Total Quality Leadership:

A Primer

Archester Houston, Ph.D.
Steven L. Dockstader, Ph.D.

Department of the Navy
Total Quality Leadership Office

About the TQLO

The mission of the Department of the Navy (DON) Total Quality Leadership Office (TQLO), is to assist the DON leaders in their quality-focused improvement efforts. The TQLO also provides technical advice to organizations inside and outside government. The TQLO has responsibilities in six key areas:

Information and Communication

The TQLO educates the DON about TQL policies and initiatives through the *TQLeader* and through articles and presentations at conferences. It has developed an electronic bulletin board and an Internet site to facilitate communication.

Assessment

Systems are needed to assess and enhance TQL implementation in the DON. The TQLO designs and develops feedback mechanisms in support of mission accomplishment. It also develops new approaches to improving organizational effectiveness.

Consultant Services

TQLO members provide technical advice to the Under Secretary of the Navy and other senior DON leaders on the application of TQL principles and methods within the DON and on strategic planning. Advice may also take the form of recommendations on implementing new laws, such as the Government Performance and Results Act, as well as on related initiatives.

Education and Training

The TQLO is responsible for ensuring the technical accuracy of the DON TQL curriculum. Having overseen the design and development of the courses, the staff now advises on the integration of TQL material into training pipelines. The TQLO continues to publish handbooks and other materials on organizational change and to design new courses.

Networking Liaison

The TQLO has much to share with other organizations, government and private, and much to learn from them. Staff members participates in TQL-related networks and organizations.

New Technologies

Technology can provide critical support to DON quality improvement efforts. The job of the TQLO is to assess new technologies related to organizational change and process improvement and translate them into applications for the DON.

Total Quality Leadership: A Primer

Archester Houston, Ph.D.
Steven L. Dockstader, Ph.D.

Department of the Navy
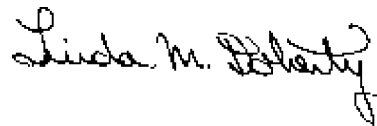Total Quality Leadership Office

Foreword

The Department of the Navy (DON) began in 1984 to improve organizational performance through the use of Total Quality Leadership (TQL) within its logistical organizations. Since that time, the practice of TQL has been deployed throughout the DON.

The change from past management practices to TQL is substantial and impacts the jobs of every person in a naval organization. Because of this, the transition to TQL must be learned, planned for, and put into place in a systematic fashion. The implementation process must be led by the commanding officer (CO). A training program that provides all of the information to get started with TQL has been developed and is available to all naval organizations following the training of the CO.

This document is intended to provide an overview of some of the major elements of the Department of the Navy approach to TQL. The DON TQL *Primer* covers the definition of TQL, underlying philosophy, implementation roles, approach and management structure, and how the scientific method is applied to improve work processes. While it is not a substitute for education and training, it will provide information on the basics of the DON TQL approach and perhaps serve to dispel some misconceptions.

The authors of this *Primer*, Drs. Archester Houston and Steven L. Dockstader, were two of the first people involved in the development and application of the DON TQL approach while they worked at the Navy Personnel Research and Development Center, San Diego, CA. This *Primer* draws upon their extensive knowledge and experience in its application.

Our intention was to produce a useful document. Please direct any questions you have about it to Dr. Houston, DON TQL Office: Voice: 703-602-8944 [DSN 332-], FAX: 703-602-8942, INTERNET: Houston-Archester@HQ.SECNAV.NAVY.MIL.

Linda M. Doherty, Ph.D.
Director, Total Quality Leadership Office
Department of the Navy

Contents

Introduction

Total Quality Leadership, or TQL, provides the means for Department of the Navy (DON) organizations to more efficiently and effectively respond to current and future mission requirements. These requirements appear in such documents as the DON's *Forward from the Sea*, the *Navy Policy Book*, and the Commandant's Planning Guidance. These documents describe the need to meet new and enhanced mission requirements with fewer resources, a compelling reason for the DON to fundamentally change its organizations, its people, and its leadership practices.

Purpose of the *Primer*

The purposes are twofold: (1) to document the basic concepts and principles for the practice of Total Quality Leadership (TQL), and (2) to provide this information in a concise and readable form to those who may not have had any training on the subject.

This primer is not a substitute for the education and training necessary to effectively practice TQL. It provides an overview of the basic concepts and summarizes some organizational implications of implementation. It also attempts to dispel misconceptions about TQL.

Background

In the Spring of 1984, the Naval Matériel Command tasked the Navy Personnel Research and Development Center (NPRDC) to investigate the feasibility of using statistical process control (SPC) and quality management methods to improve mission performance (Houston, Sheposh, & Shettel-Neuber, 1986). The research involved (1) literature reviews and site visits to private and public organizations applying SPC; (2) identifying differences in quality management approaches of Crosby, Deming, and Juran, and the relationship of these approaches to SPC methods (Suarez, 1992); (3) determining the suitability of commercially available quality management and SPC

training programs for naval use, and, finally, (4) identifying conditions needed in naval organizations for effective use of quality management and SPC (Dockstader, 1984).

Major conclusions of the research were that:

- The integrated application of quality management and SPC was feasible in naval organizations.

- Active participation of top leaders was a critical element for success.

- Organizational changes must be made to establish and sustain improvement through the application of quality management and SPC.

Based on the findings, the Naval Air Systems Command (NAVAIR) leaders decided to test a quality management approach based on the philosophy of W. Edwards Deming, a prominent quality consultant who contributed to Japan's economic gains following WWII. The first tests were conducted at North Island Naval Aviation Depot. As a result of success in quality improvement there, the approach was extended to other aviation depots, shipyards, and supply centers. In 1985, the label "Total Quality Management" (TQM) was coined in the DON to describe this approach. In 1990, the Chief of Naval Operations replaced the label "Total

Quality Management" with "Total Quality Leadership" (TQL) to emphasize the crucial role leaders have in the quality approach. This change in labels did not change any of the major elements of the approach. Total Quality Leadership is now used throughout the Department, including headquarters, logistical commands, operational units, field activities, and systems commands.

For more detailed coverage on the origin of the DON TQL approach, the following readings are recommended: *Deming Management at Work* by Mary Walton (1990) and *Thinking about Quality* by Lloyd Dobyns and Clare Crawford-Mason (1994).

