An innovative and effective strategy for involving and empowering the entire workforce is used. The strategy is tied to quality goals and objectives set in the strategic plan. Effective approaches are used to involve customers and suppliers. The strategy leads to an environment that supports employee contributions and teamwork, and builds trust and respect between management and employees. Future plans address how to sustain momentum and enthusiasm.

#### **B. Enhancing Employee Empowerment**

- 0) Rate as 0 points if not at level 1.
- 1) Few employees feel a sense of empowerment and ownership of the quality improvement efforts.
- 2) Specific actions are taken in some parts of the organization to enhance employee empowerment. Some employees feel a sense of empowerment and ownership of quality improvement efforts. Authority, rewards, information, and knowledge are shared at lower levels in some parts of the organization.
- 3) A variety of approaches is used in many parts of the organization to enhance employee empowerment. Teams feel a strong sense of empowerment and ownership of work processes in many parts of organization. Individuals in many parts of the organization feel ownership of quality improvement efforts, and exhibit personal pride in the quality of work. Authority, rewards, information, and knowledge are increasingly shared at lower levels in many parts of organization.
- 4) A variety of effective approaches is used to enhance employee empowerment in most parts of the organization. Teams feel a strong sense of empowerment and ownership of work processes across most of the organization. Individuals across most of the organization feel ownership of quality improvement efforts, and exhibit personal pride in the quality of work. Authority, rewards, information, and knowledge are moved to lower levels in most of organization.

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- 5) A variety of effective and innovative approaches is used to enhance employee empowerment. Teams feel a strong sense of empowerment and ownership of work processes across the organization. Individuals across the organization feel ownership of quality improvement efforts, and exhibit personal pride in the quality of work. Authority, rewards, information, and knowledge are moved to the lowest feasible levels across the organization.

#### **C. Means for Workforce Involvement in TQM**

- 0) Rate as 0 points if not at level 1.
- 1) A traditional suggestion system is the major means for employees to become involved.
- 2) The ways for employees to become involved are limited.
- 3) A variety of means is employed in many parts of the organization to involve the workforce, including cross-functional teams and natural work groups.
- 4) A variety of effective means is employed in most of the organization to involve the workforce, including cross-functional teams and natural work groups.
- 5) A variety of effective and innovative means is employed across the organization to involve the workforce, including cross-functional teams and natural work groups.

#### **D. Involvement Trends**

- 0) Rate as 0 points if not at level 1.
- 1) Involvement levels are relatively constant.
- 2) Involvement levels are increasing.
- 3) Both individual and team involvement levels are increasing.
- 4) There are generally positive trends for individual and team involvement for both managers and employees.
- 5) There are positive trends for the last three-to-six years for individual and team involvement, both for managers and employees.

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## **VI. Measurement and Analysis**

This element examines the scope, validity, use, and management of data and information that underlie the organization's TQM system; how the data are used to support improvement; and the process for developing measures.

### **A. Process for Developing Measures**

- 0) Rate as 0 points if not at level 3.
- 3) Senior management approves macro measures relating to the organization's goals and objectives for mission performance. Development of other product/service and process measures is delegated to program managers.
- 4) Senior management provides input to the development of and approves measures relating to the organization's goals and objectives for mission performance. A process is used to develop other product/service and process measures that are related to macro measures.
- 5) Senior management is actively and personally involved in the development of macro measures relating to the organization's goals and objectives for mission performance. A process is used to develop other product/service and process measures that are integrated with and support macro measures.

### **B. Measures Relate to Goals and Objectives**

- 0) Rate as 0 points if not at level 1.
- 1) Measures exist for a few products/services.
- 2) Measures exist for some products/services and processes.
- 3) Measures exist relating to goals and objectives for many products/services. Other process measures that support these product/service measures exist.
- 4) Measures exist relating to goals and objectives for most products/services. Other process measures that support these product/service measures exist.
- 5) Macro measures relating to the organization's goals and objectives for mission performance exist. Other product/service and process measures exist that are integrated with and support macro measures.

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### **C. Data for Measurement**

- 0) Rate as 0 points if not at level 1.
- 1) Quality, timeliness, and productivity data are available in a few areas. Customer information is collected in a few areas.
- 2) Limited data on quality, timeliness, and productivity are available for the organization's processes and products/services. Information is collected from some customers.
- 3) Quality, timeliness, and productivity data are available for many products/services, as well as some processes. Information is collected from many internal and external customers and suppliers.
- 4) Quality, timeliness, and productivity data are available on most products/services, as well as many processes. Information is collected from most internal and external customers and suppliers.
- 5) Comprehensive quality, timeliness, and productivity data are available for all products/services, as well as most processes. Information is collected from internal and external customers and suppliers.

### **D. Ensuring Adequacy of Data**

- 0) Rate as 0 points if not at level 2.
- 2) Processes and technologies are used in some parts of the organization to ensure that the information collected is useful.
- 3) Processes and technologies are used in many parts of the organization to ensure that the information collected is complete, timely, accurate, and useful. Data are collected by the process owners.
- 4) Processes and technologies are used across most of the organization to ensure that the information collected is complete, timely, accurate, valid, and useful. Data are collected by the process owners.
- 5) Processes and technologies are used across the organization to ensure that the information collected is complete, timely, accurate, valid, and useful. Data are collected by the process owners.

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## **E. Data Analysis**

- 0) Rate as 0 points if not at level 1.
- 1) Data analysis to support quality improvement is beginning. Data are primarily used for reporting purposes rather than improvement.
- 2) A centralized group is responsible for analyzing data in support of quality improvement. Employees in some parts of the organization may also analyze data.
- 3) Employees in many parts of the organization analyze data and translate it into actionable information to support continuous quality improvement.
- 4) Employees across most of the organization analyze data and translate it into actionable information to support continuous quality improvement.
- 5) Employees across the organization analyze data and translate it into actionable information to support continuous quality improvement.

## **F. Benchmarking**

- 0) Rate as 0 points if not at level 2.
- 2) Areas are identified for collecting benchmark data.
- 3) Benchmark data are collected for some products/services and processes. Comparisons are made and improvements initiated. The benchmarking process is expanded periodically.
- 4) Many areas are analyzed to determine benchmarking needs. Comparative data are collected from top performers. Comparisons are made for certain products/services and processes in these areas. Improvements are made. Periodic review and improvement are made to the benchmarking process.
- 5) The organization is analyzed to determine priorities for benchmarking. Comparative data are collected from recognized leaders in the field. Comparisons are made for priority products/services and internal processes. Systematic improvements are made. Formal review and improvement are made to the benchmarking process.

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## **VII. Quality Assurance**

This element examines the systematic approaches used by the organization to design, assess, control, and improve processes and inputs to produce quality products and services. Emphasis is on prevention rather than detection.

