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THESIS

IMPLEMENTATION OF TOTAL QUALITY LEADERSHIP
(TQL) AT LONG BEACH NAVAL SHIPYARD AND
FUTURE PERSPECTIVES FOR IMPLEMENTATION BY
THE HELLENIC NAVAL STATIONS

by

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December 1993

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The Hellenic Navy, in a continuous effort to improve its maintenance capability, is seeking improved quality to handle both today's and future needs. Such a quality improvement could be realized by examining and implementing a Total Quality Leadership (TQL) process similar to that at the Long Beach Naval Shipyard (LBNSY). This thesis uses the framework of Dr. W. Edwards Deming's philosophy of management, highlighting his fourteen points to assess the implementation of TQL at LBNSY. Personal interviews were conducted and a climate questionnaire given to selected TQL-trained civilian senior and middle managers at LBNSY. The results were evaluated to assess the performance of TQL at LBNSY and to determine its possible applicability for the Hellenic Naval Stations.

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**IMPLEMENTATION OF TOTAL QUALITY LEADERSHIP (TQL)
AT LONG BEACH NAVAL SHIPYARD AND FUTURE PERSPECTIVES
FOR IMPLEMENTATION BY THE HELLENIC NAVAL STATIONS**

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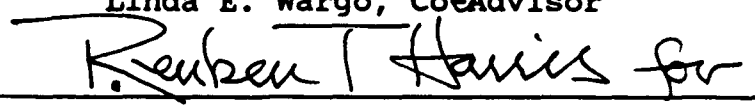
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ABSTRACT

The Hellenic Navy, in a continuous effort to improve its maintenance capability, is seeking improved quality to handle both today's and future needs. Such a quality improvement could be realized by examining and implementing a Total Quality Leadership (TQL) process similar to that at the Long Beach Naval Shipyard (LBNSY). This thesis uses the framework of Dr. W. Edwards Deming's philosophy of management, high-lighting his fourteen points to assess the implementation of TQL at LBNSY. Personal interviews were conducted and a climate questionnaire given to selected TQL-trained civilian senior and middle managers at LBNSY. The results were evaluated to assess the performance of TQL at LBNSY and to determine its possible applicability for the Hellenic Naval Stations.

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I. INTRODUCTION

A. BACKGROUND

After World War II, countries cleaned off the dust of the war and assessed their remaining power. Some countries had the advantage of being winners and others the disadvantage of being losers. The casualties were severe on both sides, but the losers were in the worst situation.

Japan was a big loser. Their industrial base was destroyed. Japan was not expected to recover from the war, nor was it imagined that they would ever compete with the world's super powers. Japan was left with the ruins of the war and its only asset was the Japanese people.

In the early 1950's the words "Made in Japan" meant almost nothing on the international market. But the same thing cannot be said today. Most American companies still wonder why they are so far behind Japan and how the Japanese became pre-eminent in the market place. What happened? What was Japan's secret? Prhaps it is the idea and practice of "quality."

The Japanese applied the philosophy of Total Quality Leadership (TQL) which is based on the philosophy of Deming and Juran. Thus the words "Made in Japan" became a symbol for customer focused, high quality products and services.

In 1980, the Americans, following the maxim of "study your enemy," discovered the means of Japan's success. They studied the philosophy and methods of some "quality gurus" and particular that of Deming. Institution of Deming's principles was credited with transforming Japan into its position as a major world power. The Americans call their approach Total Quality Management (TQM) and, when used as the Department of the Navy (DON), Total Quality Leadership (TQL).

Most organizations in the United States, as well as the Department of Defense, adopted TQL for continuous improvement with very encouraging results. The general assumption is: "It works."

In the fall of 1991, the Secretary of the Navy H. Lawrence Garret III, speaking out on the Need for Change said:

> ...World events and the condition of our nations economy provide intense pressure to reduce defense expenditures. At the same time the requirement to equip, maintain, and held combat-ready forces is and will continue to be essential to the freedom of our nation. Maintaining naval strength under significantly reduced funding and manning levels demands that we became more efficient and effective, and we must do this with considerable urgency....
>
> Commitment to quality improvement is the way the naval service can maintain its effectiveness. It has been demonstrated in this country recently, and in Japan for over 40 years, that by improving quality, dramatic reductions in costs and incases in productivity can result. Shore commands that has initiated quality focused efforts have already shown significant improvements, and we have learned much from these successes. In November 1988, when I served as Under Secretary of the Navy, I became convinced that quality was the key to our survival. I talked with quality experts, industrial leaders, and members of our own shore commands who had initiated quality efforts. These organizations gad bottom-line results to show that an emphasis on quality, on reduction

of process variation, will lead to increased productivity and lowered costs.

It is my firm belief that leadership is the cornerstone of TQL. Our work system s and our culture are changing to met the challenge of becoming a smaller, leaner, more efficient Department. Through TQL we are shaping a Navy and Marine Corps that can meet the demands of this decade of change and those of the coming century. [Ref. 1]

In Spring 1991, the Commander of Naval Operations(CNO) ADM Frank B. Kelso II, Spring 1991, after operations Desert Shield and Desert Storm, said to his people:

...Your superb performance during operations Desert Shield and Desert Storm once again demonstrated Navy's readiness to fight and win. Now we must face new challenges, many of which will focus on operating with fewer resources than we have now. That means we'll have to improve our efficiency and make maximum use of those limited resources in the years ahead.

...To that end, the entire Navy will adopt the principals of Dr. W. Deming known as "Total Quality Management." For our Navy this program is called "Total Quality Leadership," to reflect our reliance on Navy Leaders of all pay grades. Some Commands, especially those in the shore establishment, have already begun implementing TQL principles and have achieved impressive results. Now we must expand our efforts, and tap the wealth of talent available in the fleet to help us improve our effectiveness.... Through TQL, you have an opportunity to make a lasting mark on the Navy. Your contributions can improve the quality of everything we do, and get done right the first time. I know I can count on your support as we embark on this new dimension in Leadership. [Ref. 2]

In another publication ADM Kelso said:

...We need something to take up the slack, and that something is quality.... Since TQL is a management philosophy we will need to adapt its approach and techniques to the Navy operational environment. [Ref. 3]

After the second World War, Greece although being a winner, was still struggling to stand up economically. Quality was something unknown in the market place and in the

public sector; although, every one complained about inflation and poor product performance.

Today Hellenic Naval Leaders are struggling to address the scope of an imposed economic rehabilitation program and instability in relationships with their neighbors. Hellenic Naval Leaders, particularly in the Hellenic Naval Stations, try to "do their best" to keep the Hellenic fleet in readiness. They "do their best" to synchronize the diverse personnel resources, which are characterized by the military mentality that "The Commanding Officer is the Master under the God," and the civilian, living under the umbrella of the Union.

TQL appears to be an effective way to unify the human resources and to create a climate of continual improvement. "If U.S.A. and Japan can do it, why can't we?"

B. OBJECTIVES

The general purpose of the thesis is to assess the applicability of TQL to Hellenic Naval Stations, and if applicable, to determine strategies for implementation.

The thesis will study how TQL is implemented in Long Beach Naval Shipyard, the problems faced, how they were handled, and the attitudes of executives, managers and workers toward TQL. It will then examine the applicability of this approach to Hellenic Naval Stations.

C. RESEARCH QUESTION

The primary question of the thesis is:

- Is TQL as it practiced by Long Beach Naval Shipyard (LBNSY), applicable to Hellenic Naval Stations?

- If so, how?

The following secondary questions will be addressed:

- What problems occurred in the implementation of TQL at the LBNSY an how were the problems resolved?

- How does the work force view the effectiveness of TQL at the LBNSY?

- How was the transformation from traditional management practices to TQL initiated and how was it maintained?

D. ASSUMPTIONS

Assumptions made by researcher when conducting this study were:

- The survey population is representative of LBNSY management.

- The LBNSY functions are comparable to those of an Hellenic Naval Station.

- The Western countries have similar work ethics.

E. METHODOLOGY

The research methodology included a review of current literature, including applicable DOD directives, instructions, periodicals, and research papers. Assessment of implementation of TQL in Long Beach Naval Shipyard was accomplished by:

- Development and delivery of a questionnaire survey based on Deming's Fourteen Points which was given to a random sample of the management personnel that had been trained in TQL in 1992.

- Conducting interviews with senior and middle management personnel.

- Observations of TQL meetings.

   The descriptive and statistical analysis was conducted using the Statistical Analysis System (SAS).

F. ORGANIZATION OF STUDY

   The study is organized into the following chapters:

- Introduction and Background: A brief overview of TQL, its history, and how management in different departments feel about TQL.

- What is Total Quality Leadership? A review of the most important points of Deming's theory.

- Historical Background: A short historical review of the Long Beach Naval Shipyard and its TQL implementation.

- Methodology: A description of the method in practice.

- Survey, Interview and Observation Results: The analysis of results of an eighty item questionnaire, which was distributed to senior and middle management personnel who received training and are currently involved in the implementation of TQL. The findings from the question-naire analysis supported from interviews with senior and middle management and observations from TQL meetings.

- Implications for Hellenic Naval Stations: A brief description of the Hellenic character and the character of the Hellenic Navy personnel. Advantages and disadvantages of implementing TQL in the Hellenic Naval Stations and the possible strategy that could be applied in implementing TQL in the Hellenic Navy.

- Conclusions and Recommendations: The research questions are answered based on the author's experience in the Hellenic Navy and his visit to LBNSY. Recommendations for future study are also addressed.

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II. WHAT IS TOTAL QUALITY LEADERSHIP?

A. BACKGROUND

Today, when we talk about Quality, the first name that usually comes to our mind is the name of Edward Deming. But who is he?

Edward Deming, the famous American statistician, holds a Ph.D. in physics. He is an educator, lecturer, author, and an internationally renowned consultant, best known for setting Japanese businesses on the course of quality and productivity known throughout the world. He has been called "The Father of the Third Wave of the Industrial Revolution. " In 1927, he worked for the U.S. Department of Agriculture where he met Walter Shewhart, who was developing techniques to bring industrial processes under statistical control. Deming studied Shewhart's theories, which became the basis of his own work years later. The gathering of data and its subsequent analysis are the foundation of statistical process control.

Total Quality Management (TQM), a term used often to describe U.S. businesses' approach to quality improvement, is a systems approach to managing work and leading people. An alternative to present quality control philosophies, it is the combination of statistical process control and management principles.

The U.S. Navy defines it's version of Quality Management, Total Quality Leadership (TQL), as the application of quantitative methods and the knowledge of people to assess and improve:

- Materials and services supplied to the organization

- All significant processes with in the organization

- Meeting the needs of the customer or end-user, now and in the future.   [Ref. 4:L. 1 p. 27]

Former Secretary of the U.S. Navy, H. Lawrence Garrett, III, framing the role of the Total Quality Leadership Executive Steering Group (ESG)of the Department of the Navy (DON), in June 1991, said:

> In acknowledgement of the unique role of leadership on military operational commands, and the fact that military personnel generally disfavor the word "management," we have decided to use "Total Quality Leadership (TQL)" as the title for the quality principles, approach, and methods that will be used throughout the Department of the Navy, instead of TQM.   [Ref. 5]

The Department of the Navy, in order to improve quality and productivity, adopted the Leadership approach known as TQL, the systematic way to ensure that everyone is doing the right things...and in the right way. Table 1 provides further information on what Total Quality Leadership is and is not.

B.   THE DEMING APPROACH TO QUALITY LEADERSHIP

Deming believes that in order to achieve continual improvement we have to look at quality in a new way. The

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TABLE 1: WHAT TQL IS AND IS NOT. [REF. 22]

TOTAL QUALITY LEADERSHIP

IS	IS NOT
* A way to strengthen the chain-of-command.	* A way to bypass the chain-of-command.
* A systematic way to improve products and services.	* A new program.
	* A passing fad.
* A proven method.	* "Fighting fires."
* A structured approach to identifying and solving problems.	* Short-term focus.
* Long-term focus.	* Conveyed by inspection.
* Conveyed by leadership actions.	* Delegated to subordinates.
* Supported by statistical process control.	* Internally focused.
	* Individual-oriented
* Practiced by everyone.	* Individually changing direction.
* Customer-focused.	
* Team-oriented.	
* Constancy of purpose.	* Results-focused.
* Process-focused.	* Opinion-based.
* Fact-based.	* The status quo.
* Continuous improvement.	* Just meeting requirements.
* Striving for excellence.	
* Driven by top leadership.	
* System-oriented.	* Delegated.
* An American system.	* Management by objective.