The Five Cornerstones of TQL

TQL is an approach to quality management that is based upon five major elements or cornerstones. This section describes briefly those cornerstones and presents information about some related concepts that are central to TQL:

1 Definition. TQL is defined as "the application of quantitative methods and the knowledge of people to assess and improve (a) materials and services supplied to the organization, (b) all significant processes within the organization, and (c) meeting the needs of the end-user, now and in the future."

This definition describes the "what" of TQL ("application of quantitative methods and the knowledge of people to assess and improve"), the "where" of the effort ("all significant processes [performed] within the organization") and the "when" ("now, and in the future"). "Significant" is used to emphasize that TQL practices should address processes *central* to mission performance, not those that are incidental to it. This emphasis avoids committing scarce organizational resources to less important issues.

2 The Deming philosophy provides the basis for TQL. W. Edwards Deming (1900-1993) was a physicist and statistician who developed a management philosophy for improving quality. The principal elements of the philosophy come from the (a) theory of variation; (b) application of systems theory to managing organizations; (c) psychology of work, and (d) use of the scientific method to pursue optimal mission performance. These elements were adapted for implementation in naval organizations.

3 Department of the Navy implementation approach. The approach to implementation is two-phased (Doherty, 1990). The first phase concentrates on planning and conducting quality improvement efforts. Education and training resources for process improvement are required for success. The second phase advances and sustains the continual improvement

throughout the organization, including suppliers. Strategic planning and management are used to enhance future mission performance.

4 **Management structure.** Changes in systems and processes are managed through the chain of command. Significant mission-related processes typically cross functional areas. Therefore, cross-functional teams at the executive, middle, and supervisory levels must be linked for communication and coordination of efforts. These teams concentrate on gathering and applying information to improve mission effectiveness.

5 **A scientific approach.** The aim of TQL is to enhance mission effectiveness. This is achieved by using an objective, disciplined approach to making changes in the processes and systems that affect mission performance. The performance of current processes and systems is analyzed and an improvement plan is developed. The plan is carried out and performance is analyzed to determine the effects of changes. Changes that result in improvement are retained.

Basic Concepts

In addition to the five cornerstones of TQL, other important concepts are:

Quality focus

For the naval service, *quality* refers to the extent to which naval organizations satisfy their mission requirements. While mission requirements can involve products, they are more frequently associated with services. Some of these are delivery of supplies, medical care, engineering support, successful aircraft launchings, ordnance on target, etc.

Customers and end-users

The term "customers" refers to those people who buy and/or use products and services. In the world of commerce they ultimately define quality. Under TQL, the focus of quality improvement efforts is to meet mission requirements as defined by the operational forces. The Sailors and Marines are the customers or, more appropriately, "end-users" of products and services provided by the DON. Sailors and Marines are the ultimate judges of the quality of the supplies, medical care, engineering support, weapons systems, training, etc.

Improvement then must address all the significant processes that enable the Sailors and Marines to fight, win, and survive. While TQL is not used to conduct operational missions in real time, operating forces can use the same procedures to improve the processes that contribute to mission readiness (Doherty & Howard, 1994; Howard, 1992; Wasik & Ryan, 1993).

Process improvement

Process improvement involves systematically analyzing and changing process factors so that they work together better to improve quality. Mission effectiveness is increased through improvement, redesign, or innovation of processes. Processes are improved when they are more predictable, cost less, and contribute more to meeting mission requirements. Through process improvement problems or errors are prevented rather than fixed after they have occurred.

Process management

Process management involves the leadership actions required to begin and sustain continuous improvement of significant processes.

Extended process

An organization can and should work with customers and suppliers as part of an extended system to improve quality. Customers can provide information that helps an organization to focus its improvement efforts on those product and service characteristics that have the greatest impact on quality. Suppliers provide products or services that affect an organization's ability to perform its mission. Working with suppliers to clarify current needs or to share process improvements can reduce problems and avoid defects due to faulty materials or inadequate service.

Section 1

Definition of Total Quality Leadership

The Department of the Navy's definition of TQL is based on Deming's flow diagram that shows production as a system (cf. Deming, 1986, p. 4) (see Figure 3, p.22 of this document). This definition was developed during the initial application of Deming's ideas to the operations and management of naval aircraft overhaul facilities (Walton, 1990).

"The application of quantitative methods . . ."

The term "quantitative methods" refers to statistical and other graphical tools that summarize data in a structured way (cf. Brassard & Ritter, 1994). These methods help in the identification, understanding and control of factors related to good or poor performance.

". . . and the knowledge of people . . ."

Most process information does not reside in the existing financial accounting or management information systems. Rather, process information is in the minds of the people--enlisted personnel, workers, officers, managers, and supervisors who are responsible for a process. It is not just individual knowledge that is important, but the collective knowledge of all those who are involved with the process.

People in the process must work *as a team* to contribute to the information, ideas, and actions needed to improve a process. One of the principal differences between TQL and some problem-solving approaches (e.g., task forces, tiger teams) is that the people doing the analysis and improvement are *process owners*, i.e., those who are already responsible for process performance. As indicated during the discussion of the "extended process" concept, the knowledge of customers and suppliers is also

very valuable in understanding and improving processes.

". . . to assess and improve . . ."

TQL uses measurement and statistical analysis to (1) assess the causes of process problems and (2) evaluate the effects of changes to the system. The scientific approach to process improvement requires that process performance be assessed and understood *prior* to making changes to it.

Improvement of a process involves changing factors that strongly influence or "cause" process performance. These factors are often grouped into four categories: materials, methods, people, and machines. The most significant factors require action by management to achieve lasting gains in improvement. For example, improving the performance of a Fleet Industrial Supply Center's process might involve changing the delivery times of supplies from a contractor, changing employee training, or revising work procedures. An individual or work group probably would not have the authority to make these changes. This is the fundamental reason for *management* teams to work *on* a process.

Assessment and improvement of all mission-essential processes are fundamental to TQL. When processes are assessed initially there

may be a lot of waste and redundancy in process steps. Teams are able to identify and eliminate waste, which will lower costs almost immediately. This reduction in costs can then be invested in innovations to that particular process or to other processes. This reinvestment strategy can only be leadership-directed: the decisions concerning what to do with the cost savings are ones that must be based upon management priorities.

"... all significant processes within the organization ..."

Significant processes are directly related to mission performance. They are the activities that produce the products or services of an organization. For example, a significant process for a guided missile cruiser would be all of the activities necessary to launch missiles. Significant processes for a Navy Special Warfare unit might include beach reconnaissance and underwater demolition of obstacles.