### **A. Designing and Introducing Products and Services to Meet Customer Requirements**

- 0) Rate as 0 points if not at level 1.
- 1) New and improved products/services for external customers are designed to meet internally developed specifications.
- 2) New and improved products/services intended for external customers are designed to meet customer requirements in some parts of the organization.
- 3) New and improved products/services and processes are designed to meet or exceed customer requirements in many parts of the organization. Methods of process optimization are occasionally used.
- 4) New and improved products/services and processes are designed to meet or exceed customer requirements in most parts of the organization. Methods of process optimization are generally used.
- 5) New and improved products/services and processes are designed to meet or exceed customer requirements. Methods of process optimization are used routinely.

### **B. Process Control and Improvement**

- 0) Rate as 0 points if not at level 1.
- 1) There is a systematic approach to quality assurance in the planning stages. Inspection remains the primary tool of quality control.
- 2) Processes are controlled in some parts of the organization to meet design plans and customer requirements. Appropriate analytic tools are used in some parts of the organization to identify and solve problems that disrupt processes. In most parts of the organization methods are used for quality assurance that emphasize detection, not prevention.

- 3) Processes are controlled in many parts of the organization to meet design plans and customer requirements. Appropriate analytic tools are used in many parts of the organization to identify and solve problems that disrupt processes. Methods used to assure quality of key products/services emphasize prevention, not detection. Verifications are used in many parts of organization to assure that improvements produce the desired results. In many parts of the organization process changes are systematically communicated to all relevant work units.
- 4) Processes are controlled across most of the organization to meet design plans and customer requirements. Appropriate analytic tools are used across most of the organization to identify and solve problems that disrupt processes. Methodologies are used across most of the organization to continuously improve processes by reducing statistical variability. Systematic verifications are used across most of the organization to assure that improvements produce desired results. In most parts of the organization process changes are systematically communicated to all relevant work units.
- 5) Processes are controlled across the organization to meet design plans and customer requirements. Appropriate analytic tools are used across the organization to identify and solve problems that disrupt processes. Methodologies are used across the organization to continuously improve processes by reducing statistical variability. Systematic verifications are used across the organization to assure that improvements produce desired results. Process changes are systematically communicated to all relevant work units across the organization.

**C. Assessing Quality, Quality Systems and Quality Processes (e.g., systems audits, product or service audits)**

- 0) Rate as 0 points if not at level 2.
- 2) Assessments of quality are performed occasionally. Areas for improvement are targeted.
- 3) Assessments of quality, quality systems, and quality practices are performed occasionally in many parts of the organization. Findings are translated into improvements and prevention of problems.

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- 4) Comprehensive assessments of quality, quality systems, and quality practices are performed at appropriate intervals across most of the organization. Findings are translated into improvements and prevention of problems. Quality assurance systems across most of the organization are updated to keep pace with changes in technology and quality improvement practices and techniques.
  - 5) Comprehensive assessments of quality, quality systems, and quality practices are performed at regular intervals across the organization. Findings are translated into improvements and prevention of problems. Quality assurance systems across the organization are updated to keep pace with changes in technology and quality improvement practices and techniques.

#### **D. Process for Assuring External Supplier Quality**

- 0) Rate as 0 points if not at level 2.
- 2) Verification checks are made to assure quality standards are met by some suppliers. Quality is considered secondary to cost when selecting suppliers.
- 3) Major external suppliers are required to meet quality standards in many parts of organization. Quality is considered when selecting suppliers.
- 4) Systematic approaches are used across most of the organization to assure and assess the quality of externally provided materials, components, information, and services. Quality is a major consideration when selecting major suppliers.
- 5) Systematic approaches are used across the organization to assure, assess, and improve the quality of externally provided materials, components, information, and services. Quality is a major consideration when selecting all suppliers.

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## **VIII. Quality and Productivity Improvement Results**

**This element examines the measurable results of the organization's quality improvement efforts.**

### **A. Mission Performance**

- 0) Rate as 0 points if not at level 1.**
- 1) There is anecdotal evidence of improvement.**
- 2) Product/service measures demonstrate improving results, but may not be competitive with "industry" standards (where applicable).**
- 3) Most significant measures of mission performance demonstrate good results over the past three years, and are competitive with "industry" standards (where applicable).**
- 4) Most significant measures of mission performance demonstrate excellent results over the past four years, and are competitive with "industry" standards (where applicable).**
- 5) Most significant measures of mission performance demonstrate exceptional results over the past five years, and are superior to "industry" standards (where applicable).**

### **B. External Customer Satisfaction**

- 0) Rate as 0 points if not at level 1.**
- 1) Customer complaints are decreasing.**
- 2) Customer satisfaction shows improvement.**
- 3) Customer satisfaction shows good results over the past three years.**
- 4) Customer satisfaction shows excellent results over the past four years.**
- 5) Customer satisfaction shows exceptional results over the past five years.**

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### **C. Key Organizational Measures**

- 0) Rate as 0 points if not at level 1.
- 1) Improvements have been achieved in one or more dimensions (quality, timeliness, productivity) in a few parts of the organization.
- 2) Improvements have been achieved in more than one dimension (quality, timeliness, productivity). In-process and end-item measures are improving in some parts of the organization.
- 3) Good results have been achieved in organizational quality, timeliness, and productivity over the past three years. Good results have been achieved in in-process and end-item measures in some parts of organization over the past three years.
- 4) Excellent results have been achieved in organizational quality, timeliness, and productivity over the past four years. Excellent results have been achieved in in-process and end-item measures across most of the organization over the past four years.
- 5) Exceptional results have been achieved in organizational quality, timeliness, and productivity over the past five years. Exceptional results have been achieved in in-process and end-item measures across the organization over the past five years.

### **D. External Supplier Performance**

- 0) Rate as 0 points if not at level 2.
- 2) Some suppliers meet quality standards.
- 3) Major suppliers meet quality standards.
- 4) Quality performance of major suppliers has been improving over the past three years.
- 5) Quality performance of major suppliers has been improving over the past five years.

# Appendix 4. Supervisors' Opinion Survey -- Survey Data.

Supervisors Opinion Survey and Prioritization of Roadblocks to TOM Implementation

Answer	Q	chase	vte	#	500	600	900	TOT	500	600	900	TOT	500	600	900	TOT
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Legend:

- Q is the questions asked within the survey.
- Answer refers to the 6 or 7 answers provided for each question
- Chase refers to the values chosen or assigned (1-6 for question 2 and 1-7 for questions 2-5) for question and answer combination.
- # is the number of votes cast for the specific question, answer and chase combination.
- # is the value of the choice times the number voted.
- # = chase X vte

Answer	Q	chase	vte	#	500	600	900	TOT	500	600	900	TOT	500	600	900	TOT
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Total	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Appendix 4  
Summary of Data  
TQL Survey on Managers Opinions  
June, 1993

1. Do you believe the command has (please check one):

# of Votes

All      MC

1	0	(1) Significantly improved in implementation of TQL/TQM over the past two years.
6	1	(2) Improved somewhat in implementation of TQL/TQM over the past two years.
10	1	(3) Stayed about the same time -- little real change.
11	3	(4) Regressed somewhat in implementation of TQL/TQM over the past two years.
4	0	(5) Significantly regressed in implementing TQL/TQM over the past two years.