The Chain Reaction
for Quality Improvement
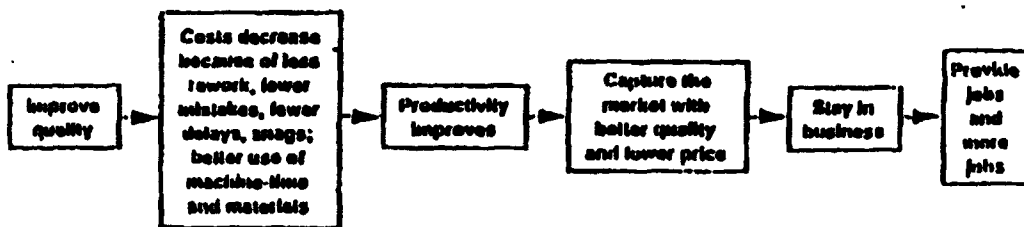
Figure 1: Deming's Chain Reaction Model [Ref. 4:L1 p. 22]

new way is the "chain reaction" (Figure 1). As quality
improves, costs decrease and productivity increases. With
lower cost and higher quality, the opportunity for increased
market share and growth is created. From the Navy's aspect,
lower cost and higher quality lead to an improvement in
mission readiness.

Operating with quality management methods, Navy units will
be able to:

- Eliminate waste, reduce costs, and increase productivity

- Improve competitiveness because of lowered cost and
  increased quality

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- Enable people to make meaningful contributions to their work

- Ensure an organization's mission focuses on the right targets

Looking behind the chain reaction, and taking a closer look at improving quality, we enter the process improvement area (Figure 2). Raw materials come in the organization and flow to the production line. People, materials, machines, and methods all contribute the final good production. At the end of the process, customers receive the final product and reflect their judgement to the organization, thus contributing to the continuous improvement. The cooperation between the system and the customer helps optimize the system; to make it as perfect and effective as possible.
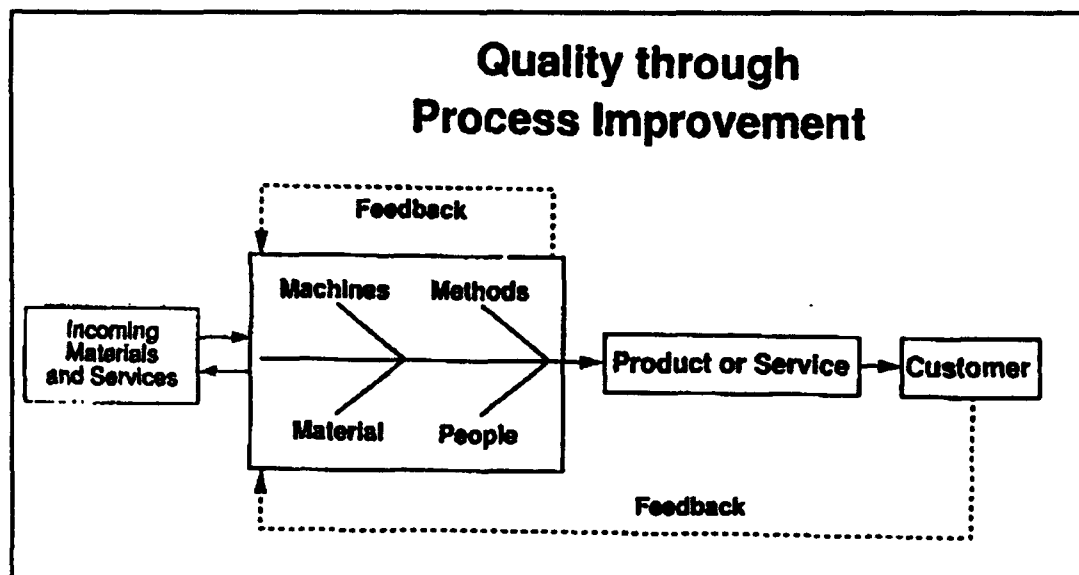
Figure 2: The Way to Quality Through Process Improvement [Ref. 4:L2 p. 25]

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Quality is achieved through process improvement, not product inspection. Figure 3 shows that the traditional production method which is heavily based on inspection will not improve quality in the way Deming defines it in his chain reaction.

Inspection of Final Products
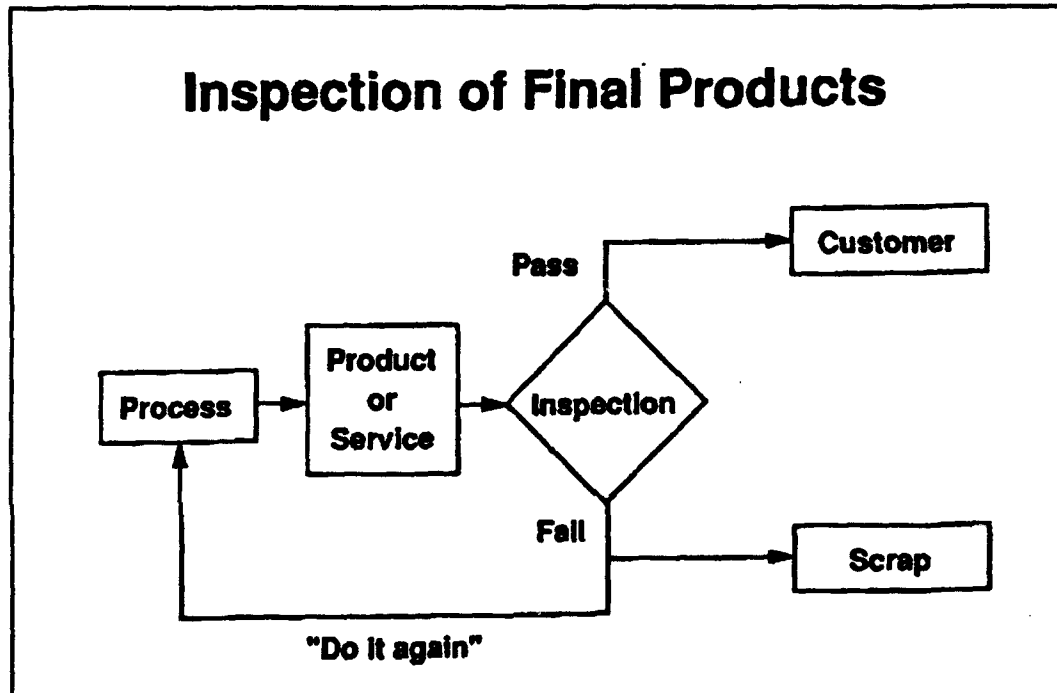
Figure 3: Traditional Production Way With Inspection
[Ref. 4:L2 p. 20]

Inspecting the final product or service is too late; there is too much rework, waste and customer complaints. It is important to note that customer satisfaction is necessary and always the goal, but it isn't sufficient. Deming makes the distinction between a "satisfied" customer who may switch to another product of equal quality and price, versus a "loyal"

customer who not only stays with the product, but brags about it to his friends, which can create more business. [Ref. 4:L1 p. 11]

Deming suggests using a sampling procedure for measuring the quality characteristics of the output, and identifying customer requirements as early as possible. By measuring customer needs on a continuous basis, the system will be continuously improved.

In the process everything that we do and everything that we think is related in a sequence of transformation of "inputs" into "outputs." These inputs and outputs they have four generic resources:

- People

- Method

- Material

- Machines [Ref. 7:p. 18]

These four variables can influence the availability of the output and sequentially we can affect the output through continuous improvement of these variables. For example education and training effect the people component and are the most significant way to navigate the organization to quality.

"Quality control begins with education and ends with education" (Ishakawa, 1985).

Measurement and analysis affect the machines and materials variables. Improvement requires "fact-based decision-making."

Collection of data and measurement and analysis is the safe way to the correct decision making.

Methods can improved through the improvement of the process. Deming said that in an organization, 15% of the mistakes and poor performance is caused by the people, and 85% by the wrong processes. [Ref. 8:p. 20] The leaders in an organization, as well as their subordinates, have to understands that they, and the work that they do, are elements of the system.

The Deming approach to quality leadership has three elements: the System of Profound Knowledge, the application of the Plan, Do, Check, Act (PDCA) cycle in order to improve the process, and the Fourteen Points (Figure 4).

The System of Profound Knowledge is the cornerstone for Deming's approach to quality management. The PDCA cycle is the scientific method for gaining new knowledge from the data. That is the only two way channel the between System of Profound Knowledge and PDCA cycle. Quality is the reward attained by use of these three elements.

The Deming Approach to Quality Leadership

System of Profound Knowledge

14 Points → PDCA Tools

(After Baker, 1990)
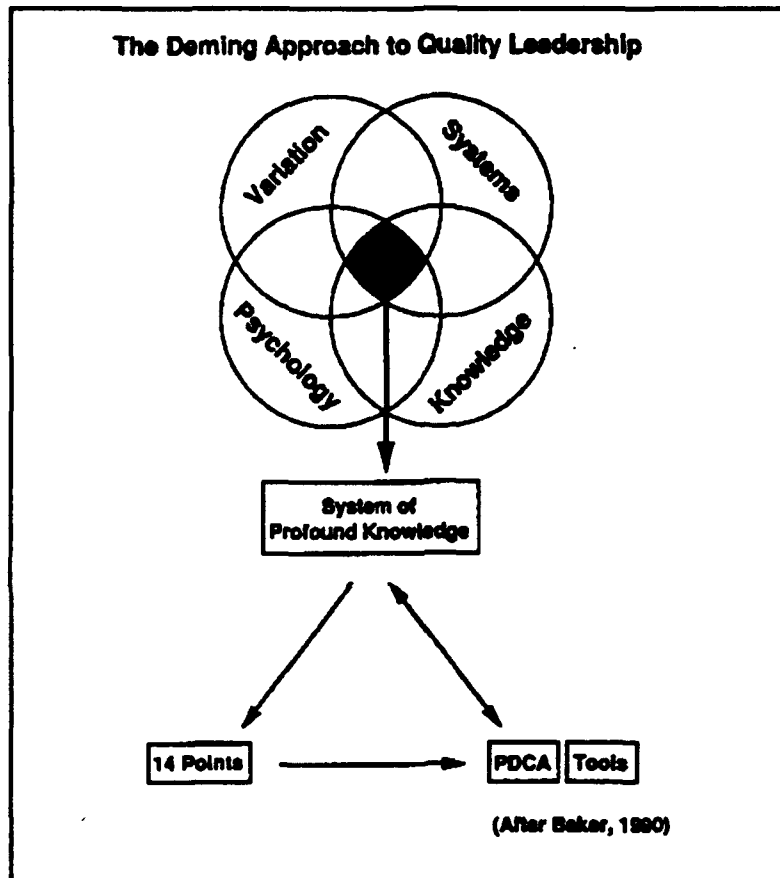
Figure 4: The Deming's Approach to Quality Leadership [Ref. 4:L2 p. 4]

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1. The System of Profound Knowledge

The System of Profound knowledge is the result of four powerful parts, all related to each other:

a. Knowledge of a System

A System can be defined as the collection of functions or activities that interact with each other within an organization for the aim of the organization [Ref. 4:L2 p. 6]. An example of a system that every one is familiar with is the human body. All the parts and the organs of the body cooperate, giving the image of the human and working for the same task, to keep the body alive.

In Figure 5, production is depicted as a system. Improvement of quality envelops the entire production line, from incoming materials to the consumer, and even redesign of the product and service for the future [Ref. 10:Ch1 p. 4]

The territorial area of the components of the system, the communication channels between them, and their particular tasks have to be clearly defined. Communication is a basic requirement between the discrete parts of a system. The higher degree of interdependence between each unit of the system, the greater the need to impose better communication between them. It is also important for the system to have a purpose. As Deming says: A system must have an aim. Without an aim, there is no system [Ref. 4:L2 p. 6].