These processes are aided by internal operations that are necessary but by themselves do not meet the mission requirements of an organization. For example, providing meals, offering technical training, and maintaining personal records might contribute indirectly to mission performance. Improving these processes should be a secondary priority. The primary focus is on significant processes because

improvement takes an investment in resources such as people and funds. Applying these resources where they may have the most impact makes good sense.

"... now, and in the future."

"Now" means improving quality of current processes. The "future" refers to preparing for evolving or anticipated mission changes. TQL embraces both present and future through the two-phase implementation approach. The first phase focuses on continuous improvement of existing processes that are responsible for mission effectiveness. The second phase includes re-engineering processes or creating new products and services to meet the anticipated needs of end-users—sailors and marines.

Section 2

Adoption of the Deming Philosophy

The leadership of the naval aviation logistics community initially adopted the Deming approach because (1) productivity needed to increase to respond to potential competition, (2) the leaders recognized the approach could address those management practices in their community that inhibited productivity (Dockstader, 1984), and (3) because of its proven effectiveness both in Japan and the United States.

Subsequently, the Secretary of the Navy, the Chief of Naval Operations, and the Commandant of the Marine Corps adopted the approach for practice throughout the Department of the Navy. They anticipated the downsizing of the naval community and believed that a quality focus was a way of preserving the integrity of the naval service mission at the same time that resources were being reduced.

The Economic Rationale for the Practice of TQL

The economic rationale that underlies the Deming philosophy is the chain reaction of quality and productivity. Deming proposed that improved quality leads to improved productivity which, in turn, leads to business survival and growth (1986). As the DON adapted Deming's philosophy, it was determined that the final outcome of a quality and productivity chain reaction would be "national defense remains strong." The DON adaptation of Deming's chain reaction is presented in Figure 1.

Understanding the relationship between improved quality and decreased costs depends upon different assumptions and approaches to productivity. In the past, most people equated improved quality with increased inspection and, therefore, believed that improving quality increased costs and lowered productivity. Under TQL the assumption is that if the causes of
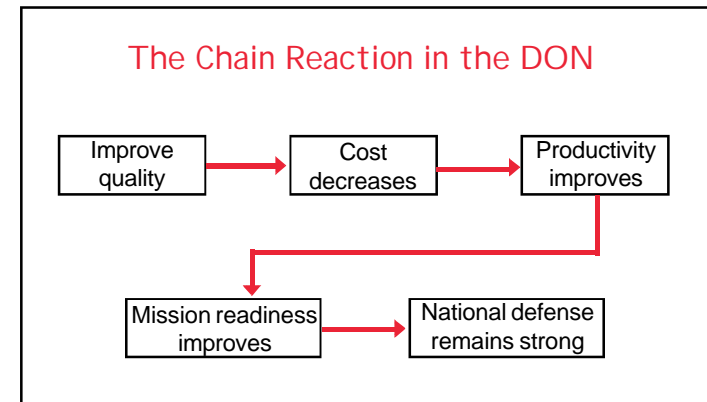

Figure 1. The chain reaction in the DON.

poor quality are prevented in the first place, there is a reduction in inspection and rework costs. These savings alone should lead to productivity improvement. It is important to understand the difference between these two ways of achieving quality:

Quality by inspection

When enhanced performance is pursued through inspection, improvement is based upon failure. The focus of management is on producing products or services, then sorting good from bad. Improvement efforts under this approach tend to concentrate on increasing throughput or reducing production costs. Quality is managed by finding defects and errors through inspections and audits. Costs of this approach include the cost of performing the work the first time, the costs of inspection, and the costs of recovering from failures.

Quality by prevention

The prevention approach to quality improvement is based upon the assumption that high or low quality is an outcome of the process that is used to produce the product or service. If the process—the interaction of people, machines, methods, and materials—works well, then high quality will result. Walter Shewhart, a statistician and contemporary of Deming, confirmed this assumption at the Bell Telephone Laboratories (Shewhart, 1939). Use of this approach deters failures, the costs of failure, and the reliance on inspections.

However, there are several reasons why the inspection approach continues to be the dominant approach to quality:

1. Some inspections must be conducted to avoid threats to life and property.
2. People do not clearly understand the important differences between inspection and prevention approaches to quality.
3. People do not think they are able to make changes that could prevent failures.
4. Changing to a new system involves risk-taking, and the fear of failure leads to conservative decisions (Suarez, 1993).
5. It is frequently easier and more rewarding to respond to the urgency of a failure than to take the actions required to avoid problems.

The Three Components of the Deming Philosophy

Deming's quality philosophy is based on profound knowledge, leadership principles, and the learning cycle. The system of profound knowledge leads to the practice of those principles that, in turn, lead to the use of the learning cycle (also known as the continuous improvement cycle or the "Plan-Do-Check-Act [PDCA]" cycle). Profound knowledge can be increased by using the learning cycle. Descriptions of the three components follow.

System of Profound knowledge

Profound knowledge provides the knowledge and theory needed to understand and improve organizations. It is made up of four interrelated parts: (1) *theory of knowledge* (the development, testing, and application of hypotheses), (2) *theory of variation* (identifying factors and interactions that affect quality through measurement and analysis of data), (3) *general systems theory* (understanding and dealing with the dynamics of internal organizational components and the interrelationships of an organization with its external environment), and *(4) psychology in the workplace* (finding and using effective teaching, communication, incentives, and teamwork skills). Deming indicates that one need not be an expert in any one of these areas, but rather have a working knowledge of all four areas to make improvements.

Deming's "14 obligations" of leadership

Deming describes 14 leadership principles that are derived from profound knowledge. They are also known as obligations because leaders are seen as being directly responsible for their adoption and incorporation into an organization. The aim of the 14 principles is to improve performance while eliminating harmful beliefs and practices. (The 14 principles are listed on the inside of the back cover of the *Primer*.)

Deming believed that the 14 obligations describe a management *system* that cannot be applied on a piecemeal basis. All are required to ensure the future success of organizations.

Application of the scientific method

The "PDCA" cycle (Figure 2) will be presented in greater detail in Section V. It can be described as the systematic study of the causes of variation in quality and an approach to improving quality. The PDCA cycle involved the following steps:

1. Plan a change for improvement
2. Carry out the change on a small scale
3. Analyze and interpret effects of the change
4. Act on what was learned
5. Repeat step 1, with new knowledge
6. Repeat step 2, and onward.