Mean for all = 3.34

Mean for Management Council = 3.4

Appendix 4  
Summary of Data  
TQL Survey on Managers Opinions  
June, 1993

2. Rank the following areas as to their hinderance to NSCL's adoption of TQL/TQM. Please assign a value of six (6) to the area you believe is the biggest problem, a five (5) to the next most critical and etc. through a one (1) to the least. Suggest you use the Nominal Group Technique method for assigning priorities, ie., first rate the most critical, then the least critical, then the second most critical, then the second least critical, etc.

<u>Ranking</u>		<u>Problem Area for Implementation</u>	
<u>All</u>	<u>MC</u>		
<u>Score</u>	<u>%Tl</u>	<u>Score</u>	<u>%TL</u>
170	24	23	22
139	20	17	16
126	18	21	20
92	13	15	14
89	13	12	11
86	12	17	16

Responses to the question: I wish you had included the following additional causes for difficulty in implementing TQM/TQL.

- \* Top management believed that TQL/M was good for those below them but not for themselves.
- \* The front office tried to force TQL before each level of management was on-board.
- \* Next week's program will be different.
- \* Time and resources are the biggest problem. The codes I am familiar with are extremely busy and have little or no time to work TQL.
- \* Command does not use TQL/TQM for "old problems" like the "message errors".
- \* Add to the top leaders execution (Changes in policy)
- Add to A flawed TQL/TQM approach (trying to force)
- \* Inadequate incentives to improve ("What's in it for me?")
- \* Fear of loosing resources/power when one eliminates waste.
- \* - Management Council
- No lower level/employee buy-in to the program (No empowerment to lowest levels)
- CO/TD who don't use TQL.
- \*\* Lack of clearly defined process.
- \*\* Should address time/timing. What are the priorities?
- Maybe over involvement of top management is/was a problem.
- We should "just do it".

Appendix 4  
Summary of Data  
TQL Survey on Managers Opinions  
June, 1993

3. Please rank the following organizational or cultural issues as to their negative impact on implementing TQL/TQM. Assigning a seven (7) to the most critical, a six (6) to the next critical, etc. through a one (1) to the least critical.

<u>Ranking</u>				<u>Problem Area for Implementation</u>
<u>All</u>		<u>MC</u>		
<u>Score</u>	<u>%TL</u>	<u>Score</u>	<u>%TL</u>	
176	20	29	21	There is a lack of common purpose between the organizational units and/or their managers.
154	17	18	13	Distrust between various levels of management.
122	14	8	6	Distrust between managers and employees.
121	14	27	19	Belief by many that existing processes are generally OK and that the command does not need to change to the degree suggested by TQL/TQM.
116	13	25	18	The existing management and employee roles (what people think they are supposed to do) are not consistent with the degree of employee participation suggested by TQL/TQM.
108	12	11	8	The rewards and recognition provided are inadequate to justify the efforts necessary to implement TQL/TQM.
101	11	22	16	TQM/TQL Processes are just too far from the way NSCL does its work to be easy to adopt.

Comments to the request for other potential reasons that should have been included:

- \* - Are TQM/L administrative cost to maintain worth while?
- Does a type commander care about TQL when he wants a rep on a ship now. Priority management, not TQL takes precedence.
- \* For TQM/L to be successful it must be moved to the lowest level, to each worker, and its major goal should be to build team work among employees. Management needs only to set visions/goals, assure support funding and other resources are available and to assure suggested improvements are acted upon immediately. For TQM/L to be successful it must be a short lived task and it should always do one of three things for our employees: (1) increase money; (2) make job easier; (3) make employees/NSCL look good.
- \* We have tried Dr. Sink and Florida Light and I think the time has come to build what NSCL needs. I think if J. Twine and others are turned loose we can build a program that works for us.

Appendix 4  
Continuation of Comments - Question 3

\* This is simple: We have absolutely no training program. Everybody get a token visit to an FPL course over a year ago. Since then? Managers have each selected any course they wanted to attend and it alone. You can't focus attention when one guy bathes in Deming, another in Conway, etc. We need a "constancy of purpose", but can't get it without every 14/15 going through Deming together. Often.

\* Constant switches in direction; Sink, Deming, FP&L, DON, etc.

\* - Every decision regardless of how small is often forwarded to a PAT.

- TQL/M has become an excuse for some managers not to make decisions.

\* Lack of interest by senior managers.

\* Change distrust to problems.

\* The biggest problem was the roles the front office played. When preaching TQL the front office did not appear to be committed individually to it.

\*\* How does this list vary in theme from the previous list?

Appendix 4  
Summary of Data  
TQL Survey on Managers Opinions - June 1993

4. Please rank the following leadership concerns as to their negative impact on implementing TQL/TQM. Assigning a seven (7) to the most critical, a six (6) to the next critical, etc. through a one (1) to the least critical.

<u>Ranking</u>				<u>Problem Area for Implementation</u>
All		MC		
<u>Score</u>	<u>%TL</u>	<u>Score</u>	<u>%TL</u>	
182	20	30	21	A lack of visible commitment to TQL/TQM by members of the Management Counsel, ie., lack of follow-up to TQM/TQL related issues and not "walking-their-talk"
152	17	20	14	Conflicts between senior managers.
134	15	28	20	Senior leadership is too involved with other issues.
129	14	26	19	Inadequate organizational policy planning (Visions, guiding principles, strategic and tactical planning).
126	14	18	13	Lack of adequate "management of participation", \ ie., senior leadership does not adequately involve others in the process.
106	12	9	6	Leadership just does not support implementing employee identified improvements.
71	8	9	6	Subordinates just will not "get with the TOL/TOM program".

Comments to the request for other potential reasons that should have been included:

- \* Employees travel often and are too busy to be involved in PAT process for any length of time.
- \* Senior management tasked others to work on what they wanted done and called in TQL/M. When they got negative results on surveys they ignored the results and continued as before.
- \* Concern rated (7)[last items] leads to concern rated 6 [inadequate policy planning]. We should have concentrated on items to improve service -- not in-house processes that are transparent to our customer.
- \* People pushing TQL were thought to have a lack of credibility as managers and were thought to be "yes" men rather than leaders.
- \* (Referring to #7 (item e)) -- I feel this is a very strong negative area within the command, not only in TQL but everything we do.
- \* Mid level supervisors do not have time to spend supporting down line supervisors. We spend a large amount of resources doing a FSO study, but do not put the resources in "building the business".
- \* Is the command so diversified that consensus (TQL) will never occur? Is the environment able to handle TQL/TQM?