Organization Viewed as a System

Design and redesign

Consumer research

Suppliers of materials and equipment

Consumers

Receipt and test of materials

A
B
C
D

Production, assembly, inspection

Tests of processes, machines, methods, costs

(W. E. Deming, 1986)
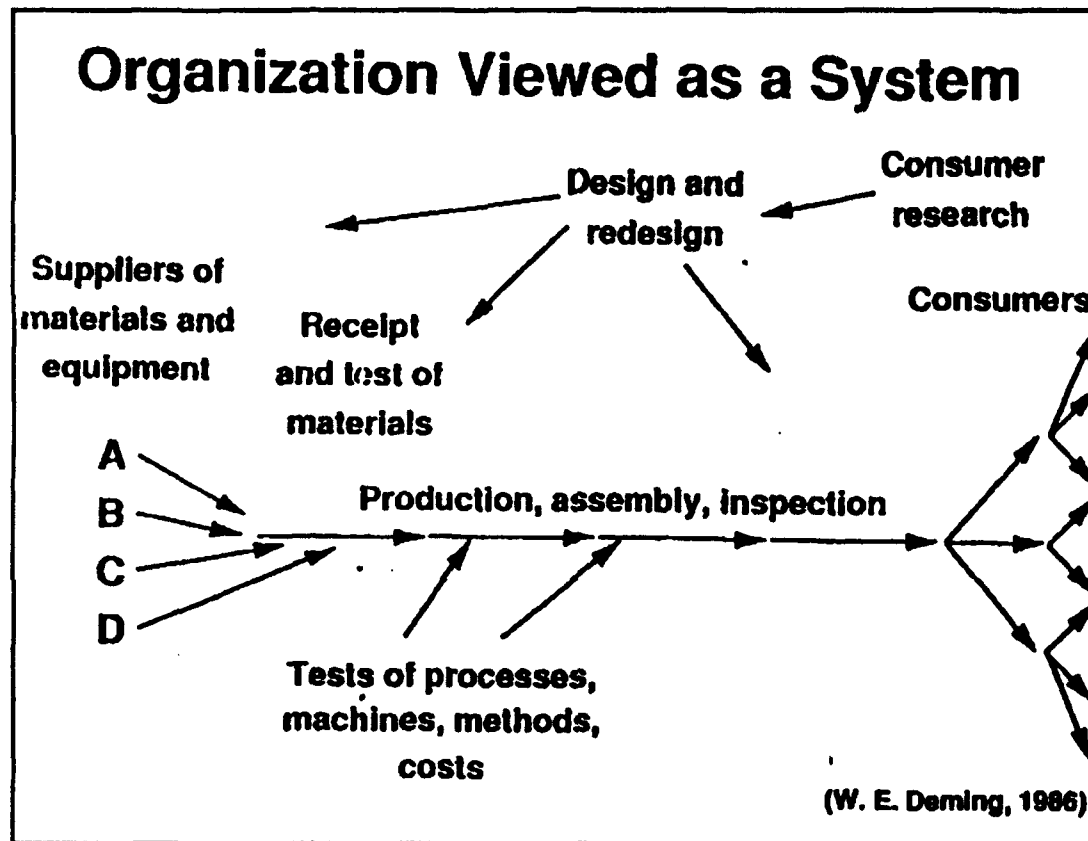
Figure 5:   Deming's View for an Organization System
[Ref. 10:p. 4]

The traditional organization, with its vertical tree structure and flow of command has survived because historically it has been the most effective way to transmit the message of the leader down through the organization, and this downward communication has been extremely necessary and effective during combat when time and control are extremely significant. However, during peaceful times, this organizational approach creates some of the following problems:

- Institutionalizes top-down communication
- Impedes the aim of the system when organized by function variation
- Reduces sense of ownership
- Encourages "we-they" thinking
- Increases costs of supervision
- Reduces flexibility to respond

Obviously, this traditional organizational structure sets up barriers to process improvement. These obstacles could be overcome if departments would focus across the process and work together in cross-functional teams toward common goals. So, to foster this type of communication we need a parallel structure that allows:

- The chain of command to be maintained
- The organization's focus to be process oriented
- The organization to be linked horizontally and vertically for communication and decision making

Quality Improvement Teams, organized around
processes, offer a solution. Their structure and activities
are shown in Figure 6.

**An Integrated
Quality Improvement Structure**

ESG

QMB

PAT

- Strategic quality policy
- Strategic goals

- Product/process improvement goals
- Product/process improvement plan
- Product/process changes

- Data collection
- Removal of special causes
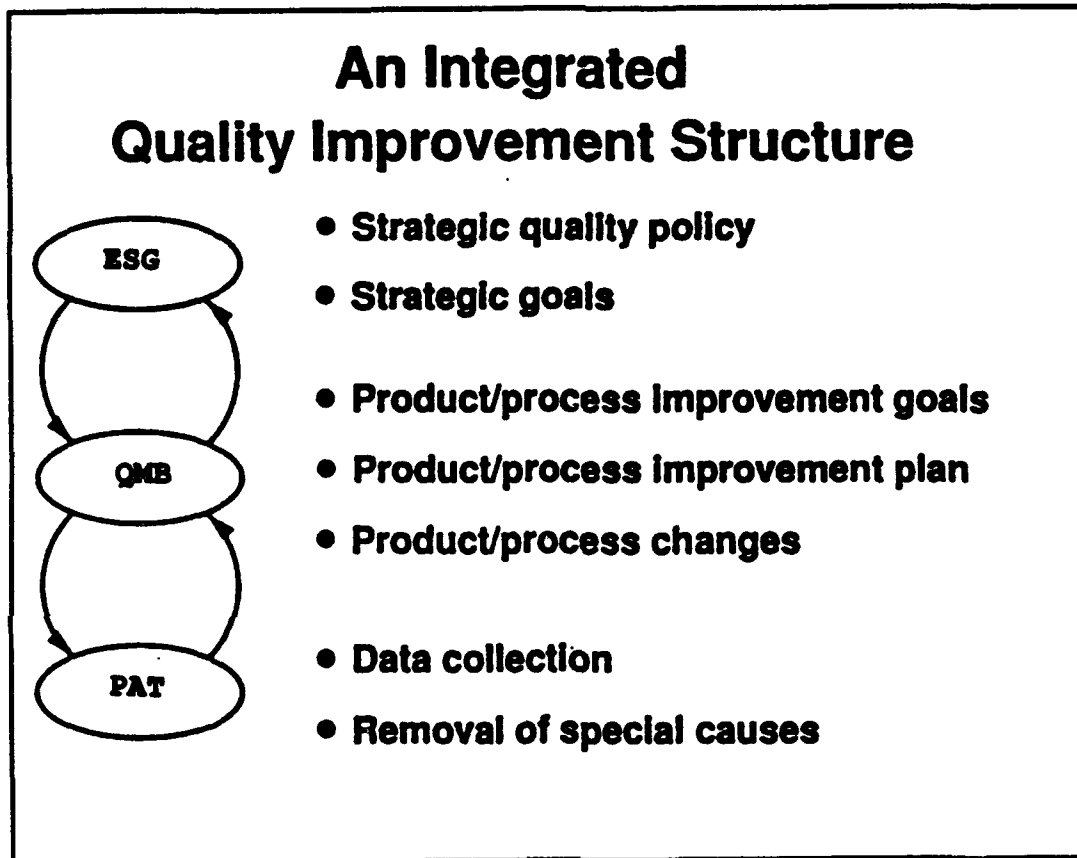
Figure 6: Quality Improvement Teams and their task [Ref.
4:L2-p. 48]

The Quality Improvement Teams increase the inter-
action and cooperation between departments. The chain of
command is still preserved. In fact, power comes to the teams
by the authority of the chain of command, but the focus is on
the process. Teams also give the workers a sense of process

ownership and identity, creating a more fulfilling and happier

work environment. Those teams are:

- Executive Steering Committee (ESC): Encompasses the top leadership in the organization. Its primary concern is in developing a strategic quality policy for the organization. In effect, the ESC contains the product and service managers.

- Quality Management Boards (QMBs): These are the middle managers of the organization. They primarily work with the details of planning and evaluating the process improvements identified by the ESC. The QMB members are the process owners.

- Process Action Teams (PATs): Assist QMB's with data collection and removal of special causes of variation. Members include the subordinates who work in the day to day development of part of the overall process, that is, in a subprocess area. [Ref. 4:L2 p. 31]

b. Theory of Variation

One of the key learning points in this element of

profound knowledge is understanding the difference between

common and special causes of variation.

Let's assume that somebody, makes coffee every

morning and enjoys it with one "level teaspoon of sugar." If

he had the time to weigh the sugar with a very sensitive

balance he would figure out that the spoon of sugar he uses

every morning doesn't weigh the same every day. The

"variation" is not great so he is still satisfied. That kind

of random variation is inherent in the process, it exists as

a part of the system and is called a common cause of

variation. [Ref. 4:L3 p. 21]

One day his secretary volunteers to makes coffee

for him at the office and he politely asks for one spoon of

sugar. The secretary's definition of a teaspoon of sugar is a heaping one. This time the variation is noticeable, too sweet. So he states, "The next time I'll make the coffee myself." The caused variation is not typically part of the process. It occurred because of special circumstance, secretary making coffee, and is called a special cause of variation. [Ref. 4:L3 p. 22]

Walter Shewhart, a statistician who worked on studies in variation at Bell Telephone Laboratories (New York) in the 1920s and 1930s, found that when he took repeated measurements on the same process outputs, he obtained a distribution of values. He found variation, no matter how many times he did it. Shewhart said that instead of separating good products from bad products, as we do in the traditional approach to loss (inspection), we need to understand what is meant by good processes and bad processes. [Ref. 4:L3 p. 19]

All the variables of an organization can cause variation: machines, methods, material, and process. In the case with the coffee, the cause of the variation was the secretary (people). The coffee, the coffee machine, the sugar, the cup, the spoons were almost the same; the variable was the people. The boss needed to tell the secretary exactly what he meant by one teaspoon of sugar.

Every process can be analyzed and a determination can be made as to the causes of variation within each process.

Once the cause of variation is identified, action can take place to reduce the variation.

   c. **Theory of Knowledge**

      To manage an organization or even our lives, we need a plan. Planning requires prediction and prediction requires knowledge. Knowledge is a moving point, constantly changing position. To follow this kind of change we need to continually get new knowledge by studying, investigating, observing or experiencing. Without new knowledge, the transformation or cultural change to TQL cannot occur. One of Deming's frequent assertions is: "There is no substitute of knowledge." [Ref. 11:L5 p. 6]

      Theory is knowledge. Theory leads to questions. Without theory there is no knowledge. Without questions, experience and examples teach nothing. To copy an example of success, without understanding it with the aid of theory, may lead to disaster. [Ref. 11:p. 13]

      One of the basic concepts of continual improvement that is included in the Theory of Knowledge is the Plan Do Check Act(PDCA) cycle or the Scientific Method, Figure 7. It is the method through which a theory or hypothesis becomes reality and action.

      (1) Plan. In the planning phase, the manager of the organization has become aware that something needs to be improved or has to be changed. First he examines the process and identifies what is to be improved. Then he examines how

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the process can be improved, making theories or hypotheses with alternatives, planning what changes will lead to improvement. In order to be sure of the effectiveness of the theory he must measure and keep data. He then decides what data are

The PDCA from the Leader's Perspective

- Determine which changes should be implemented
- Make the appropriate changes
- Educate the work force to the changes
- Assess application to other parts of the organization
- Monitor the process

ACT

- Determine whether changes led to improvements
- Compare results of changes with what was planned

CHECK

PLAN

- Identify what is to be improved
- Plan what changes might lead to improvements
  - Decide what data are needed
    - Determine how, when, and by whom data will be collected

DO

- Gather baseline data to determine where we are
- Make planned changes
- Gather data to determine what happened after the changes

Figure 7: The PDCA Cycle, the Key To Quality and Improvement [Ref. 4:L5 p. 16]

needed as well as how, when, and by whom the data will be collected.

     (2) Do. In the action (Do) phase the manager proceeds with the experiment. He applies the theory on a

small scale, measuring the results and comparing them with previous data. In order to prove that there has been improvement, he has to gather baseline data to determine where the organization foundation is. This baseline data can be obtained through previous data or through new collected data. After this process the change can be implemented. Through pilot tests he may decide to make planned changes. With continuous data collection he can determine what results occurred after the changes.

(3) Check. By comparing all the data with the baseline data the manager evaluates the hypothesis and determines whether changes led to any improvements. After the data has been summarized, the manager must analyze, synthesize and interpret the findings. Usually he compares results of changes with what was planned. Whether the outcome is supportive or not, the important question is, "What can be learned from the data?

(4) Act. Having the new data, the manager will be able to choose three alternatives about the theory, Adopt-Alter-Abandon. [Ref. 12:p. 45] The manager has to determine which changes should be implemented. If the changes were successful he will adopt them instituting the changes; educating the work force to the changes; assessing application to other parts of the organization; monitoring the process and repeating the PDCA cycle. [Ref. 4:L5 p. 25]

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d. Psychology

People are the most important variable in an organization. Psychology is the science that studies variations in people. It is the science that helps people understand other people. We all realize that people with varied ideas and behaviors meet in organizations to work in teams and learn new things.

Understanding people and helping them do a better job is a major challenge for the leaders of an organization. Most people find it easier to express things they dislike than those that please them. By listening and understanding the difficulties people face, we can eliminate frustration. Satisfied people, who feel good about themselves, make good things. It is impossible to make a Da Vinci paint something by force. It is impossible to make a Steinbeck write a novel by order. Quality is like a flower; it blooms only in the right climate, the climate of trust, honesty, patience.

Deming's theory is partially based on Maslow's theory of Hierarchy of Needs. Both believe that people are motivated differently depending on their personality. Maslow postulated that people are rational beings with conscious desires, and the capability to fulfill these desires. He believed everyone possessed a common set of five universal needs, ordered in a hierarchy, from basic needs to highest-order needs (Physiological, Safety, Social, Esteem, Self-actualization). Norms, work behaviors, and communication

patterns in the traditional organization must be changed. The magnitude of the change is so great that Deming calls it a cultural transformation of the organization.