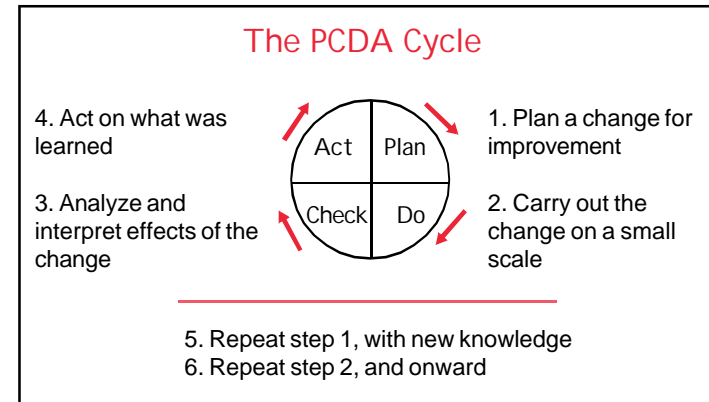A benefit of using the cycle is increased knowledge to understand, predict, and control out-

The PCDA Cycle

4. Act on what was learned

Act | Plan

3. Analyze and interpret effects of the change

Check | Do

1. Plan a change for improvement

2. Carry out the change on a small scale

5. Repeat step 1, with new knowledge
6. Repeat step 2, and onward

Figure 2. The PDCA cycle.

put. Because this application of the scientific method is cyclical and ongoing, and because the components of profound knowledge interact, the growth in knowledge is much like compounding interest—multiplicative rather than additive.

Viewing and Managing Organizations as Systems

A fundamental premise of Deming's theory of quality management is that an organization behaves as a system. Organizational effectiveness is greatest when the parts of that system work well together to achieve an aim or mission. Such a system is then optimized. Deming depicted this premise in a diagram (Figure 3). There are several very important implications from viewing an organization as a system.
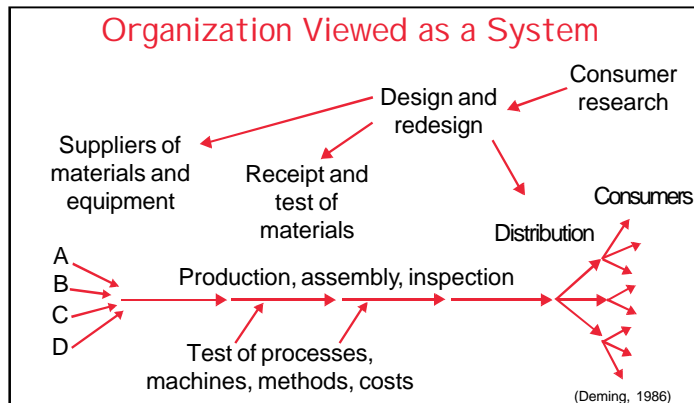
Figure 3. The organization viewed as a system.

System optimization requires that an organization is led and managed to focus on the aim of the organization. In Deming's diagram, the consumer research is the starting place, which begins with assessing consumer satisfaction with current products and services.

The systems perspective includes customers and suppliers. An external customer orientation is necessary to provide an aim for an organization. Without an aim, the organization's activities can become scattered or internally focused. Figure 3 shows that consumer information is used to design the production or service process. Tests are performed and changes made to the process to satisfy the requirements revealed from the consumer research.

As compelling as the argument is for focusing an organization on what is requested by cus-

tomers, there may be beliefs and practices of an organization that make it difficult to use this approach. Examples are:

- **A hierarchical perspective** that can encourage members of functional departments to be self-serving and more responsive to departmental goals than to organizational ones.

- **Performance appraisal and reward systems** that can concentrate on individual behavior and subsequently reinforce efforts based on self-interest rather than the long-term interests and performance requirements of the organization.

- **Lack of constancy of purpose or aim,** which can cause fragmented, unfocused work efforts.

- **Emphasis on short-term gains and short-term thinking,** which doesn't permit focus on strategic goals**.**

- **Hope for easy, simple, and quick solutions to major problems** that require little or no leader involvement.

- **The belief that just solving problems, automating processes, or installing new equipment will result in optimum performance** without considering the whole system. Actions based on this belief can lead to increased work complexity and degraded performance.

- **Reliance on a quality control department to take care of performance problems.**

Deming labeled these beliefs and practices "deadly and dreadful diseases" of management. Holding these beliefs will not lead to overall sustained organizational improvement. Deming's "14 Obligations" are practices that seek to ameliorate the "deadly and dreadful diseases" while promoting a long-term commitment to optimizing organizational performance.

For further information and discussion of these points, a bibliography is provided. A good starting point is *The Deming Route to Quality and Productivity* by William W. Scherkenbach (1988).

The Role of Leaders

The leaders of an organization have the prime responsibility for the quality produced by the organization, i.e., the success of the mission. The commitment and participation of leaders have long been recognized as critical factors in successful organizations (Tichy & Devanna, 1990). Only leaders have the sufficient authority, influence, and access to information to begin and maintain major organizational change.

In support of these leadership practices, Deming identified some responsibilities and

characteristics unique to leaders (Suarez, 1992). It is the responsibility of leaders to:

- Teach their people how the work of the group supports the aims of the organization.
- Act as a coach and counselor, rather than simply as a judge.
- Not rely solely on formal authority, rather develop systems knowledge and interpersonal skills.
- Be an unceasing learner. Encourage everyone to study.
- Create an environment that encourages participation and innovation.

Section 3

DON Implementation Approach

Within the DON, TQL is implemented in two phases. The first phase concentrates on conducting quality improvement and establishing the resources needed to maintain the practice of TQL. Process management is the means to accomplish this phase. The second phase involves extending process management to all significant processes important to the mission of the organization, working with suppliers and end-users, and meeting the needs of the end-user in the future. Strategic management is the means to accomplish this second phase.

The two-phase approach takes into account organizational realities. This phased approach was designed because:

1. Organizations do not have the resources to improve the entire organization at once. Phase One provides an approach for deciding what to work on first and how to apply new methods for improvement.

2. Education and training need to be coupled with improvement initiatives so that they are provided at the appropriate time. A sequential command-wide training plan is part of the implementation plan developed by senior leaders during this phase.

3. The commitment of military senior leaders to improvement efforts can be effected by their scheduled tour rotation. To encourage commitment, Phase One promotes activities that yield benefits during a leader's tour of duty.

4. Lessons learned from a command's quality improvement initiatives need to be understood and impediments to process management removed before expanding the application of TQL. Phase Two provides an approach to exploit this learning.