Appendix 4  
Summary of Data  
TQL Survey on Managers Opinions  
June, 1993

5. Please rank the following asset concerns as to their negative impact on implementing TQL/TQM. Assigning a seven (7) to the most critical, a six (6) to the next critical, etc. through a one (1) to the least critical.

<u>Ranking</u>		<u>Problem Area for Implementation</u>	
<u>ALL</u>	<u>MC</u>		
<u>Score #TL</u>	<u>Score #TL</u>		
197	22	34	24
			Not enough time. The nature of the work load is such that time can not be spared to work on TQL/TQM.
166	19	23	16
			Funds to pay for employee salaries while they participate in TQM/TQL.
129	15	10	7
			Inadequate assets for employee training
113	13	19	14
			Available TQM/TQL Facilitator to support the QMBs and PATs.
108	12	23	16
			Inadequate tools, such as computer systems software and availability of necessary information.
91	10	17	12
			Support of outside consultants.
85	10	14	10
			Inadequate training aids such as films, books and magazines.

Comments to the request for other potential reasons that should have been included:

- \* How much does our TQL effort cost?
- \* Lack of commitment was demonstrated by lack of specific TQL job order to charge time to. If TQL was valuable and not just time, [funds] should have been committed.
- \* Workload and employee tasking are not consistent within the various branched, divisions and departments. Some have too few people for the workload, some have too many people for the workload.
- \* Should not pay for them.
- \* No one really understands the process.
- \* I really think all of these except senior management (and some mid and first level) time is of minor significance. New one: (1) (Deming) Hire a statistician! (2) Measure (3) Commit resources to quality initiatives (ie. telephones, building furniture, test equipment).

Appendix 5  
NAVSEACENLANT  
Employee Satisfaction Survey Comments - 1990  
Sorted by Researcher<sup>1</sup>

Category 1 -- Very Negative Comments

Management Oriented

1. Poor morale because no leadership from front office, 00 and 00A. (**senior management**)
2. I have worked at five different commands in the last 13 years, this command has the lowest morale I have ever seen. Management support is almost non existent, but upper management interference is constant. Quality of life issues are totally ignored. (**senior management**)
3. This was a two and one-half page letter concerns the writer's perception of mismanagement in a large number of areas. Themes were poor supervision at all levels, too many managers, priority of command investments, lack of management focus on mission, unhappy with the TQM program. For detail review see number 36 on the survey. (**TQM**)
4. This was a one and one-half page letter questioning the survey format and value. Suggested a management satisfaction survey and need for better management interface and communications. For detailed review see number 37 in the survey.
5. Morale is at an all time low. No problems at department or branch level. Maybe if I were a former SEABAT employee it would help.
6. In an era when some codes (branches) are losing 50% or more in funding - why is management still spending on what "looks good" and not on "what gets the job done?"
7. \_\_\_\_\_ is the worst upper-level manager (\_\_\_\_) I've had as a government worker. He does not understand \_\_\_\_\_ work. (**senior management**)
8. The supervisor in \_\_\_\_\_ is a jerk. All the employees in this code are very disgruntled bunch of men. He is a thorn in everyone's side.

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<sup>1</sup> Negative comments have been further classified into the following categories: senior management; TQM; performance evaluation and travel/BOQ issues.

Process Oriented

None

Organizationally Oriented

None

Personnel Practices Oriented

1. I don't feel I am a valued employee of NSCL because I'm not an engineer nor do I have a college degree and I'm black.

Category 2 -- Negative Comments

Management Oriented

1. If top management wants true comments from managers, why are they so much in a reactionary mode? (senior management)

2. Why does the CO and TD look for items to jump on instead of looking for and presenting a positive picture with managers? (senior management)

3. Management in building H should listen to their valuable employees instead of dictating the way it will be. (senior management)

4. We have more managers than workers, and most shoot-from-the-hip on decision making and policy.

5. I feel upper level management has become so engrossed in charts/graphs/TQM, that the true objectives of management is completely masked. (senior management)

6. The goals and objectives today are rather uncertain.

7. I understand the goals and objectives of NSCL, and I understand my department's role in NSCL. I just wonder does anyone else understand!

8. I feel that instructions and regulations set by and signed by the Captain are not followed by the managers of NSCL. I feel that manager's do their own thing and do not back up the Captain or TD of NSCL. I feel the managers show favoritism to employees.

9. What is the hold up on GS-12 techs in Code 500? Change from the top in directed, change from the bottom up must be fought for. I know the goals and objectives of NSCL, but not the priorities. I understand my department's role in NSCL, but not the priorities.

10. (I feel that management will listen and support my ideas on better ways to do my job.) Listen!! yes, Support!!! Not unless it's in their best interest and doesn't involve any work. Deaf ears predominate!

11. I feel NSCL is worried more about politics than getting the job done. This command is always worried about stepping on someone's toes rather than identify and correct the problems. The Navy has a lot of ships with major problems due to poor decisions being made by the upper management operating them. If NSCL does not help to resolve the problems then NSCL is part of the problem. NSCL spends a lot of government money to appease ships rather than correct the problem and letting the chips fall where they may. During this time of fiscal restraint I feel this is not an economic way of doing business. What is TQM doing about these problems? What is Code 00 and 00A doing about resolving the problems? (TQM)

12. The gap between employees and management seems to be growing wider each year. Engineers do not respect technicians.

13. NSCL's initial objective, service to the fleet is hampered by middle management having too many assigned projects, which requires them to spend less time on their primary job, in effect they lose touch with what is happening on a day to day basis. Goals and objectives of NSCL - empire building and paperwork, special projects have clouded primary objectives - service to the fleet. (senior management)

14. I feel there could be more communications between department heads and employees, instead of just branch heads and employees, which is all we have right now.

15. Too many meeting for managers. The people who make the money for this command are not appreciated by the overhead people. TQM -- it is worth it? (TQM)

16. I'd like to see more of my efforts spent on concerns in my own domain. I hate to work five year projects, especially those led by "dingbats."

17. \_\_\_\_\_ is never in. Supervision and leadership are not part of management - there is a lack of goals and organizational direction.

18. Morale below GM-13 level is good, above GM-13 stinks; (my department management sponsors good teamwork) talks a big game; (I know the goals and objectives of NSCL, and understand my department role in NSCL) I know, but upper level management is in a "vision"; (If feel I am fairly and properly rewarded and recognized for my work) no recognition.

19. A memorandum routed through all concerned seems to be necessary to make any minor change via the branch head. Word of mouth seems ineffective.