2. **Fourteen (14) Points**

Deming, after years of applying his method and observing different organizations in the course of improvement, noticed common problems and remedies. His experience, condensed, comes to us as Deming's fourteen points. A short explanation of each point follows:

a. **Create Constancy of Purpose for Improvement of Product and Service**

In an organization everyone must focus on constant improvement through quality. Innovation, research, constant improvement and maintenance lead the organization towards meeting the customers needs; staying in business and providing jobs.

> There are two problems for the company that hopes to stay in business, (i) problems of today and (ii) problems of tomorrow. Problems of today encompass maintenance of quality of product put out today, regulation of output so as not to exceed immediate sales by too far budget, employment, profits, sales, service, public relations, forecasting, and so forth. Problems of the future command first and foremost constancy of purpose and dedication to improvement of competitive position to keep the company alive and to provide jobs for their employees. Establishment of constancy of purpose means acceptance of obligations like the following:
>
> (i) Innovate
>
> (ii) Put resources into Research and Education
>
> (iii) Constantly improve design of product and service [Ref. 10:p. 25]

In the free economy if the consumer is not offered what he needs by one company, he or she will switch. Without customers to buy a product there is no reason for an organization's existence. But a satisfied customer is the best form of advertisement; this will attract more customers.

The major goal of an organization is not to make money, but to maintain satisfied customers; the money will follow.

b. Adopt the New Philosophy

Reasons for bad performance in an organization are 85% weak process, 15% workers [Ref. 8:p. 20].

Deming, talking about the adoption of the new philosophy said:

> We can no longer tolerate commonly accepted levels of mistakes, defects, material not suited for the job, people on the job that do not know what the job is and are afraid to ask, handling damage, antiquated methods of training on the job, inadequate and ineffective supervision, management not rooted in the company, job hopping in management, buses and trains late or even canceled because a driver failed to show up. [Ref. 10:p. 26]

In any organization the people must be aware of the system and processes in which they work. Then they must improve or replace them with ones built on the new philosophy of leadership. But in order to succeed in that, they have to be flexible, to accept changes, to be free from cultural traditions, and able to see the forest and farther still.

c. Cease Dependence on Mass Inspection

When inspecting the product after it completes the last production step, defective products are thrown out or

reworked. In both cases, overhead is increased. In other words, an organization pays workers to make mistakes and then hires other people to correct them. By fixing the faulty process, organizations avoid additional overhead expenses and are able to provide goods at lower prices.

> Inspection to improve quality is too late, ineffective, costly. When product leaves the door of a supplier, is too late to do anything about its quality. Quality comes not from inspection, but from improvement of the production process. Inspection, scrap, downgrading, and rework are not corrective action on the process. Rework raise costs [Ref. 10:p. 30].

d. End the Practice of Awarding Business on the Price Tag Alone

Some organizations are strongly focused on using lowest-price vendors, at the expense of quality. The quality of raw material used in a process has a direct relationship to final product.

Sister Jeanne Perreault, president of Rivier College, repeated to Deming the words of her business manager: "We can not afford to purchase equipment and buildings at the lowest price. We have to be careful." [Ref. 10:p. 33]

A few years ago the Hellenic Navy ordered shoes for the sailors at the lowest price. We did not define the acceptable level of quality required, nor specifie.. what materials to use. The vendor sent shoes with soles made of compressed paper. As a result after three months the sailors were out of shoes, and at a higher risk for accidents and poor performance. So the cheap shoes really cost too much.

Some computer specialists, talking about data processes, use to say "garbage in garbage out." Other people, according to their experience, might say "the cheap is expensive" because the life expectancy of cheap materials is shorter or they may require repair that costs more in the end.

e. Improve Constantly and Forever the System of Production and Service

An improved process, is not cause for eternal celebration and an excuse to then rest on previous glory. Management is obligated to continually look for improvement methods, and is obligated to continuously reduce variation.

Everyone might well ask himself every day what he has done this day to advance his learning and skill on this job, and how he has advanced his education for greater satisfaction in life. [Ref. 10:p. 50]

f. Institute Training

Employees must know how to do their jobs. The best way to transfer that knowledge is training.

According to Deming, training must be totally reconstructed. Management needs training to learn about the company, all the way from incoming material to customer. It should be noted that money spent on training, retraining, and education does not show on the balance sheet; it does not increase the tangible net worth of a company. [Ref. 10:p. 53]

On the job training is not sufficient because it usually is an informal procedure in which the trainee is simply expected to learn by watching an experienced worker. In some companies, the simple instruction to any employee

"Help John learn the job" fully implements their training program. The entire instructional process is placed in the hands of an individual who may or may not be capable of performing the job and who probably considers the entire procedure an imposition on his time. [Ref. 13:p. 142]

So, by instituting proper training, we give workers the opportunity to have pride in their knowledge.

g. Institute Leadership

The job of management is not supervision, but leadership. Management must work on sources of improvement, the intent of quality of product and of service, and on the translation of the intent into design and actual product. [Ref. 10:p. 54]

The role of a manager is to help employees do a better job, to lead them to produce good products. A manager has to be a coach and counsellor, not a judge. He has to understand and respect the employees if he wants to get the best out of them.

h. Drive Out Fear

The following examples give an idea of the fear that the people usually have in an organization:

- I am afraid that I may lose my job because the company will go out of business.

- I have a feeling that the communists/socialists/conservatives, will win the elections. If so, what will happen to my career?

- I could do my job better if I understood what happens next.

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- I am afraid that my next annual rating may not recommend me for a raise.

- I am afraid that I may not always have answer when my boss asks something.

- I am afraid to admit a mistake.

- My boss believes in fear. How can he manage his people if they don't hold him in awe? Management is punitive.

- I do not have time to take a careful look at my work. I must turn this job out, and start on another one.

No one can put in his best performance unless he feels secure. Secure means without fear, not afraid to express ideas, not afraid to ask questions. [Ref. 10:p. 59]

Fear is an implement of old fashioned management. When people are managed by fear, it is impossible for them to point out weaknesses in the system, mistakes they notice and to propose remedies or improvements. To assure better quality and productivity, it is necessary that people feel secure and free to communicate.

i.   Break Down Barriers Between Staff Areas

Cooperation between the departments of an organization is a very significant factor. Enhancing things that unify the people in an organization, eliminating things that divide them, and helping them communicate vertically and horizontally; is the key to "if you win, I win, too."

A functional organization can operate effectively if departments talk with each other and try to help each other regularly, but that seldom happens. Instead, departments become mini-organizations, protecting and filling their own

"rice bowls," pursuing their own aims and purposes instead of the organization. [Ref. 4:L7 p. 34]

j. Eliminate Slogans, Exhortations and Targets for the Work Force

Eliminate targets, slogans, exhortations, posters, for the work force that urge them to increase productivity. "Your work is your self-portrait. Would you sign it? No--not when you give me defective canvas to work with, paint not suited to the job, brushes worn out, so that I can not sell it my work. Posters and slogans like these never helped anyone to do a better job. [Ref. 10:p. 65]

Slogans and exhortations work like bars: they imprison the people who work in an organization. They don't help people to do better job. On the contrary, workers have to be stimulated to create their own slogans, to express freely their perception about the realities in their job.

Here are the fruits of exhortations:

- Failure to accomplish the goal

- Increase in variability

- Increase in proportion defective

- Increase in costs

- Demoralization of the work force

- Disrespect for the management [Ref. 10:p. 68]

k. Eliminate Numerical Quotas

Rates for production are often set to accommodate the average worker. Naturally, half of them are above average, and half below. What happens is that peer pressure

holds the upper half to the rate, no more. The people below the average can not make the rate. The results is loss, chaos, dissatisfaction, and turnover. Some rates are set for the achiever, which is even worse. [Ref. 10:p. 71]

A number by itself means nothing. People need methods by which they can attain the numbers. Concern only with quantity of the output, while ignoring or possibly having no knowledge of the process, makes it difficult for employees to create quality products and services. A good leader plans, estimates and shows honestly the optimum method.

1. Remove Barriers to Pride of Workmanship

Everyone, the leader and worker alike, has "...the right to be proud of his work, the right to do a good job." Anything that stands in the way of this is a barrier to pride of workmanship.

The conditions mentioned below are examples of barriers that diminish the likelihood of an organization successfully pursuing total quality:

- Inadequate training for the job

- Poorly written or outdated documentation of work procedures

- Defective incoming material or information

- Delays and shortages

- Poorly maintained or defective equipment

- An inspection process that identifies defects but provides no information on how to remedy the situation

- Quotas or rush jobs that force workers to produce defective products

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- Being treated as a commodity, hired when needed, fired when there is a downturn in business

- Leaders who do not know the work they supervise, so they cannot help the employee do a better job

- Inadequate or no feedback on the quantity of the product or service produced

- Leaders who will not listen to or act on suggestions for improvement [Ref. 4:L7 p. 43]

All the people are willing to do a good job, to have a good performance. In order to do that they require good supervision, education, good materials and tools. Sometimes these requirements are not fulfilled and the people don't have the satisfaction of doing a good job. The leaders have to eliminate these barriers.

m. **Institute a Vigorous Program of Education and Retraining**

What an organization needs is not just good people; it needs people who are improving with education. More than money, in their careers people require, ever-broadening opportunities to add something to society, materially and otherwise. [Ref. 10:p. 86]

All members of an organization must be updated on new methods and technological evolutions in their field. This way they can compete and create new ideas. Education is what prepares people for changes, stimulates the mind to find innovations and invest in quality and improvement.

n. Take Action to Accomplish the Transformation

Transformation to TQL is not easy and it will not happen by order. It requires study, discussion, patience and constant activity by every one.

As Figure 8 shows, TQL requires cultural change and a different orientation on how work is performed. Workers cannot do it on their own, nor can managers. A critical mass of people in the company must understand and spread the new idea, the new philosophy.

**Figure 8:   TQL is Not Easily
Accepted [Ref. 9]**

"This is what I can do for you."

"Here is what you might do for me."

This critical mass will seduce and stimulate others in the organization towards transformation.

III. THE LONG BEACH NAVAL SHIPYARD (LBNSY)

A. HISTORICAL BACKGROUND

The Long Beach Naval Shipyard is located on Terminal Island in the city of Long Beach, California. The shipyard, one of eight Naval Shipyards in the United States, was established in 1940. Initial funding was $19,750,000 for dredging, land acquisition and construction of facilities. Construction was started in November 1940 and the first major ship was drydocked in September 1942. Originally, the shipyard was to be operated by a private company, the Bethlehem Steel Corporation. However, this premise changed on 25 February 1943, it was placed under military jurisdiction when the U.S. Naval Drydocks, Terminal Island (later known as Long Beach Naval Shipyard) was established.

Today the shipyard has three graving docks, three industrial piers, and extensive ships and office complexes. It is the Navy's newest shipyard. Among the shipyard's landmark features are the giant Moreel Drydock and the YD171 Crane. The Moreel Drydock has a capacity of 56 million gallons and can hold the Navy's largest ships, including aircraft carriers. Official authorized drydock tonnage capacity is 95,000 long tons. The YD171 is one of the world's largest selfpropelled floating cranes. It is 374 feet high and has a lifting capacity of 386 tons. [Ref. 15]

There are about 120 crafts and skills organized in ten production shops and three public works shops. The shipyard's employment figures reached a high of 16,091 in August 1945. Today there are about 4,200 employees working in a variety of occupations such as support engineers, managers, administrators, technicians ,and building maintenance personnel. LBNSY is organized into nine Departments/Offices with two Production Department Shop Groups and a Public Works Department. The shipyard is a major industry in the area and projects approximately $344,000,000 volume of work for FY 93. [Ref. 15]

This shipyard has successfully completed several special projects, as well as its primary mission. These projects include support of programs like POLARIS, POSEIDON, and SEALAB. Currently, the shipyard makes electronic and weapon's evaluations.