Process Management

Phase One establishes the practice of process management. The major steps of process management are (1) identification and training of personnel to undertake initial improvement projects, (2) undertaking initial projects to gain experience with and obtain results from process management, (3) expansion and support of efforts to improve significant processes, and (4) removal of organizational impediments to improvement. This approach, depicted in Figure 4, can be applied to any organization in the DON, to major elements such as fleets or systems commands, or to the DON as a whole.

Senior Leader Responsibilities for Leading Process Management	Improve Mission Performance	Educate & train	•Educate/train senior leader and executive-level group •Select/train support personnel •Train quality improvement teams
		Initiate project efforts	•Develop TQL implementation plan •Create a quality environment •Provide resources •Charter quality improvement teams •Establish the practice of commandwide process management
		Support/ extend process management efforts	•Plan for the reinvestment of resources •Identify/remove impediments •Monitor/assess progress •Act on teams' recommendations •Extend education/process management efforts

Figure 4. Senior leader responsibilities for process management.

Process management differs from traditional operations management in a number of ways. It is:

1. *Proactive management* that seeks to identify and remove causes of errors to prevent occurrences of failures. Traditional management of quality tends to deal with failures after the fact through problem-solving.

2. *A team effort* that seeks to involve as team members all those responsible for and involved in the process.

3. *Based on objective sources of measurement to support decisions,* using data, statistical methods and decision rules for taking actions on processes. Measurement sources include *input* (materials from suppliers), the *output* (products and services) provided by an organization, and the *processes* (interaction of people, materials, methods, and machines) that produce the products and services.

4. *Continuous*, an ongoing pursuit of improvement, rather than episodic or crisis-driven. Leaders will still respond to problems, but they will focus on *prevention* of problems through continuous improvement of the processes that lead to mission effectiveness.

To practice TQL, the leader of a unit must establish process management as the day-to-day management methodology. An organizational unit such as a squadron, a ship, or any shore-based command is the focus for implementation of process management.

The knowledge and skills required for process management include systems thinking, team leadership, applied statistics, and the psychology of work. As a cost-effective training approach, commanding officers have been instructed to send personnel to DON TQL courses to become trainers within their own organizations.

Strategic Management

The second phase of implementation extends continuous improvement to the strategic level, focusing on systemwide implementation and alignment of work processes and management support systems. Phase Two implementation addresses the issues of (1) sustaining improvement efforts when military leaders rotate, (2) removing organizational structure and bureaucracy that inhibit change, and (3) identifying and meeting future mission requirements or needs of end-users.

The methodology for guiding changes during Phase Two is strategic planning and strategic management. Specific guidance for strategic planning is presented in *A Handbook for Strategic Planning* by Wells and Doherty (1994); guidance for strategic management is given in *Strategic Management for Senior Leaders: A Handbook for Implementation* by Wells (1996).

Strategic planning is defined as "the process by which the guiding members of an organization

envarenvision its future and develop the necessary procedures and operations to achieve that future" (adapted from Goodstein, Nolan, & Pfeiffer, 1992). Strategic management is then the "management system that links strategic planning and decision-making with the day-to-day business of operations management" (Gluck, Kaufman, & Walleck, 1982) (see Figure 5). The strategic approach is a top-down systematic way to institutionalize what the organization does and how it accomplishes its mission. It focuses on current and future processes, integrating overall goals, and helps leaders understand the implications of aligning management systems so that they are all focused on the mission and the future. Strategic management requires the same tools and

Figure 5. A general strategic management model.

management approaches used during Phase One, with a greater emphasis on systems thinking and measurement.

While process management primarily focuses on improving current processes, strategic management focuses on ensuring the organization is working on the "right" processes to meet current and future requirements. The strategic approach is a systems method for changing the overall organization, not a process-by-process approach as used when getting started in process management.

The senior leaders are responsible for managing systemwide changes necessary to optimize mission effectiveness. They must develop and implement the strategic plan, committing the time, guidance, and resources necessary to achieve success. Some of the major leader activities in strategic planning and management are expanded on in Figure 6.

Strategic planning

The leaders set the aim and direction for the organization by clarifying (1) the *mission*—why the organization exists, whom it serves and what it provides, (2) the *vision*—a view of the organization that addresses needs of the end-users in the future, and (3) *guiding principles*—a reflection of the values of the organization, the quality philosophy, and how these values are to be employed in day-to-day management
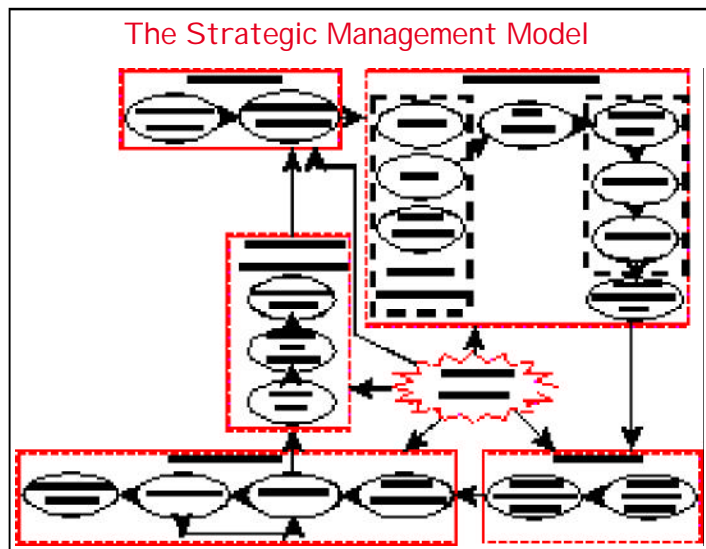
and decision-making. Organizational goals are then developed to reflect what needs to be done to move toward the vision. *Strategies* are the operational statements that describe how the strategic goals are going to be achieved. *Objectives* are the specific, measurable short-term and mid-term performance targets that represent interim steps for achieving the strategies.

Senior Leader Responsibilities for Leading Strategic Management	Improve Mission Effectiveness	Strategic Planning	•Set the aim and direction for organization •Develop goals & strategies to meet needs of future •Provide resource & support for implementation
		Deployment & Implementation Plans	•Develop plan of action for implementation •Communicate plan throughout organization •Use cross-functional teams working on goals
		Strategic Measures	•Develop mission effectiveness measures •Link effectiveness measures to input/process/ output measures •Assess progress on goals/make decisions
		Management Policies/ Support Studies	•Identify & change policies to match goals •Align organizational structure to match organizational aim & direction •Change accounting & personnel systems to map to organizational requirements

Figure 6. Senior leader responsibilities for strategic management.