20. I feel there is a conflict between what is said in public, at such occasions as the code 900 all hands meeting and what is done in private. On one hand you say positions will be rated according to the merit of the job and on the other hand management refuses to conduct the proper/legal evaluation of positions/grades. (performance evaluation)

21. I feel that department management encourages employees to participate and become involved - middle management does not!!

22. It's a shame none of these surveys are utilized to improve matters that are less than satisfactory.

23. Supervisor seems to show favoritism toward certain employees. Seems to be intimidated by certain employees.

24. As a 1st line supervisor, I do not feel there is a good understanding of my branch/section duties and especially problems much less support in the problems areas in sponsorship/\$\$ problems support for 91. Section and branch supervisors are told by our "customers" that our CO has plans for us that even we aren't aware of - I would think the NSCL employees that are effected by changes in command policy would hear it from the command and not be surprised or caught off guard by a customer telling us. I feel like upper management should be more supportive or help us (1st line sups) better informed on what they are doing for us. Kind of agree my management department management sponsors good teamwork. Management listens sometimes; disagree on supporting my ideas on better way to do my job.

#### Process Oriented

1. New safety rules will hurt performance and slow production.

2. Question #5 -- I know the goals and objectives of NSCL. Should be for our department head - lately we're too busy trying to impress other commands and losing focus on the waterfront.

3. Since implementation of PAG's TQM, etc the quality and quantity of our work has deteriorated. Our managers are now overwhelmed with more paper and have no time to actually dedicate to fleet service except for manager who does all kinds of "fleet support" out of the area -- haven seen him in 2 months. (TQM)

4. "Teamwork" requirements more than one person. Every time more than one person goes on a job we are interrogated by 520/500. Goals of NSCL - I've seen 3 different "five year" plans in 3 different years. I think I understand evaluation criteria, but it will change again, as it always does. (TQM)

5. I'm not sure I understand my job. Our role in fleet support is much to exploited -- we are called to deal with problems often because the ship does not want to deal with the problems. Four of the common reasons for this are as follows (a list of problems dealing with lack of training, attitude and knowledge of ship's officers; fleet not understanding NSCL role, too many organizations involved with maintenance and more equipment training needed by NSCL personnel. See number 46 the detail write-up.

6. I feel cutout and shutout. As time goes on I find I'm doing my own support work. I used to feel like I'd say "I need this" and someone would say, "I'll call such and such." Now, it's-handle it.

7. This form remains as before, a poorly worded questionnaire. Please change it to something more reflective of our problems. Question "12" should read, "Do you think this form is an original or an example from some pie in the sky management boom?"

8. Too much time spend on paperwork - could better be utilized in a technical capacity on board ship/waterfront.

9. ADP has been a joke and a total waste of time and money since moving from building 11 to 12.

#### Organizationally Oriented

1. If you every experienced problems/lack of cooperation while working on board ship and return or call the office for support you will receive little or none.

2. There appears to be animosity between codes and even between different branches of the same code.

#### Personnel Practices Oriented

1. For a tech code, we rarely ask, or listen to employees. We are dictated by people who were tech reps once and now know it all. I feel I am of grate value to NSCL. I am not fairly and properly rewarded and recognized for my work, not do I understand the criteria used to evaluate my performance, I do not understand my department's role in NSCL, I do not know the goals and objectives of NSCL and I feel that department management dictates to employees. (performance evaluation)

2. I feel there should be an increase in pay for the job we do.
3. I feel that as a GS-7 my requirement to work 40 hrs comp time before I am able to get ot was unjustified according to my understanding of the instruction.
4. Do not understand FSO local evaluation. (performance evaluation)
5. I feel FSO admin tech's should be judged on their individual merit as to promotion and should be rated and graded as such. (performance evaluation)
6. I feel FSO" admin tech should be treated as individuals basis and not as group and given promotions capabilities due to their own merit as all other NSCL employees.
7. Question #7 I understand the criteria used to evaluate my performance. - I disagree with the command's double standards for FSO employee evaluations vice home office employees only on PAF# 12430/2 XO's form + PAF 12430/2. (performance evaluation)
8. The attitude of the department reflects from the lack of funds and the hiring freeze. They feel one is overworked and promotion is impossible at this time regardless of how hard one works.
9. (I understand the criteria used to evaluate my performance.) I feel that my performance on the job can only be evaluated by the individuals I am working for, and with on the job-sites. Not by a person behind a desk who has absolutely no idea of my function or performance. The system needs to either be overhauled or eliminated. Report cards are for high schoolers not professionals. (Performance Evaluation)
10. Dislike public rating systems used by supervisor. Often criticized for not agreeing with supervisors concerning E.I.T. requirements. (Performance Evaluation)
11. There is a double standard set for frequent travelers: one, for the convenience of the government. If you make more than two trips a year you are considered a frequent traveler and have to use the Diner's Club Card - the second, if you don't travel more than 1/3 of a year you have to stay in the BOQ for inspections. I feel that the standard should be same for frequent travelers whether it is two trips or 1/3 of a year traveling. Telephone usage while on travel: I feel that this command does nothing to make it easy for the frequent travelers. It's bad enough to spend most of your life away from your family and you have to spend your own money to call

your wife to let her know that you have been diverted to another job or whatever. The bottom line is: does management give a damn about it's employees or does every decision that is made (or not made) depend on cash flow. (Travel/BOQ)

12. Don't like staying in BOQ's when on travel, as I like to choose my own environment when my day's work is done. It's bad enough to travel away from home but that comes with the job and I accept that. But choosing where I stay should be my choice. (Travel/BOQ)

13. Staying BOQ has the Navy taking control of my off duty hours for no pay, the ability to stay in a motel of my choice is a benefit. Staying in BOQ is a detriment. TQM is not working in this case. (Travel/BOQ)

14. BOQ is a slap in the face. If the command feels that it's employees are valued employees that are on travel should be given respect of choosing their own lodging and not be treated like an irresponsible child. (Travel/BOQ)

15. My major gripe involves the staying in BOQ. BOQ is meant for transient officers and I feel I am not part of their community nor do I wish to be. When I leave work and go to the comfort of my home for my relocation I choose my surroundings. When on travel we are already being inconvenienced. Our jobs require us to be away a great deal of the time and we accept that as part of the job. Management should also respect our time off and absences from home by fighting for our rights to stay where we choose while on travel (within reason). If our services are so important to our customer I feel that the customer would have no objection to paying the expense for us to be there. The government pays contractors for their employees expenses on travel and I feel that I am just as good or better and provide a superior visit to theirs, at a much lower overall cost. (Travel/BOQ)

16. Teamwork and high morale is definite in our code. I see other engineers going to better and higher paid jobs and I begin to wonder why I'm putting up with condemn building, and have to stay in BOQ. If I was smart I'd go to Raleigh and get a better job, but I really enjoyed my last three years at NSCL. I just wish NSCL could get their act together. (Travel/BOQ)

17. I don't understand the BOQ situation. If we save the government so much money why are we staying in BOQ to save money? I feel the morale and camaraderie in our command is getting weaker with the new policies being implemented. (Travel/BOQ)

18. I feel my role here is not specifically defined.

19. Section head, branch head, department head need to pay closer attention to work needs/priority for job satisfaction, ie. PD's, work environment, awards.