The LBNSY is equipped with facilities and skills capable of performing all structural, sheet metal, boiler, rigging, electronics, electrical, lagging, ordnance, sandblasting, welding, machining, woodworking, painting, pipefitting operations. In addition, the shipyard has complete design, engineering, combat systems, quality assurance, planning, and public work capabilities to support its industrial work. The workload of this shipyard consists primarily of the overhaul and maintenance of surface ships. The organization chart is depicted in Figure 9.
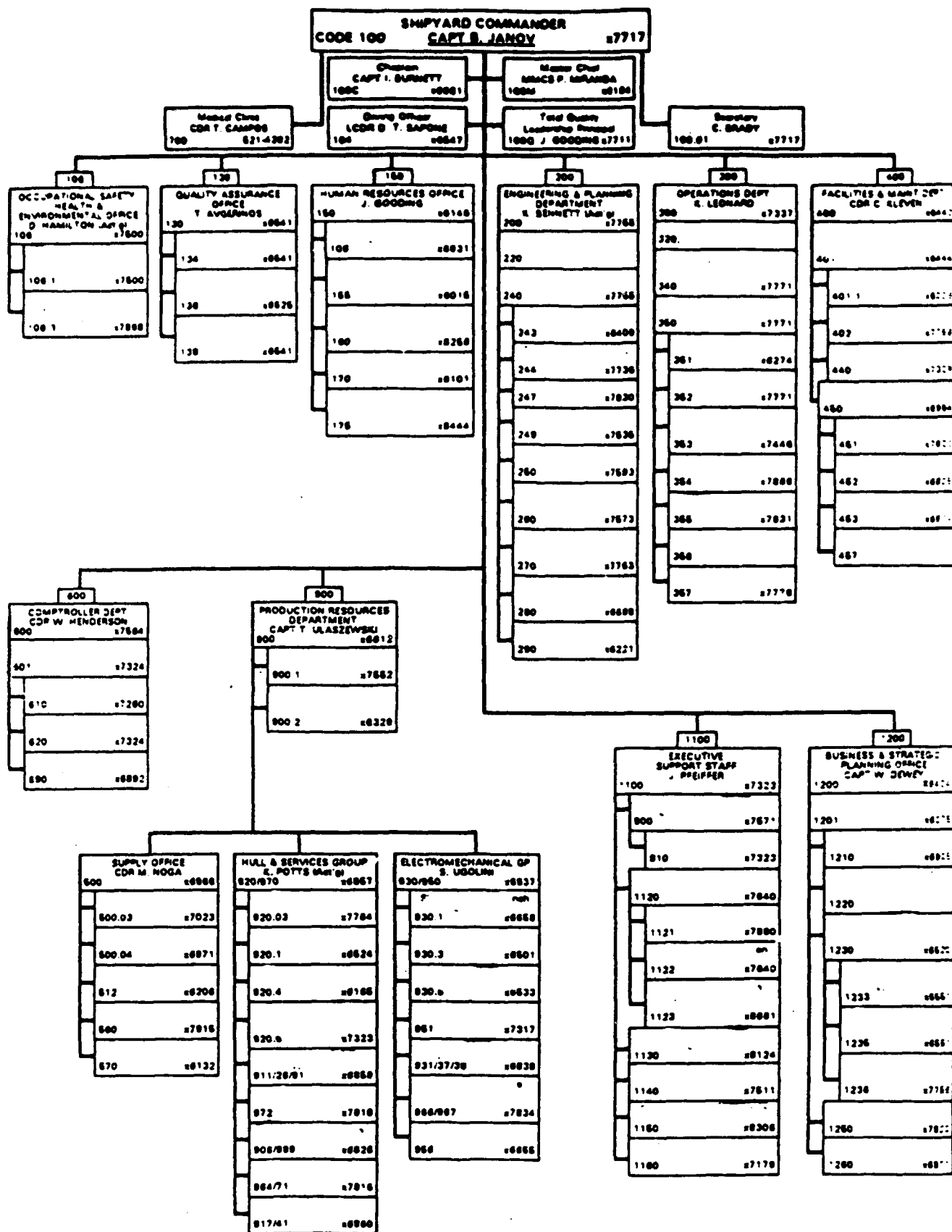
Figure 9: Organization Chart of LBNSY [Ref. 19]

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LBNSY occupies 347 acres (214 land acres and 135 submerged acres), estimated to be worth $885 million in 1992. [Ref. 15]

B. THE QUALITY STORY OF LBNSY

In about 1975, the US Government began an effort, to improve productivity through Quality Circles, Economic Analysis, Value Engineering, and Resource Management Systems, etc. Survey results show that most employees have heard of these programs and many have been directly involved in one or more of them. In the Fall of 1991, Leadership, Education, and Development (LEADS) training was provided for supervisors. This class empowered supervisors with the tools to deal effectively with employees and increase productivity. In this way, the seedlings of TQL were carefully planted and nurtured.

In the Navy, when a new ship is commissioned, it brings with it the fingerprints of the first Commanding Officer, Executive Officer, and Chief Engineer. The vessel seems to forever reflect segments of the personalities and ideas of the originators throughout its life. The same thing happens in an organization when a new idea or a new process is implemented.

Four people are responsible for establishing the quality effort at LBNSY:

- CAPT. B. Janov, the Shipyard's Commander

- Jeff Gooding, Code 150/100Q, the Shipyard's TQL Coordinator

- Shirley J. Watkins, Code 100Q.1, the TQL spirit

- Leslie L. Kossoff. The person who trains the Quality Teams in the LBNSY and offers her experience as an external facilitator

Captain Bernard Janov assumed command of the Long Beach Naval Shipyard on 27 June 1991.

He graduated from Villanova University in 1968. His initial tour of duty at sea was on USS ZELLARS (DD777) as the Electronics Material Officer, Combat Information Center Officer and Operations Officer. His next tour was as the Executive Officer of USS OBSERVER (MSO461). He graduated from the Naval Postgraduate School, California, where he earned his Masters Degree in Computer Science in 1979. From 1975-1979, after completing his training as a Surface Warfare Officer, he served on the USS PHARRIS (FF1094) as Weapons Officer and then the USS PORTLAND (LSD34) as Engineer Officer. During that sea tour Captain Janov screened for Executive Officer, afloat, and qualified for a command at sea.

In 1979, Captain Janov was accepted as a line transfer to the Engineering Duty Officer community. He served as an aircraft carrier Ship's Superintendent and Type Desk Officer at Norfolk Naval Shipyard. From 1982 to 1984, he was the Repair Officer on the USS YELLOWSTONE (AD41). He then served a tour of duty as Maintenance Officer on the Staff of Commander, Naval Surface Group Middle Pacific in Pearl Harbor, Hawaii. From 1987 to 1988, Captain Janov served at Pearl Naval Shipyard as Assistant Repair Officer, Surface Ships and

Submarines. He served a tour of duty from 1988 to 1990 at Long Beach Naval Shipyard as the Planning/Business Officer.

His previous tour was at Naval Surface Forces, U. S. Pacific Fleet as the Assistant Chief of Staff for Maintenance and Engineering.

Captain Janov's personal decorations and awards include the Meritorious Service Medal (with three stars), Navy Commendation Medal, Navy Achievement Medal, Meritorious Unit Commendation, Navy Unit Commendation, Battle "E" Award, National Defense Medal (with Bronze star), and Humanitarian Service Medal. [Ref. 16]

Jeff Gooding received a Bachelor of Arts Degree from the University of California, Irvine. Before attending college, Gooding was in the Navy as an Aviation Fire Control Technician. He worked on the Sparrow and Sidewinder Missile programs while on active duty from 1964 to 1968. He began his career at Long Beach Naval Shipyard in July 1971 as a Position Classification Specialist in the Internship Program. He left the Shipyard from 1973-74 to pursue graduate work.

Jeff Gooding, as Code 150 is responsible for the Personnel Operations Division, Code 170, the Technical Services Staff, Code 150.03. the Injury Compensation Program Management Division, Code 155, the Employee and Labor Relations Division Code 160 and Employee Service Division, Code 165. [Ref. 17]

Shirley Jean Watkins, Code 100Q.1, reports to Jeff Gooding, Code 150/100Q, who oversees the entire TQL program.

Watkins began her career at LBNSY in November 1967, as one of the first Worker Trainees in the former Administrative Department. Her willingness to learn and work hard eventually landed her jobs as a Clerk, Cold Type Composing Machine Operator, Management Technician, and Management Assistant. In 1987 she was promoted to Supervisory Management Assistant, GS8. One of her larger accomplishments was the implementation of word processing throughout LBNSY. After 14 years in the Administrative Department, Watkins was promoted to Management Analyst, GS9, in the former Management Engineering Office, and in 1984 Watkins was promoted to Management Analyst GS11. In September of 1990, she transferred to the Command Evaluation and Review Office. In March of 1992, Watkins was detailed to help set up TQL in the Shipyard. She is currently the LBNSY TQL Advisor, Code 100Q.1.

When asked what impact TQL has had on her life, Watkins said, "It means a new way of life at work and at home. By learning and embracing the philosophies, TQL has enabled me to change my behavior and have a better understanding of things and people."

Kudos to her for the tremendous effort she exhibits every day to maintain LBNSY's reputation as a leader in the ship repair business. [Ref. 18]

Leslie L. Kossoff, Founder and Principal of LLK Associates, San Francisco, is a fifteen-year veteran in the field of

quality and productivity improvement. The scope of her experience encompasses a broad base of industries and diversity of clients. Her extensive background and expertise over the years have enabled her to help such major clients as Kraft General Foods, 3M, TRW, and others. In addition, Ms. Kossoff actively focuses her attention on assisting small and medium size firms in achieving their continuous improvement goals.

Ms. Kossoff has also worked as an assistant to Edward Deming at client meetings and has assisted and facilitated at Deming's four-day seminars.

Specifically, Deming invited Ms. Kossoff to attend client meetings where issues regarding implementation would be the focus. Her assistance at the four-day seminar was in facilitating evening sessions with as many as eight hundred attendees in question and answer sessions about implementation obstacles and strategies.

Ms. Kossoff is an invited speaker at professional conferences and meetings throughout the United States. She has spoken to education and industry groups about continuous improvement implementation in manufacturing, service and education sectors.

Ms. Kossoff is the founder and Director of the Institute for Quality and Productivity Improvement at California State University, Long Beach Extension Service. She is also an

instructor and the coordinator for the Total Quality Certificate Programs at San Francisco State University and California State University, Long Beach.

Ms. Kossoff was recently included in the Who's Who Registry of Global Business Leaders and is a member of the Judges' Panel for the Sterling Award of Orange County.

Ms. Kossoff has authored numerous articles pertaining to quality and productivity improvement including "Closing the Gap: The Handbook for Total Quality Implementation." Her second book, "Making Quality Work," is scheduled for publication in 1994.

Ms. Kossoff holds Bachelor and Master of Arts degrees from San Francisco State University and a Master of Science from the University of Oregon. [Ref. 12:p. 117]

It is well known that TQL is a long term effort. It has been almost twenty months since TQL implementation started at LBNSY. The enthusiasm and desire for quality conflicts with resistance to change. Table 2, is a brief overview of the LBNSY's road to quality.

In January 1992 the Commanding Officer of the LBNSY made the decision: "We will implement TQL." Top management understand the necessity for improving business, as well as the requirements of quality and competition, and has enthusiastically accepted the idea. Most of them have the additional responsibility of being members in the Executive Steering Group (ESG).

TABLE 2: THE LBNSY'S ROAD TO QUALITY [REF. 21]

TQL AWARENESS TRAINING

Implementation Status at LBNSY

*JAN 92   Shipyard Commander decided to implement Total Quality Leadership (TQL). The Executive Steering Group (ESG) was established.

*MAR 92   TQL Office was established.

*APR 92   ESG received training in TQL implementation.

*MAY 92   Senior/Middle Managers were trained in TQL.

*JUN 92   ESG went on a retreat. A vision and mission statement were developed.

*JUL 92   Established several Process Action Teams (PAT).

*SEP 92   ESG went on a retreat. A vision and mission statement were developed.

*OCT 92   ESG passed vision and mission out to employees.

*NOV 92   Trained TQL Facilitator.

*JAN 93   ESG chartered 6 QMB's, Public Works Department charted 3 QMB's and trained the members.

*MAR 93   LBNSY Hosted TQL Principals Network for all QMBs Leaders, Facilitator and Links.

*JUN 93   Mare Island conducted MMQ training for all QMBs Leaders, Facilitator and Links.

The mission and guiding principles that ESG established and developed is as follows:

"Our shipyard is a customer-focused, full-service, industrial business committed to providing quality products and services which meet the needs of our customers world-wide."

"Our vision is to:

- Provide a safe and environmentally responsible work place for our people and customers in harmony with the communities in which we work and live;

- Promote creativity, inspire innovation, and capture strategic business opportunities into the year 2000 and beyond;

- Create and maintain an innovative, highly trained, and developed shipyard team;

- Promote honest, candid, and uninhibited information-sharing;

- Provide straightforward, consistent managerial and administrative processes which serve our needs and empower our people;

- Improve personnel facilities, equipment and material to maintain our competitive business position."

The establishment of a TQL Office was developed and implemented in March 1992. The ESG consisted of the following people:

- Shipyard Commander

- TQL Coordinator

- Environmental Officer

- Quality Assurance Officer

- Human Resources Officer (collateral duty: TQL Principal)

- Engineering Officer

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- **Operations Officer**
- **Facilities and Maintenance Officer Comptroller**
- **Production Resources Officer**
- **Production Group Superintendent**
- **Executive Staff Officer**
- **Business and Strategic Planing Officer**
- **Deputy**
- **Union Official: Metal Trades**
- **Union Official: AFGE**
- **Union Official: Guards**
- **Union Official: IFPTE**

The ESG's established strategy in launching TQL was to establish one QMB for each of the major business functional areas in LBNSY. Direct each QMB as owners of its business process to develop a long-range plan for its domain, authorize the QMBs to charter PATs as required to analyze particular process elements and provide a link and supporting resources to each PAT. The link and facilitator are the unifier between the ESG vision and the PAT analysis and recommended process improvement.