Deployment of plans

Everyone in the organization will participate in strategic management, beginning with the leaders. Senior leaders begin by reaching consensus on goals and developing a plan of action. They then obtain input from their immediate subordinates, or direct reports, prior to publication. The plan is then communicated widely, with actions identified that are needed

to achieve the goals and objectives. Leaders need to ensure that plans contain measurable milestones so that progress can be tracked.

Implementation

By turning the strategic plan into action, the organization aligns its significant work processes and identifies other management systems that need to be changed. While planning is top-down, implementation begins at the level where specific objectives are worked on, leading to accomplishment of strategies and, ultimately, goals. Roles and responsibilities for meeting goals are defined. Organizations with a well-established cross-functional team structure should use it where possible since organizational goals more than likely will be cross-functional. For goals defining new missions, additional teams may need to be established. Through this infrastructure, plans for day-to-day business are linked and resource needs identified.

Strategic Measurement

Measures that indicate mission effectiveness (outcome measures) will be developed. These should reflect how well strategic initiatives (i.e., goals to move toward the vision) are being met. Most current performance measures focus on efficiency or financial measures (e.g., amount of funds expended at end of the fiscal year). While these may be necessary for day-to-day

business management and may be useful for investigating why an organization is not accomplishing its strategic goals, they may not be measuring mission effectiveness or how well end-user needs are being met.

Strategic Management and PDCA

 The leadership uses the PDCA cycle to revise the strategic management effort. Organizational improvements are strategically "Planned." The planned changes are then deployed and implemented, reflecting the "Do" phase. Progress on objectives and goals is "Checked" and "Acted" upon, using the appropriate performance measures. Actions based on this information can include developing new plans to continue the cycle of improvement.

Organizational Implications of Strategic Management

As quality improvement activities become strategically oriented and widespread in an organization under Phase Two, there will be effects on all organizational systems. As an organization matures in its application of TQL:

🖉 There will be shorter chains-of-command and fewer functional structures because cross-functional teams will be managing the work processes.

🖉 Decision-making will shift lower in the organization because teams will control work processes.

🖉 Information and reporting requirements will change to support cross-functional work on organizational goals.

🖉 Organizational structure will evolve to a customer-focused or process-oriented structure.

🖉 Compensation and reward systems will need to become more clearly aligned with performance and organizational goals**.**

These issues and others should be addressed when the strategic plan is revised. By using the strategic management process for directing organizational change, an organization's components will become aligned and integrated to maximize overall performance.

In summary, strategic planning and management are intended to help organizational components work together with a common purpose toward a shared vision. They are a way of aligning all work processes and involving customers and suppliers to help determine and meet future requirements. Strategic planning and management can be used to gain support from a parent command for the course charted by the plan and to obtain needed resources external to the organization. The plan and

management efforts demonstrate the organization's commitment to providing quality products and services, now, and in the future.

Section 4

TQL Roles and Management Structure

At the beginning of TQL implementation, participation must be planned and *managed from the top* for two basic reasons: (1) the training needed to get underway is substantial and requires resource decisions, and (2) the selection of initial processes for improvement requires decision-making at the highest level to ensure buy-in and success.

Process Management and the Structure of Teams

Teams need to be formed that reflect existing ownership responsibilities and the way the work is actually performed. Contrary to the way management structures appear on hierarchical organization charts, work is actually accomplished through processes that flow horizontally, *across* the organization. The up-and-down vertical flow on the current organizational charts only reflects how control is exerted from the top to the bottom, an effective structure for communication top-down. However, "vertical" is not how the work flows, which is why the hierarchical structure may be a barrier to efficient processes (Rummler & Brache, 1991).

Organizations that focus on hierarchical relationships can suffer from competition and rivalries between functional areas, poor communications, and narrow perceptions of managerial responsibilities. Avoiding these barriers to performance and promoting the effective use of teams require knowledgeable leadership attention.

An important task of management is to span functional boundaries so that the output from one functional area meets the needs of the functional area receiving the product (the internal customer). At each step, value is added so that what is produced is a value-added output for the external customer.

Defense organizations pursuing their missions are no different from other service organizations in that everything created is the result of processes. The application of process management in a military operational unit should focus on developing the capability of performing a military mission. As mentioned earlier, TQL is not intended as an approach to conducting operational missions.

TQL teams

In an organization practicing TQL, teams are created to represent the top, middle, and working levels of an organization. The highest-level team is called an Executive Steering Committee (ESC). Teams of mid-level leaders are called Quality Management Boards (QMBs). Teams of individuals who work in a process are called Process Action Teams (PATs). While all three levels of teams are expected to share a common approach to improvement, the PDCA cycle, they have different roles and responsibilities, as shown in Figure 7.

ESCs

ESCs represent the executive level. For naval organizations, an ESC should include the commanding officer, senior civilian, department heads, and senior enlisted person. The ESC collects and uses information from the organization's customers and other external groups (e.g., regulatory agencies). It develops an implementation plan and selects improve

ment goals. It charters and supports the analysis and improvement efforts conducted by subordinate teams. During Phase Two the ESC is responsible for strategic planning and strategic management, implementing the management changes needed to optimize mission effectiveness.
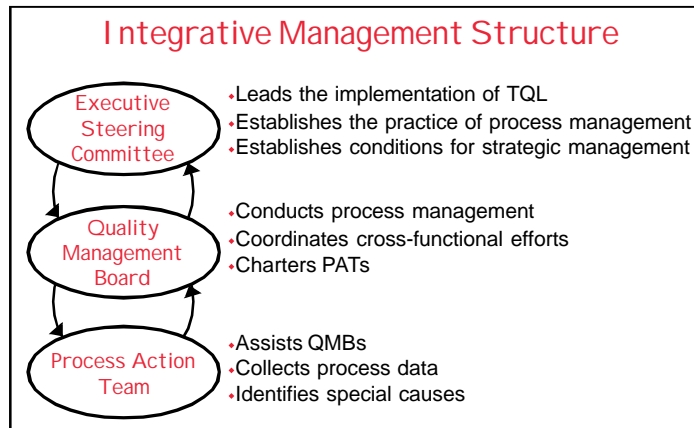
Integrative Management Structure

Executive Steering Committee
- Leads the implementation of TQL
- Establishes the practice of process management
- Establishes conditions for strategic management

Quality Management Board
- Conducts process management
- Coordinates cross-functional efforts
- Charters PATs

Process Action Team
- Assists QMBs
- Collects process data
- Identifies special causes

Figure 7. Integrative management structure.