20. All travelers or none should use the BOQ's if avail on travel. What constitutes a 50% traveler? (Travel/BOQ)

### Category 3 -- Neutral Comments

#### Management Oriented

1. (My department management sponsors good teamwork.) Somewhat. (I believe I am fairly and properly rewarded and recognized for my work.) Not concerned.

2. Question #2 - my department management sponsors good teamwork -the "team" is often split up. Question #9 - Will see how TQM evolves.

3. I feel good about my department management but very unsure of what "command" top management thinks/does.

4. A complaining sailor is a happy sailor and ships over. Same applies here.

#### Process Oriented

1. I believe results of this survey should be analyzed and corrective actions taken where possible.

2. NSCL needs to encourage an increase in quality of day-to-day work, ie., written debriefs with ship's engineer and RSG on every job, less errors on message drafts to reduce time in chop cycle, and more cross training.

3. If morale and camaraderie (in #1) were separated I could have given camaraderie higher marks.

4. It's difficult to respond to some of these statements since management in the FSO operates different from management at headquarters. My comments are in response to headquarters management.

5. I have been a CENLANT employee less than a year.

#### Organizationally Oriented

1. Less certain of division's role than of department's role.

2. I feel there is good team work in code 40; however, due to shortage of personnel and workload, morale at times is low. People are "burned out" and concerned that we cannot always or

may not be able to support our customers. Definitely need more people or, at least, vacancies filled.

3. Branch (Code 512) morale is very high. I cannot fairly evaluate command morale, but have noticed low morale for command.

#### Personnel Practices Oriented

1. I feel that cross training and grade levels should be the same as our counter-parts NSCP.

#### Category 4 -- Somewhat Positive Comments

##### Management Oriented

1. I sometimes feel that department management encourages employees to participate and become involved.

2. I know I'm a valued employee because of the way the command solved the bad lighting in building 203, 1st. floor.

##### Process Oriented

1. Question #7 - I understand the criteria used to evaluate my performance. Performance standards are presently being developed.

##### Organizationally Oriented

1. On most occasions I receive good cooperation with other code personnel. The one problem area I have had is with the person working at the security desk for visitors to NSCL. She is not very friendly and is very annoying. She would give first impressions of NSCL a very negative feeling.

2. Remarks from #1 (I think there is high morale and camaraderie in our command.) is based on remarks and responses from other codes relating to safety.

3. I feel that cooperation has improved in our command.

4. Things are going well.

##### Personnel Practices Oriented

1. I believe I am fairly and properly rewarded and recognized for my work.

## Category 5 -- Very Positive Comments

### Management Oriented

None

### Process Oriented

None

### Organizationally Oriented

1. This is a great place to work.
2. NSCL is one of the best places I have ever worked. It may have some problems, but they/we are willing to work on them.
3. The challenges and opportunities to succeed are available. We, as employees, must continue to prepare ourselves to meet the future opportunities. Can't think of a better place to work.
4. Working in Code 500/533 is a pleasure.
5. One of the most satisfying jobs I have every had.

### Personnel Practices Oriented

## APPENDIX 6

### MUTUAL MIRRORING

The methodology for conducting the case study for more controversial issues was to provide a statement of belief to knowledgeable reciprocators. They were asked to "chop" the paper by reviewing it with the intent of insuring that it was accurate and reported the facts in a balanced manner.

Three topics fell under the controversial category -- conflict within the Management Council; management training and knowledge and the relative priority of the TQM process. The reciprocators did not respond to the conflict issue by chopping the document (thought several verbally agreed to its content). The responses to the other issues and the conflict description are attached to this appendix. The entire case study was provided to the Management Council for their chop and all but one responded. The volume of paper preclude them from being included.

### Interpersonal Conflicts Within Top Management

There has, for the entire TQM implementation, been conflicts within the senior management ranks. There have been elements of interpersonal friction and distrust; lack of alignment between objectives; differing management styles; conflicts over the roles of the top military and civilian leadership; and disagreement, of a philosophical nature, regarding the appropriate degree of centralization and standardization within the command and the autonomy of the departments. These issues have been brought to the forefront during the past several years and have become a major concern and source of much management discussion.

The issue of conflicts within the senior management ranks has had a negative impact on the senior leaders ability to present a consistent front to the organization, especially for the adoption of TQM. A consistent theme of the various survey feedbacks and discussion within the command is that the senior management does not work well as a team and is unable to reach consensus or present a united front on any management issue of substance. This has resulted in a general lack of senior direction and may be a contributing factor to the waning of TQM implementation.

Respondent Number 1

### Relative Priority of TQM Implementation

Relative Priority of TQM Implementation  
NSCL management *developed an interest with a general*  
~~never~~ *documented a specific* relative  
priority for implementing TQM. ~~However~~ *the* initial actions and  
statements made by the senior managers clearly espoused to the  
command personal that TQM had a very high priority.

The philosophy of the senior leadership was that an investment now will reap rewards in the future. The Technical Director frequently said that it was OK to "pass a job" (a major cultural no-no) to another activity if the short term job conflicted with supporting TOM. It was frequently stated by senior leaders that an investment in process improvement would reduce time spent in routine and crises later on, which would, in turn, provide more time to spend on improving processes and building the business.

TQM was espoused as having a very high priority during the submission process for the 1989 and 1990 U. S. Senate Productivity Awards. It became unclear to many employees, which was most important -- improving TQM or winning the award. In 1991 there was an apparent waning of the degree of priority of <sup>the Program.</sup> TQM. Various reasons cited included a backlash to the efforts to win the quality award, a change in commanding officer, a reevaluation of priorities to cope with the downsizing of the Navy and the pending reorganizations. In any case, the top management no longer <sup>apparently</sup> espouses the importance of ~~the Program~~, but rather implementing those management tools <sup>provided</sup> ~~the Program~~, but rather implementing those management tools <sup>provided</sup> TQM. The only active senior leadership involvement is sponsoring this research, which is espoused to serve as a starting point for a revitalization of the TQM process.

## Respondent Number 2

### Relative Priority of TQM Implementation

NSCL management never documented a specific relative priority for implementing TQM, however the initial actions and statements made by the senior managers clearly espoused to the command personnel that TQM had a very high priority.

THIS WAS NEVER  
AGREED TO BY  
1ST & 2ND LEVEL  
MANAGERS &  
IS CONTRARY TO  
TQM PRINCIPLES;  
I.E., CUSTOMER  
FOCUS.