Six QMBs have been charted by the ESGs:
- **Environmental**
- **Industrial**
- **Marketing**
- **Human Resources**
- **Managerial and Administrative Processed**

- Advanced Industrial Management (AIM)

In addition, the Facilities and Maintenance Department
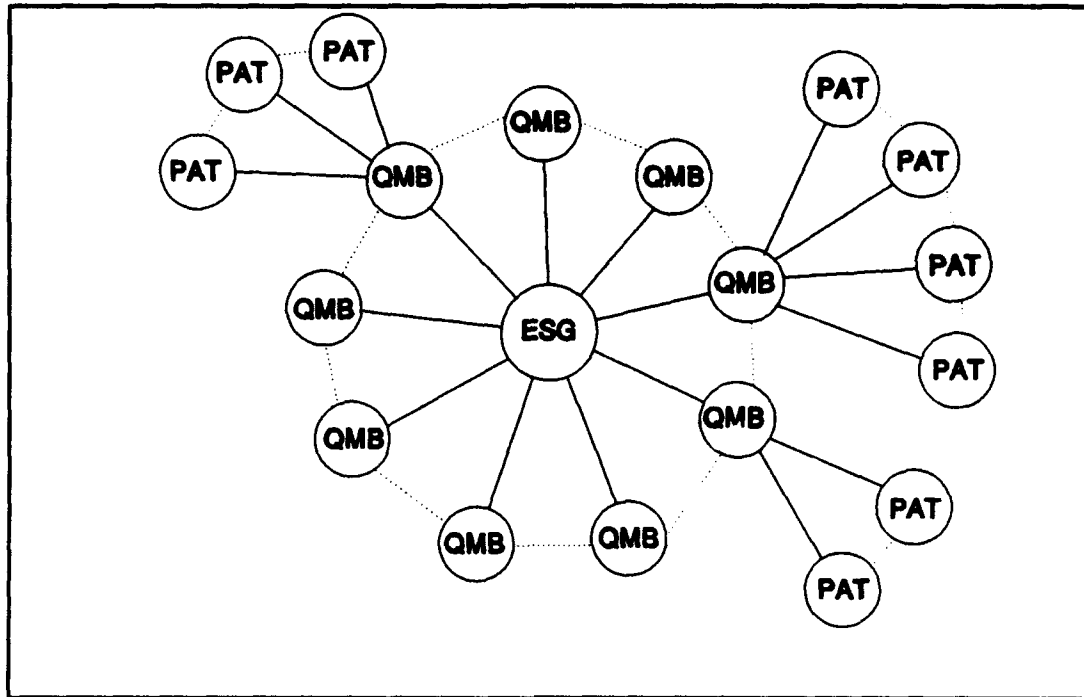
Figure 10: Quality Organizational Schema of LBNSY.

Head, Code 400, have charted three QMBs corresponding to his major business functions:

- Cranes

- Family Housing

- Transportation

For the established PATs characteristically presented the Industrial Processes QMB and Human Resources QMB PATs:

Industrial Processes PATs

' Industrial Process

- Fire Control

- Process Improvement

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- ALCO Turbocharger

- Occupational Safety

- Hearing and Sight

Human Resources

- Adverse Actions

- Federal Employees Investigation

- Personal Actions

- Organizational

- Material and Training

The quality organizational schema of the LBNSY is presented in figure 10.

In April 1992 the TQL training period started. The new philosophy was spread throughout the training. Leslie Kossoff invited to LBNSY and gave the first lectures and training seminars on the TQL philosophy to the ESG. In May 1992, the other Senior and Middle Managers were also trained in TQL.

Approximately 25 TQL Facilitators had two weeks of Basic TQL Facilitation training (November-December 1992). The Facilitators began training PATs in the 7 basic tools of TQL and in some other aspects of SPC. Approximately 20 Facilitators and QMB members had a 3-day class in Methods for Managing Quality. In an ESG briefing session at the end of the training MMQ was adopted as the shipyard's official QMB methodology.

Information obtained in an interview, provided evidence that suggests that the effects of these teams are mixed. Some

PATs have accomplished impressive process improvements when tightly focused on precisely defined problems. Some PATs have been floundering for a variety of reasons: Insufficient team-building; Unfamiliarity with TQL principles or data-focus; and Unclear charters, conflict with other assignments, and so forth.

Today, 400 of the 4000 people who work at LBNSY are trained in TQL. All of them are Senior and Middle Management people. This approximate 10% of the LBNSY personnel is the critical mass that fights for cultural transformation.

IV. METHODOLOGY

An assessment of the LBNSY with regards to its TQL implementation is required prior to being able to assess the applicability of TQL to the Hellenic Navy.

A. LBNSY

Communication with LBNSY was established with Mrs. Shirley Watkins, the TQL coordinator. Mrs. Watkins was the primary liaison between the author and the management of the shipyard. She provided information about the shipyard's organizational structure, the progress, and the problems associated with TQL implementation to date.

The initial intention of the author was to observe TQL's effect on all aspects of LBNSY. However, accessibility to the entire shipyard was limited, due to the researcher non-U.S. citizenship. Therefore, original plans which include interviews and survey distribution to all levels of the organizational pyramid, including waterfront employees was severely curtailed.

The focus of assessing the TQL implementation was therefore changed to address the senior and middle management employees previously trained in TQL. Although 400 of the 4000 total LBNSY employees have been trained in TQL, only 190 of them had completed training at least one year ago. Based on guidance received from Mr. Jeff Gooding, the LBNSY TQL

Director, and Mrs. Shirley Watkins, the study was limited to these employees.

B. ASSESSMENT INSTRUMENTS

Three types of methods were used to obtain information about LBNSY: questionnaire, interviews, and observation. The questionnaire was the primary source of data.

Data collection was performed simultaneously during a single visit to LBNSY in August 1993 for the three methodologies due to limited travel availability. The questionnaires were distributed by Mrs. Watkins and during some of the interviews by the author.

1. Questionnaire

The questionnaire (Appendix A) was created by John Persico, Process Management International (PMI) and used with his permission. The author chose 87 questions from the questionnaire: 7 demographic and 80 focusing on Deming's Fourteen Points. The Fourteen Point questions were spread throughout the questionnaire.

The questionnaire was distributed to 40 people, by choosing every fifth person on the list of the 190 personnel trained in TQL in 1992. Seven of the interviewees also received the questionnaire. A total of 33 questionnaires were returned: 28 from the general distribution and 5 from the interviewees. This represents 17.4% of the population that completed TQL training in 1992 and 12.1% of all the personnel trained in TQL at LBNSY.

The primary focus of the questionnaire was to learn how TQL had been adopted, understood, and applied at LBNSY.

2. Interviews

Thirteen interviews including eleven civilian personnel and two military personnel, were arranged at LBNSY. As mentioned before, these personnel occupied senior and middle level management positions. The TQL attitude of the inter-viewees ranged from being enthusiastic about TQL to resistance to the new philosophy. The number of interviews conducted was determined by the interview time available during the shipyard visit. All of the interviewees had been trained in TQL in 1992 at the shipyard.

Eleven of the interviews were conducted one-on-one in a private office. Two of the meetings were conducted in the presence of Mrs. Watkins, because of transportation reasons in the shipyard. To enable the interviewees to feel more comfortable, and to speak more freely no recording device or note taking was utilized during the interview.

Following each interview, the author wrote notes to record the information gathered.

Four questions were asked of each interviewee:

- What is your opinion about TQL?

- What are the major problems to implementation of TQL at LBNSY?

- In your opinion, what do the other employees believe about TQL as it relates to your department.

- Are you familiar with the Greek culture? Do you think TQL could be implement in this culture?

The main objective of the interviews was to uncover TQL implementation problems and successes at LBNSY. The questions were posed to address situational factors during the implementation.

3. **Observations**

During the shipyard visit, the author had the opportunity to observe one Executive Steering Group (ESG) meeting and one TQL facilitator meeting.

a. **ESG**

The ESG met for an hour period. ESG meetings were scheduled two times per week. One meeting every Tuesday 1200 - 1700 hours and every Thursday 1500 - 1700 hours. During that time, three main topics were covered.

- Current problems at the shipyard.

- A guest speaker came in and gave an overview of the Base Realignment and Closure Commission (BRAC) process.

- A videotape was reviewed about disability issues.

No decisions were made at this ESG meeting. Also, no mention was made of TQL and its relationship to current problems at LBNSY.

b. **TQL Facilitator Meeting**

Thirteen TQL facilitators were present at this meeting. Facilitation meetings were not regularly scheduled, but held as needed. Items discussed during this particular meeting included:

- TQL problems faced at LBNSY

- How to handle these problems

- Existence of fear of employees at LBNSY

- How to communicate the idea of process improvement to the employees

- Utilities (equipment) needed by the TQL meetings.

C. ANALYSIS

1. Questionnaire

Respondents were asked to indicate their level of agreement with the statement of each question. There were 5 possible selections:

- Strongly Agree (SA)

- Agree (A)

- Undecided (U)

- Disagree (D)

- Strongly Disagree (SD)

These selections were rated from 5 to 1 when they were supportive of Deming's theory, and from to 1 to 5 when opposed.

The mean value and the standard deviation of each question shows the degree of supportiveness of the respondents toward Deming's theory for that particular question. A higher mean value implies higher degree of support for Deming's theory. Mean values over 3.5 were defined as areas where the shipyard's actions were supportive of Deming's philosophy, and those with mean values below 2.5 were areas where the ship-yard's actions were not supportive of the TQL philosophy illustrated by that question. Mean values between 3.5 and 2.5

were defined as undecided as to whether the shipyard's actions were supportive or not of the TQL philosophy.

The questions of the questionnaire were grouped and analyzed according to their relevancy to Deming's fourteen points (Appendix B).

The responses obtained from the questionnaire were analyzed with the Statistical Analysis System (SAS) software.

The mean value of each group of questions was also automatically calculated by the SAS program. A higher mean value implies higher degree of supportiveness to Deming's theory for that particular Deming point. Mean values over 3.5 were defined as areas where the shipyard's actions were supportive of Deming's philosophy, and those with mean values below 2.5 were areas where the shipyard's actions were not supportive of the TQL philosophy. Mean values between 3.5 and 2.5 were defined as undecided as to whether the shipyard's actions were supportive or not of the TQL philosophy.

These limits were arbitrarily determined to provide structure to the analysis.

To illustrate the questions which elicited the strongest responses in the survey on the average, Appendix C ranks responses from highest mean value to the lowest.

Although a strong response to an individual question may be significant, analyses of the responses respective standard deviations is vital in terms of describing the

accuracy of the data. Appendix D depicts the variability of the responses to each question from smallest to largest.

During the analysis period, the author was in contact with Mrs. Watkins and Ms. Kossoff in order to maintain an accurate viewpoint of the shipyard.

2. Interviews

Interview responses were grouped as to their applicability to specific survey questionnaire and the associated Deming point. They are used to amplify the questionnaire analysis in the following Chapter.

3. Observations

Observations obtained from the ESG and Facilitators' meetings were used to support the questionnaire findings also group as to applicability to Deming's point.

D. HELLENIC NAVAL STATIONS

The information and findings from LBNSY were then related to the Hellenic Naval Stations. This comparison is based upon the author's 16 year engineering career in the Hellenic Navy. He served as customer of the Hellenic Naval Stations when he served on the following types of ships:

- Destroyers
- Fast Attack Patrol Boats
- Open Sea patrol Boats
- Landing Ships

Conclusions of this comparison are presented in Chapter VII.

V. SURVEY, INTERVIEW AND OBSERVATION RESULTS

The analysis is based on the theory of Deming's Fourteen Points. Interviews and observations were used to amplify questionnaire data.

The survey canvassed middle and senior management civilian personnel having an average of 17 years experience in their respective fields. The 33 respondents were all competent and knowledgeable about the needs of LBNSY.

The 80 survey questions were derived from the Fourteen Points of Deming's philosophy of Total Quality Leadership. Appendix B presents the mean values, standard deviations, and frequency distributions for each of these questions.

Questions were grouped based on their relationship with a Deming point. The grouped data are presented in Tables 3 through 16, in order of descending mean value. The tables include the following information:

- The percentage of the responses (SA, A, U, D, SD).
- Mean values.
- Standard deviations.

Some of the questions were rated in reverse order. These questions are marked with an asterisk.