QMBs

QMBs are cross-functional teams of top- and mid-level managers chartered by the ESC who are jointly responsible for significant processes. A QMB uses the combined knowledge of its members to select the process areas or factors that contribute the most toward achieving performance improvement. As needed, QMBs organize subordinate teams, PATs, to collect and analyze information to identify the process factors influence the quality of performance.

Using the process data, QMBs make changes by removing impediments or changing the process. If QMBs identify changes that require a higher level of authority, then they submit those recommended changes to the ESC for action.

PATs

PATs are made up of individuals who work directly in a process. These teams are chartered by a QMB to assist in the process management effort because of their (1) knowledge of process performance and (2) location in the process where data are to be collected. A critical responsibility of PATs is to collect, analyze, and provide summary information to QMBs about processes. PATs also take actions to stabilize process performance. If they identify changes that they cannot make at their level of authority, then they submit those changes as recommendations through the chain of command to QMBs.

The TQL teams are supported by internal consultants known as TQL coordinators and quality advisors. A TQL coordinator is the individual selected to support the ESC, while quality advisors support QMBs and PATs. TQL coordinators and quality advisors provide just-in-time training and assistance in the application of management and planning methods, process analysis tools, and principles of effective teamwork. These people are trained to

provide this assistance through completion of DON TQL courses offered through Naval Leadership Training Units in Little Creek, Virginia, and Coronado, California.

TQL Team Structure and the Chain of Command

Quality improvement is managed through this team structure to provide an efficient means to optimize the performance of the organization. The chain of command is responsible for improving work and management systems. For commands with several levels, it is likely that process improvement and management will involve two or more levels in the organization. Linking the teams, from higher to lower levels, is accomplished through an individual from a higher-level team who serves as a "linking pin." The linking pin is responsible for clarifying the subordinate team's charter to avoid an overlap or omission of improvement activities. Both the team structure and the use of linking pins are intended to maintain an effective chain of command and ensure mission-focused improvement efforts.

In summary, effective process management requires organizing people who are process owners into teams. Given the focus on mission performance, the application of TQL should not be viewed as a voluntary initiative. Everyone in an organization is expected to contribute to mission effectiveness and should be part of applying TQL tools and methods. They must be taught how to perform as effective team members or team leaders and how to apply the scientific approach to improve processes. While participation and the use of teams are important aspects of TQL, they do not eliminate the authority and responsibility of senior leaders to make unilateral decisions as required.

Section 5

Application of the Scientific Method

Application of the scientific method to organizational performance is conducted through the "Plan-Do-Check-Act" (PDCA) cycle. The PDCA cycle is an objective method of acquiring and applying knowledge to improve performance. This cycle was developed and applied by Walter Shewhart (1939) as a way to improve the production systems of organizations. Figure 2, displayed earlier in this document, is Deming's version of this cycle (Deming, 1986).

Use of the PDCA Cycle

Figure 2 shows a procedure for improving quality by making process changes. The types of changes that are evaluated could be (1) actions taken to avoid deterioration of the current performance due to unexpected events, such as accidents or emergencies, or (2) those designed to improve future performance of a process or system. In both of these circumstances, a "Plan" needs to be formulated, "Do" is the execution of that plan, and "Check" is an evaluation of data to determine if the planned changes are effective. In the "Act" portion of the cycle, the findings from the "Check" phase are used as a basis for taking actions that institutionalize useful changes.

TQL Adaptations of the PDCA Cycle

The DON has developed material on the PDCA cycle to aid commands in carrying out basic process improvements and redesign efforts. These are *A Total Quality Leadership Process Improvement Model* (Houston & Dockstader, 1993*)* and the *Systems Approach to Process Improvement* course (Rodriguez, Landau, & Konoske, 1993). These adaptations share common properties in that they:

- ✎ **Require empirical evidence.** In TQL, objective information takes precedence over subjective perceptions as the basis for decision-making. The identification of prob-

lems, their potential causes, and solutions must be based on objective information, not anecdotal evidence or subjective perception to guide improvement activities. The determination of causes as well as the effectiveness of efforts to improve mission performance must be verified with data.

- ✎ **Use analytic tools to gain new knowledge.** Analytic methods and tools help team members to collect, organize, and interpret information. They also serve as a common language that aids in communication and decision-making within an organization. Without the discipline offered by these tools and methods, it is difficult for an organization to learn. When an organization does not learn, it risks repeating mistakes or applying the same ineffective solutions over and over again (Rodriguez, Landau, & Konoske, 1993).

- ✎ **Address causes of performance problems.** There are two kinds of causes of problems associated with process performance. These are known as common causes and special causes. The ability to distinguish between the two causes and take appropriate action is essential to improvement.

1. Common causes are sources of variation due to the system itself or the way the system is managed. They represent

sfactors that are inherent and have a widespread effect on performance, such as the quality of incoming resources, training, or standard equipment or operating procedures. Addressing common causes of performance typically requires system changes.

2. Special causes are sources of variation due to isolated abnormalities or exceptional occurrences in the system; they are not a regular part of the system. Correcting the effects of special causes usually can be accomplished through problem-solving. Actions taken on special causes can lead to immediate results, but actions on the common causes can generate the greatest and most lasting benefits.

✎ **Help organizations to be proactive.** By anticipating and preventing poor performance, the organization's overall effectiveness is improved and limited resources are used efficiently. The organization can also use the PDCA cycle in conjunction with strategic plans to identify and respond to new requirements.

✎ **Are cyclical.** As indicated above, status quo is not good enough. Changes in mission requirements, resources, and operational constraints require naval organizations to continually seek out new and better

ways to achieve their missions. Effective application of the PDCA cycle requires the ongoing acquisition and use of new knowledge to address emerging mission needs.

✎ **Are value-focused.** Pursuing improvement through TQL does not mean quality at any cost, but rather quality at a cost the user is willing to pay. Improving mission effectiveness begins with reducing complexity and activities that do not add value. Process redesign or re-engineering efforts that may follow initial improvements are designed to increase the value of the process as it relates to mission performance. This value-based orientation is fundamental to TQL.

Summary

Significant reductions in the budget of the Department of Defense have been ongoing. The Department of the Navy is committed to the use of TQL as an approach to improve mission effectiveness under conditions of reduced resources. This approach embraces a definition of TQL that addresses short- and long-term organizational goals, adoption of the Deming philosophy, an implementation approach, a management structure and roles, and the application of the scientific method. Requirements for the successful use of TQL include education and training, leadership, and teamwork.