The philosophy of the senior leadership was that an investment now will reap rewards in the future. The Technical Director frequently said that it was OK to "pass a job" (a major cultural no-no) to another activity if the short term job conflicted with supporting TQM. It was frequently stated by senior leaders that an investment in process improvement would reduce time spent in routine and crises later on, which would, in turn, provide more time to spend on improving processes and building the business.

NO BUG  
IN BY  
MANAGER

TQM was espoused as having a very high priority during the submission process for the 1989 and 1990 U. S. Senate Productivity Awards. It became unclear to many employees which was most important -- improving TQM or winning the award. In 1991 there was an apparent waning of the degree of priority of TQM. Various reasons cited included a backlash to the efforts to win the quality award, a change in commanding officer, a redirection of priority to cope with the downsizing of the Navy and the pending reorganizations. In any case, the top management no longer espouses the importance of TQM and the only active senior leadership involvement is sponsoring this research, which is espoused to serve as a starting point for a revitalization of the TQM process.

THERE IS STILL OTHER SENIOR MANAGERS  
ACTIVE IN PROMOTING TQM PRINCIPLES,  
BUT THERE IS NO APPARENT COORDINATED  
EFFORT.

### Respondent Number 3

#### Relative Priority of TQM Implementation

<sup>DIDN'T THE INITIAL INSTRUCTION SET THE STAGE FOR TQM AS THE</sup>  
NSCL management never documented a specific relative <sup>KEY TO</sup>  
priority for implementing TQM, however the initial actions and <sup>THE</sup>  
statements made by the senior managers clearly espoused to <sup>FUTURE</sup>  
command personal that TQM had a very high priority.

The philosophy of the senior leadership was ~~that~~ <sup>TRUE</sup> an investment now will reap rewards in the future. The Technical Director frequently said ~~that~~ it was OK to "pass a job" (a major cultural no-no) to another activity if the short term job conflicted with supporting TQM. It was frequently stated by senior leaders that an investment in process improvement would reduce time spent in routine and crises later on, which would, in turn, provide more time to spend on <sup>further</sup> improving processes and building the business.

The importance of TQM was espoused during the submission process for the 1989 and 1990 U. S. Senate Productivity Award. It became unclear to many employees which was most important -  
- improving TQM or winning the award. In 1991, shortly after <sup>I'M NOT SURE THIS HAD A REM. IMPACT</sup> winning the award and with a change in commanding officer, the top management no longer espoused the importance of TQM.

Currently there is little emphasis on TQM among top <sup>(OR OTHERS FOR THAT MATTER)</sup> leaders, other than sponsoring this research, which is espoused to serve as a starting point for a revitalization of the TQM process. From this it is seen that the relative priority has changed significantly over time within NSCL.

*I SENSE A SLOWING DOWN EVERYWHERE. WE DON'T SEE IT IN THE MEDIA - ON TELEVISION. FEWER BOOKS ARE BEING WRITTEN, ETC. MAYBE EVERYONE IS THINKING THEY HAVE PLANTED THE SEED & NOW IT'S TIME TO STEP BACK AND SEE WHAT SPROUTS.*

*I'M NOT SURE WE'VE LOST SIGHT OF THE IMPORTANCE OF TQM. I THINK WE'VE ALLOWED TO GET LOST FROM THE PATH.*

## Respondent Number 4

### Relative Priority of TQM Implementation

NSCL management never documented a specific relative priority for implementing TQM, however the initial actions and statements made by the senior managers clearly espoused to the command personnel that TQM had a very high priority.

The philosophy of the senior leadership was that an investment now will reap rewards in the future. The Technical Director frequently said that it was OK to "pass a job" (a major cultural no-no) to another activity if the short term job conflicted with supporting TQM. It was frequently stated by senior leaders that an investment in process improvement would reduce time spent in routine and crises later on, which would, in turn, provide more time to spend on improving processes and building the business.

TQM was espoused as having a very high priority during the submission process for the 1989 and 1990 U. S. Senate Productivity Awards. It became unclear to many employees which was most important -- improving TQM or winning the award. In 1991 there was an apparent waning of the degree of priority of TQM. Various reasons cited included a backlash to the efforts to win the quality award, a change in commanding officer, a redirection of priority to cope with the downsizing of the Navy and the pending reorganizations. In any case, the top management no longer espouses the importance of TQM and the only active senior leadership involvement is sponsoring this research, which is espoused to serve as a starting point for a revitalization of the TQM process.

*If we re-start, how do we prevent the same thing from happening again. I'm sure Top Management would say the same things again.*

*It didn't.  
We kept up  
business as  
usual, plus  
doing "TQM."*

*Where is the  
moral to the  
story?*

## Respondent Number 1

### Leadership Training

The literature indicates that a major issue for senior leaders is to obtain profound knowledge in the many facets and concepts of TQM, however this, as mandate of their job, was not provided to the senior leaders of NSCL.

The primary training provided to senior leaders was ~~that~~ provided by VPC, which was a "just-in-time" method of interweaving training and "doing" while developing the corporate visions, goals, guiding principles, strategic and tactical plans and to setup and operate the associated PATs. Each manager was also provided the QUALTEC/FP&L team leader training which focused on methods of facilitating group dynamics and applying the Plan-Do-Check-Act cycle to systematically addressing process improvement. There was never a systematic training plan for senior leaders developed or implemented.

Inherent to the VPC training was a recognition of the importance of the various elements of TQM/TQL, including customer focus, employee empowerment, participative management, the concept of process variation, process analysis and improvement and cultural change. Terms such as "walking your talk" and "leadership by example" were used and each of the managers intellectually understands the TQM/TQL process.

OVERALL THESE ARE VALID STATEMENTS. WE EXPERIENCED  
CONSIDERABLE TQM TRAINING OVER THE YEARS. I THINK  
I'M NOT SURE WE SAW IT WHEN I THINK SENIOR  
LEADERS WERE DENIED MANY OPPORTUNITIES TO FEEL A PART  
OF THE DECISION MAKING TEAM & THE COST TO FOLLOW  
LEADERSHIP METHOD. THE INTENTIONS WERE  
GOOD BUT THE IMPLEMENTATION WAS FLAWED. WE WERE EXPECTED  
TO SIGN OFF ON A PROCESS WHICH WE FELT NO OWNERSHIP.

## Appendix 6

## Respondent Number 2

### Leadership Training

The literature indicates that a major issue for senior leaders is to obtain profound knowledge in the many facets and concepts of TQM, however this, as mandate of their job, was not provided to the senior leaders of NSCL.

The primary training provided to senior leaders was that provided by VPC, which was a "just-in-time" method of interweaving training and "doing" while developing the corporate visions, goals, guiding principles, strategic and tactical plans and to setup and operate the associated PATs. Each manager was also provided the QUALTEC/FP&L team leader training which focused on methods of facilitating group dynamics and applying the Plan-Do-Check-Act cycle to systematically addressing process improvement. There was never a systematic training plan for senior leaders developed or implemented.