The figures following each table depict the descending mean values of each relevant question in bar graph form. The range of the mean values for each question are divided as

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follows: <u>Supportive</u> of Deming's theory (+), from (5 to 3.5);
<u>Undecided</u> regarding Deming's theory (?), from (3.5 to 2.5);
and <u>Opposed</u> to Deming's theory (-), from (2.5 to 1).

A.   DEMING'S POINT 1:   CREATE CONSTANCY OF PURPOSE FOR IMPROVEMENT OF PRODUCT AND SERVICE

Ten survey questions were related to Deming's Point 1, (see Table 3).   Representative statistics indicate that respondents positively believe that they:

- Know who their customers are and what their customers require (σ=0.56).

- Understand the mission of the LBNSY (σ=0.8).

- Understand what their responsibilities are.

- Clearly understand their department's goals and how they fit in with organizational goals.

- Understand what management is trying to do in the area of quality (σ=0.93).

- Believe management is strongly committed to successfully carrying out the mission of the shipyard, as stated in the mission statement.

Respondents were undecided on the following:

- The operation is run on the "Idea of the Month."

- Management is starting to pay more attention to long range results (σ=0.96).

- Management is unable to plan well for tomorrow or uses Crisis Management (σ=0.93).

- Departments in the shipyard share the sacrifices that need to be made.

None of the questions related to Point 1 fell in the opposition range.   The average mean value of these ten

questions is 3.53 (σ=1.13). Clearly indicating support for

Deming's Point 1.

TABLE 3: QUESTIONS RELATING TO DEMING'S POINT 1.

DEMING'S POINT 1							
QUESTIONS	SA%	A%	U%	D%	SD%	Mean	s
Q5. I have a clear idea of who my immediate customers are and what they need.	57.6	39.4	3.0	0.0	0.0	4.54 (+)	0.56
Q35. I have a clear idea of what the mission of this shipyard is.	30.3	54.5	9.1	6.1	0.0	4.09 (+)	0.8
*Q18. With all of the changes going on, I am no longer certain what my responsibilities are.	3.0	18.2	3.0	45.5	30.3	3.8 (+)	1.1
Q43. I have a clear idea how my department's goals fit in with the organization's goals.	24.2	48.5	12.1	12.1	3.0	3.78 (+)	1.05
Q27. I don't really understand what Management is trying to do in the area of quality improvement.	3.0	12.1	15.2	60.6	9.1	3.60 (+)	0.93
Q59. I believe that Management is strongly committed to carrying out the mission of the shipyard as stated in the mission statement.	15.2	45.5	21.2	15.2	3.0	3.54 (+)	1.03
*Q34. It often seems like this operation is run on the "idea of the month."	6.1	15.2	33.3	33.3	12.1	3.30 (?)	1.07
Q3. I sense that Management is starting to pay more attention to long range results of their actions.	0.0	39.4	18.2	39.4	3.0	2.93 (?)	0.96
Q12. Our Management seems to be unable to plan well for tomorrow because of problems they deal with today.	6.1	57.6	12.1	24.2	0.0	2.54 (?)	0.93
*Q22. Management sees to it that, whenever possible, all areas of the shipyard share in the sacrifices that need to be made.	0.0	24.2	21.2	39.4	15.2	2.54 (?)	1.03

[Most questions rated SA = 5 ... SD = 1. Questions with (*) rated SA = 1 ... SD = 5]

There appears to be a positive focus around the "constancy of purpose" for continuous improvement in shipyard services and processes, but it is not clear that this has resulted from adopting Deming's philosophy.   Traditional management practices appear to be effective in handling short term problems, but are less effective with long term problems. However, the results suggest that people at LBNSY are open to the idea of TQL.
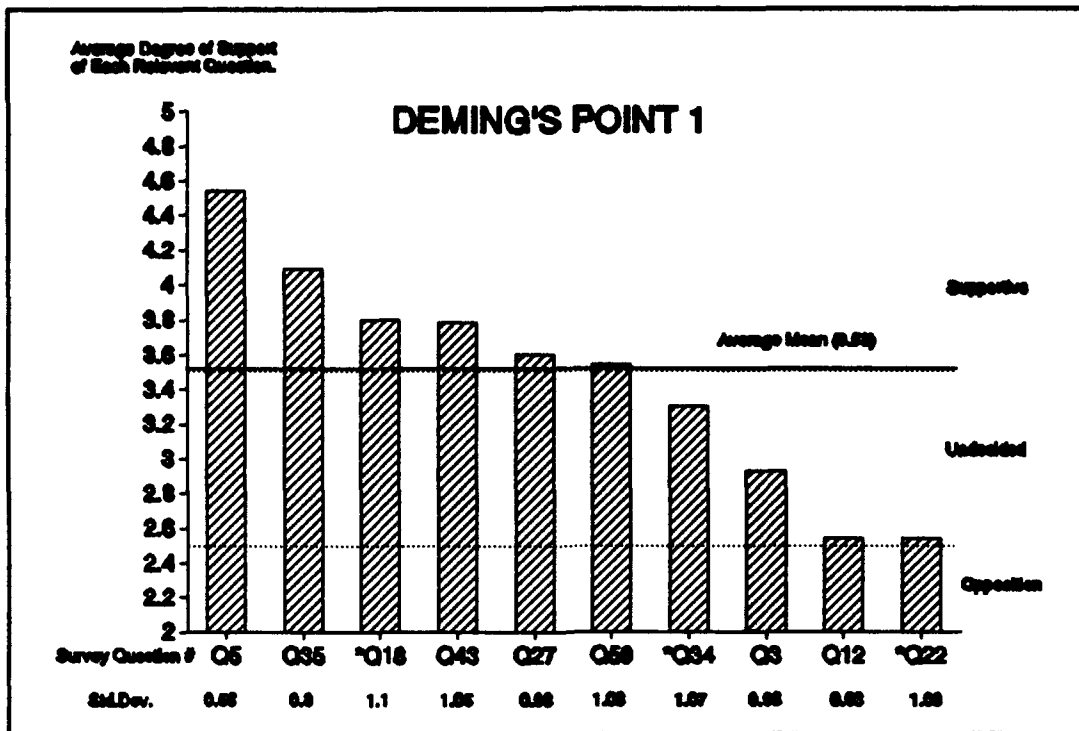
Figure 11: Degree of Support for Deming's Point 1

During the interview sessions it was apparent that cultural diversity were obstacles for "constancy of purpose" in TQL. For example, senior management personnel, depending on their professional and ethnic experiences, may create individualized approaches to quality that are not always identical to that of the shipyard. Military leaders and civilian managers tending to have old-fashioned, authoritarian mentalities appear to resist quality improvement initiatives. The organizational structure hampers management communication due to the multifaceted departments. Therefore, attempts in management to promote new concepts do not have a united front.

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Most personnel with initial experience in a bluecollar environment, seem to be the most enthusiastic and optimistic about TQL. It appears the laborers are significantly motivated toward "constancy of purpose." Enthusiasm about the new philosophy was readily evident during the facilitator's meetings but not at the ESG meetings.

Thus, the TQL transformation has only partially influenced traditional management practices. Further improvement and reinforcement of Deming Point 1 is required at LBNSY.

B. DEMING'S POINT 2: ADOPT THE NEW PHILOSOPHY

Nine survey questions were related to Deming Point 2, (see Table 4). Representative statistics in this section indicate that respondents:

- Believe management emphasizes quality more than quantity in order to achieve productivity $(\sigma=0.61)$.

- Believe that the shipyard seeks to learn who their customers are and what their customers expect $(\sigma=0.84)$.

- Are having little difficulty in adopting the new quality improvement philosophy to their work $(\sigma=0.85)$.

Respondents appear undecided about whether:

- They believe that the focus on quality is not just one more program that will fade away $(\sigma=0.97)$.

- The shipyard lives up to its commitment to customer satisfaction.

- Important values are compromised in decisions made by management $(\sigma=0.95)$.

- Management believes and acts as though employees are the most important asset of the shipyard.

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- Many employees talk about accepting the new philosophy but actually resist applying it (σ=0.96).

In addition respondents stated that they worry about the future of the shipyard (σ=0.96).

The average mean value of these questions (mean=3.20, σ=1.08), indicates that the surveyed people are undecided and have not fully accepted this particular Deming Point.

TABLE 4: QUESTIONS RELATED TO DEMING'S POINT 2.

DEMING'S POINT 2							
QUESTIONS	SA%	A%	U%	D%	SD%	Mean	s
*Q28. To achieve greater productivity, Management emphasizes quantity more than quality.	0.0	0.0	27.3	60.6	12.1	3.84 (+)	0.61
Q64. Our shipyard really seeks to learn who our customers are and what they expect.	9.1	66.7	9.1	15.2	0.0	3.69 (+)	0.84
*Q49. I am having difficulty relating the new quality improvement philosophy to my work.	3.0	9.1	15.2	66.7	6.1	3.63 (+)	0.85
*Q30. I believe that the focus on quality is just one more program that will fade away like all the others.	3.0	18.2	12.1	60.6	6.1	3.48 (?)	0.97
*Q14. The shipyard often fails to live up to its commitment to customer satisfaction.	6.1	27.3	15.2	45.5	6.1	3.18 (?)	1.10
*Q74. Important values are often compromised in decisions made here.	3.0	27.3	18.2	51.5	0.0	3.18 (?)	0.95
Q1. Management believes and acts as though employees are the most important asset of the shipyard.	3.0	42.4	21.2	27.3	6.1	3.09 (?)	1.04
*Q4. Many employees talk as though they accept the new quality philosophy while actually resisting it.	0.0	39.4	18.2	39.4	3.0	2.93 (?)	0.96
*Q9. I frequently worry about the future of the shipyard.	45.5	42.4	0.0	12.1	0.0	1.78 (-)	0.96

[Most of the questions rated SA = 5 ... SD = 1. Questions with (*) rated SA = 1 ... SD = 5]
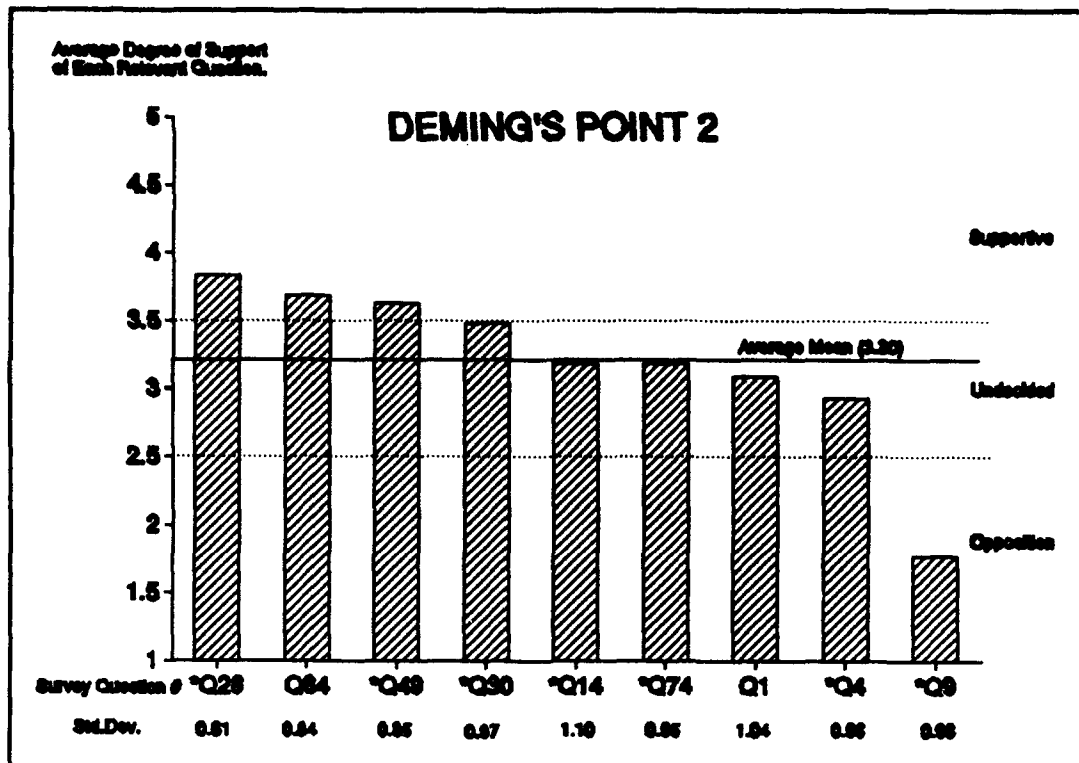
Figure 12: Degree of Support for Deming's Point 2

TQL appears to be attractive to the managers, however, they are not completely convinced of the effectiveness of TQL in their organization. They react as if the TQL implementation is in an experimental period. Some managers even believe there is a need for more traditional management. The following example is characteristic of traditional management at LBNSY. During a meeting between a senior management official and a subordinate, the author observed a discussion about a routine problem. The manager said to his subordinate: "Fix it or I'll come down to fix it myself." A few days later during an interview with another senior manager, he referred to that event as proof of the need to

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compromise some values of TQL and the need to use traditional management to solve immediate problem.