The DON TQL approach requires that commanding officers begin the practice of process

management in their organizations. Once implementation is underway, the leader is responsible for expanding improvement to all significant processes and ultimately the entire extended system. Then leaders can focus on setting a strategic direction for the organization and systematically deploying the goals throughout the organization. In this way the products and services can be directed at meeting the future requirements of the naval forces to ensure a strong defense in the 21st century.

Bibliography

Brassard, M., & Ritter, D. (1994). *The memory jogger II: A pocket guide of tools for continuous improvement and effective planning.* Methuen, MA: GOAL/QPC.

Commandant's planning guidance (July 1, 1995). Washington, DC: Headquarters of the U.S. Marine Corps.

Deming, W. E. (1986). *Out of the crisis.* Cambridge, MA: Massachusetts Institute of Technology, Center for Advanced Engineering Study.

Deming, W. E. (1993). *The new economics for industry, government, education.* Cambridge, MA: Massachusetts Institute of

Technology, Center for Advanced Engineering Study.

Department of the Navy. (March 1994). *Department of the Navy Total Quality Leadership Glossary* (TQLO Pub. No. 94-01). Washington, DC: Total Quality Leadership Office, Department of the Navy.

Department of the Navy. (September 7, 1994). *From the sea: Preparing the naval service for the 21st Century.* Washington, DC: Author.

Dobyns, L., & Crawford-Mason, C. (1994). *Thinking about quality.* New York: Random House Times Books.

Dockstader, S. L. (1984). What to do when there are more than five deadly diseases. Presentation to the *MIT Conference on Quality and Productivity*, San Diego, CA.

Doherty, L. M. (May 1990). Managing the transformation: A two-phase approach to implementing TQM. Presentation at the *Third Annual Federal Quality and Productivity Conference*, Vienna, VA.

Doherty, L. M., & Howard, J. D. (January-February 1994). Total quality leadership above and below the waves. *Journal for Quality and Participation, 74*(1), 46-53.

Gluck, F. W., Kaufman, S., & Walleck, A. S. (1982). Four phases of strategic management. *Journal of Business Strategy, 2*(3), 9-21.

Goodstein, L. D., Nolan, T. M., & Pfeiffer, J. W. (1992). *Applied strategic planning: A comprehensive guide.* San Diego, CA: Pfeiffer & Co.

Gore, A. (September 7, 1993). *From red tape to results: Creating a government that works better & costs less* (Report of the National Performance Review). Washington, DC: Government Printing Office.

Government Performance and Results Act of 1993 (Public Law 103-62). (August 3, 1993). Washington, DC: U.S. Congress.

Houston, A., & Dockstader, S. L. (1993). *A Total Quality Leadership process improvement model* (TQLO Pub. No. 93-02). Washington, DC: Total Quality Leadership Office, Department of the Navy.

Houston, A., Sheposh, J., & Shettel-Neuber, J. (1986). *Management methods for quality improvement based on statistical process control: A literature and field survey* (NPRDC Tech. Rep. 86-21). San Diego, CA: Navy Personnel Research and Development Center.

Howard, J. D. (1992). The only way ahead. *Naval Institute Proceedings*, *118*(6), 85-86.

Ivancevich, J. M., Lorenzi, P., Skinner, S. J., & Crosby, P. B. (1994). *Management: Quality and competitiveness.* Boston: Irwin.

Kotter, J. (March-April 1995). Leading change: Why transformation efforts fail. *Harvard Business Review, 73*(2), 59-67.

Ledford, G. E., Lawler, E. E., & Mohrman, S. A. (1990). The quality circle and its variations. In Campbell and Associates (Eds.), *Productivity in organizations.* San Francisco: Jossey-Bass.

Metz, E. (Summer 1984). Managing change: Implementing productivity and quality improvements. *National Productivity Review, 3*(3), 303-314.

Rodriguez, A., Landau, S., & Konoske, P. (1993). *Systems approach to process improvement* (Course No. CINP-500-0004). Washington, DC: Department of the Navy.

Rummler, G. A., & Brache, A. P. (January 1991). Managing the white space. *Training, 28*(1), 55-70.

Scherkenbach, W. W. (1988). *The Deming route to quality and productivity.* Rockville, MD: Mercury Press.

Scholtes, P. R., et. al. (1989). *The team handbook: How to use teams to improve quality.* Wisconsin: Joiner Associates.

Shewhart, W. (1939, in Deming, 1986). *Statistical method from the viewpoint of quality control.* New York: Dover.

Silberstang, J. (1995). *Charting the course: The Department of the Navy Total Quality Leadership curriculum guide* (TQLO Pub. No. 95-01). Washington, DC: Total Quality Leadership Office, Department of the Navy.

Suarez, J. G. (1992). *Three experts on quality: Philip B. Crosby, W. Edwards Deming, J. M. Juran* (TQLO Pub. No. 92-02). Washington, DC: Total Quality Leadership Office, Department of the Navy.

Suarez, J. G. (1993). *Managing fear in the workplace* (TQLO Pub. No. 93-01). Washington, DC: Total Quality Leadership Office, Department of the Navy.

Tichy, N. (1983). *Managing strategic change.* New York: John Wiley.

Tichy, N. M., & Devanna, M. A. (1990). *The transformational leader*. New York: John Wiley.

Tribus, M. (1988). *Quality first: Selected papers on quality and productivity improvement* (Pub. No. 1459). Washington, DC: National Society of Professional Engineers.

Walton, M. (1990). *Deming management at work*. New York: Putnam.

Wasik, J., & Ryan, B. (1993). *TQL In the fleet: From theory to practice* (TQLO Pub. No. 93-05). Washington, DC: Total Quality Leadership Office, Department of the Navy.

Wells, D. L., (1996). *Strategic management for senior leaders: A handbook for implementation* (TQLO Pub. No. 96-03). Washington, DC: Total Quality Leadership Office, Department of the Navy.

Wells, D. L., & Doherty, L. M. (1994). *A handbook for strategic planning* (TQLO Pub. No. 94-02). Washington, DC: Total Quality Leadership Office, Department of the Navy.

Deming's 14 Obligations of Leadership

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 dependence 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. Move toward a single supplier for any one item, on a long-term relationship of loyalty and trust.

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 supervision should be to help people and machines and gadgets to do a better job. Supervision of management is in need of overhaul, as well as supervision of production workers.

8   Drive out fear, so that everyone may work effectively for the company.

9   Break down barriers between departments. People in research, design, sales, and production must work together 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 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.