Inherent to the VPC training was a recognition of the importance of the various elements of TQM/TQL, including customer focus, employee empowerment, participative management, the concept of process variation, process analysis and improvement and cultural change. Terms such as "walking your talk" and "leadership by example" were used and each of the managers intellectually understands the TQM/TQL process.

*this seems to contradict the whole theme. Managers were never given proper training or opportunity to gain knowledge of TQM. But they understood it anyway? What is the theme/ point to this topic?*

Respondent Number 3

WITH ALL THE READING & TRAINING  
RECEIVED, WE MUST HAVE GAINED  
SOME PROFOUND KNOWLEDGE. WHAT  
IS DEFINITION?  
Leadership Training

The literature indicates that a major issue for senior leaders is to obtain profound knowledge in the many facets and concepts of TQM, however this, as mandate of their job, was not provided to the senior leaders of NSCL.

The primary training provided to senior leaders was that provided by VPC, which was a "just-in-time" method of interweaving training and "doing" while developing the corporate visions, goals, guiding principles, strategic and tactical plans and to setup and operate the associated PATs. Each manager was also provided the QUALTEC/FP&L team leader training which focused on methods of facilitating group dynamics and applying the Plan-Do-Check-Act cycle to systematically addressing process improvement. There was never a systematic training plan for senior leaders developed or implemented. (THERE WAS A SYSTEMATIC TRAINING plan for VPC PROCESS, BUT NOTHING FURTHER)

Inherent to the VPC training was a recognition of the importance of the various elements of TQM/TQL, including customer focus, employee empowerment, participative management, the concept of process variation, process analysis and improvement and cultural change. Terms such as "walking your talk" and "leadership by example" were used and each of the managers intellectually understands the TQM/TQL process.

## Respondent Number 4

### Leadership Training

The literature indicates that a major issue for senior leaders is to obtain profound knowledge in the many facets and concepts of TQM, however this, as mandate of their job, was not provided to the senior leaders of NSCL.

The primary training provided to senior leaders was that provided by VPC, which was a "just-in-time" method of interweaving training and "doing" while developing the corporate visions, goals, guiding principles, strategic and tactical plans and to setup and operate the associated PATs. Each manager was also provided the QUALTEC/FP&L team leader training which focused on methods of facilitating group dynamics and applying the Plan-Do-Check-Act cycle to systematically addressing process improvement. <sup>Also seven QC tools</sup> There was never a systematic training plan for senior leaders developed or implemmented. <sup>Code 900 did develop a systematic leadership training plan that covered all aspect of supervision</sup>

Inherent to the VPC training was a recognition of the importance of the various elements of TQM/TQL, including customer focus, employee empowerment, participative management, the concept of process variation, process analysis and improvement and cultural change. Terms such as "walking your talk" and "leadership by example" were used and each of the managers intellectually understands the TQM/TQL process.

*While these concepts/precepts were mentioned, not enough attention was given to implementation and execution.*

*Even if "each" manager understands the process (they all don't) this does not mean know how to utilize/implement the process.*

*Sometimes when attempted, the quest was stopped.*

### Leadership Training

The literature indicates that a major issue for senior leaders is to obtain profound knowledge in the many facets and concepts of TQM; however, this, as mandate of their job, was not provided to the senior leaders of NSCL.

The primary training provided to senior leaders was that provided by VPC, ~~which was~~ a "just-in-time" method of interweaving training and "doing", while developing the corporate visions, goals, guiding principles, strategic and tactical plans and to setup and operate the associated PATs. Each manager was also provided the QUALTEC/FF&L team leader training. *This training* ~~which~~ focused on methods of facilitating group dynamics and applying the Plan-Do-Check-Act cycle to systematically addressing <sup>all of</sup> process improvement. There was <sup>an initial</sup> ~~an attempt to develop~~ a systematic training plan for senior leaders, <sup>however, it was</sup> ~~developed~~ incomplete, not accepted and consequently, not implemented.

Inherent to the VPC training was a recognition of the importance of the various elements of TQM/TQL, including customer focus, employee empowerment, participative management, the concept of process variation, process analysis <sup>and improvement</sup> and cultural change. <sup>The senior managers intellectually</sup> ~~accepted and understood the TQM/TQL process and even verbalized commitment in the use of "walking your talk" and "leadership by example". The training was the managers intellectually understand the TQM/TQL process.~~ <sup>accepted and understood the TQM/TQL process and even verbalized commitment in the use of "walking your talk" and "leadership by example". The training was</sup> apparently defective in that continuity of commitment to the espoused elements was short lived. The apparent results were that the senior managers direction/focus and started improving the process in respective areas.

## BIOGRAPHY OF CHARLES STEVENS

Charles Stevens was born in 1939 in Norfolk, Virginia where he received his elementary and secondary education. He obtained a B.S.E.E. (with co-operative industrial certificate) in 1962 from Virginia Polytechnic Institute and State University and the M.B.A., in 1968, from Old Dominion University in Norfolk, Virginia. Mr. Stevens has served on the adjunct faculty at Old Dominion University as an Assistant Professor in the Mechanical Engineering Technology and Engineering Management Departments since 1981. His primary academic interests have been in the areas of economic analysis, management and organizational productivity and quality. He will obtain his Ph.D. in Engineering Management in December, 1993 from Old Dominion University.

Mr. Stevens has thirty-five years experience in numerous engineering settings, including circuit and systems design, project management, logistics development and equipment installation and maintenance. He has served in a variety of engineering and organizational management and supervisory positions, with the most recent being the Executive Director of the Naval Sea Support Center, Atlantic in Portsmouth Virginia. He retired from this position in October, 1993.

Mr. Stevens is a registered professional engineer and founding member of the Old Dominion University (Zeta Upsilon) Chapter of Eta Kappa Nu in 1975. He received the Norfolk Sports Club Scholarship in 1957 and was the Federal Engineer of the Year for the Naval Electronics Systems Command in 1984. He is a Senior Member and past Hampton Roads Chapter Chairman of the Institute of Electrical and Electronic Engineers and a Senior Member of the Institute of Industrial Engineers.

He has presented or published ten papers including "Naval Communications and Processing System -- One Segment of the Navy's Future" presented at the International Communications Society's annual meeting in Seattle, Washington in 1973. Other presentations represent a cross-section of engineering and management-oriented papers delivered to various professional societies. His most recent publications are "The Performance Improvement Process at the Naval Sea Support Center" by Jerry Hudson and Charles Stevens in Quality and Productivity Manager, The Journal of the Change Masters (Volume 2, 1991, pp. 53-60) and "Quality Measurement in the Service Sector" by Charles Stevens and Resit Unal, presented at, and published by, the International Engineering Conference in October, 1992.