One characteristically resistant comment made by an interviewee was that he didn't believe in Deming and in TQL. He felt that the "Tom Peters" method of the "team-team-team" function was a more effective philosophy.

Another interviewee describing the difficulties of change and adoption of the new philosophy said, that asking people to change is like telling a craftsperson that he can produce the same thing that he made for his whole life in a different way and can do 100 times more of them than in the past. The craftsman would still continue to resist changing his method.

A military senior manager declared that he believes in "quality methods," but he doesn't believe in Deming. He believes that Deming was an industrial statistician.

Referring to military leaders at LBNSY, one person interviewed said that the present leaders seem to have some experience with TQL and things appear to be running smoother.

Also relevant to this point is the issue raised in Point 1 about the different understandings of quality by different levels in the organization. According to interviewees, engineers love tangible things and are more skeptical of new methods. Accountants tend to be more open to new ideas and are willing to take the risk. When comparing senior managers with blue collar middle managers, the senior management

personnel are more cautious in the adoption of the new philosophy.

TQL is a long-term process and requires personnel training. LBNSY is still in the phase of understanding the concepts of TQL. The departments are still not working with TQL.

As is the case with many federal government installations, LBNSY employees face a great deal of uncertainty about future employment, ranging from minimization of some Shipyard operations to the worst case situation of base closure. The inconsistency of the respondents to Deming Point 2 is therefore quite appropriate in this case.

C. DEMING'S POINT 3: CEASE DEPENDENCE ON MASS INSPECTION

Four survey questions were related to Deming Point 3, (see Table 5). None of the responses were supportive or opposed to this particular Deming point. The respondents generally were undecided about:

- How heavily the shipyard depends on inspection to make sure that quality products and services are being delivered to their customers.

- How management relies less on inspection and rework and more on helping them improve the work process they use.

- Unless they inspect incoming materials, they cannot trust their suppliers to provide quality materials.

- Inspections can be eliminated due to the level of necessary rework.

The average mean value of these questions was in the undecided area (mean=2.79, s=1.07).

TABLE 5: QUESTIONS RELATING TO DEMING'S POINT 3.

DEMING'S POINT 3							
QUESTIONS	SA%	A%	U%	D%	SD%	Mean	σ
*Q16. We depend heavily on inspection to make sure that quality products and services are being delivered to our customers.	9.1	27.3	6.1	48.5	9.1	3.21 (?)	1.21
Q56. Management relies less on inspection and rework and more on helping us improve the work process we use.	0.0	24.2	30.3	42.4	3.0	2.75 (?)	0.86
*Q39. Unless we inspect incoming materials, we cannot trust our suppliers to provide quality materials.	12.1	42.4	21.2	18.2	6.1	2.63 (?)	1.11
*Q45. There is too much rework necessary for us to eliminate inspections.	18.2	24.1	39.4	18.2	0.0	2.57 (?)	1.00

[Most of the questions rated SA = 5 ... SD = 1. Questions with (*) rated SA = 1 ... SD = 5]

The author did not focus on these particular issues during the interviews. The average mean value of 3.0 indicates that valuable information about LBNSY could be obtained with further development into this point.
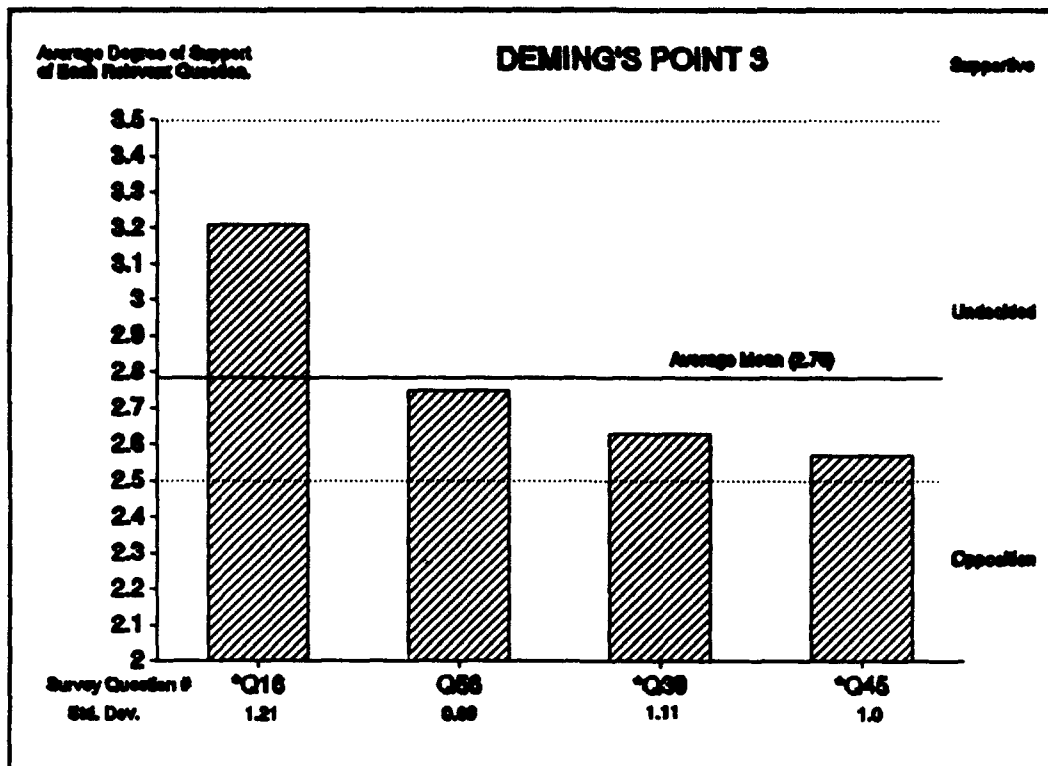
Figure 13: Degree of Support for Deming's Point 3

D. DEMING'S POINT 4: END THE PRACTICE OF AWARDING BUSINESS ON THE PRICE TAG ALONE

Three survey questions were related to this point, (see Table 6). None of the mean values are supportive or in opposition to this particular Deming Point. The respondents were undecided about whether:

- The benefits of a single supplier outweigh the risk.

- Purchasing decisions are still based on the immediate cost.

- The departments work closely with their suppliers to improve the quality of the materials.

The average mean value (mean=2.8, σ=0.98), is evidence that the respondents were undecided about LBNSY effectiveness in implementing this point.

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TABLE 6:   QUESTIONS RELATING TO DEMING'S POINT 4.

DEMING'S POINT 4							
QUESTIONS	SA%	A%	U%	D%	SD%	Mean	σ
*Q75. The risk of having a single supplier for an item out weigh the benefits.	3.0	18.2	33.3	42.4	3.0	3.24 (T)	0.90
*Q65. Management may stress quality of supplies, but they still make purchasing decisions based on the immediate cost.	6.1	42.4	36.4	15.2	0.0	2.60 (T)	0.82
Q24. My department works closely with our suppliers in order to improve the quality of the materials they send us.	6.1	15.2	21.2	45.5	12.1	2.57 (T)	1.09

[Most of the questions rated SA = 5 ... SD = 1. Questions with (*) rated SA = 1 ... SD = 5]

Figure 14:   Degree of Support for Deming's Point 4

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The general idea represented by this data is that the management of LBNSY still makes purchasing decisions based on cost. According to Deming's theory, the quality of raw materials influences the quality of the output. The low-average mean value indicates that LBNSY management should study and work for improvement in this area.

E. DEMING'S POINT 5: IMPROVE CONSTANTLY AND FOREVER THE SYSTEM OF PRODUCTION AND SERVICE

Seven survey questions were related to this point. Table 7 indicates that respondents support Deming's point and positively believe that:

- They are actively involved in trying to improve their job. ($\sigma=0.59$)

- Statistical control is not the only thing that they need to improve quality. ($\sigma=0.70$)

- There is not a great waste of materials and supplies in their departments. ($\sigma=0.92$)

- Emphasis on statistical process control is not a waste of time. ($\sigma=0.75$)

The respondents seem undecided about whether:

- Management is actively involved in helping them stabilize and improve their work process.

- Statistical process control is working.

- Management has an adequate understanding of statistical methods.

The general impression derived from the respondents is that they are undecided about the effectiveness in implementation of this point (mean=3.45, $\sigma=0.96$), however, the data

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TABLE 7:   QUESTIONS RELATING TO DEMING'S POINT 5.

DEMING'S POINT 5							
QUESTIONS	SA%	A%	U%	D%	SD%	Mean	s
Q15. I am actively involved in trying to improve my work.	27.3	69.7	0.0	3.0	0.0	4.21 (+)	0.59
*Q25. Statistical process control is the only really essential thing we need to continuously improve our quality.	0.0	0.0	21.2	51.5	27.3	4.06 (+)	0.70
*Q23. There is a great waste of materials and supplies in my department.	3.0	12.1	12.1	63.6	9.1	3.63 (+)	0.92
Q2. The great emphasis on statistical process control has a waste of time and money.	0.0%	3.0	51.5	33.3	12.1	3.54 (+)	0.75
Q42. Management is actively involved in helping me to stabilize and improve my work process.	3.0	48.5	21.2	24.2	3.0	3.24 (?)	0.96
*Q67. We have been using statistical process control for a while, but it doesn't seem to be working.	0.0	9.1	63.6	21.2	6.1	3.24 (?)	0.70
*Q62. Management doesn't appear to have adequate understanding of statistical methods for improving our processes.	3.0	27.3	27.3	42.4	0.0	3.09 (?)	0.91

[Most of the questions rated SA = 5 ... SD = 1. Questions with (*) rated SA = 1 ... SD = 5]

indicates that LBNSY management is willing to improve processes and use statistical techniques.   Therefore, additional education in statistical methods may be helpful.

LBNSY is still in the training phase. Only 400 out of 4000 employees are trained in TQL.   Management at LBNSY is not yet run with TQL principles.

The average mean value of these questions are in the undecided area but are very close to the supportive area, giving evidence that management requires improvement in TQL techniques.

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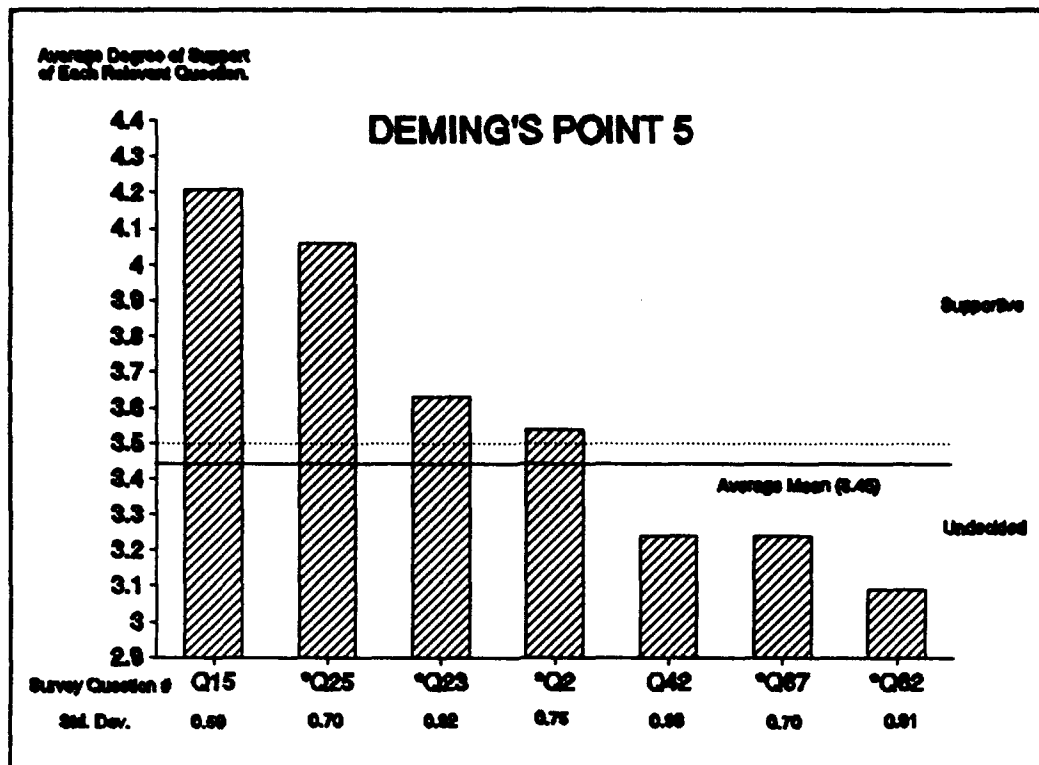
Figure 15:   Degree of Support for Deming's Point 5

F.   DEMING'S POINT 6:   INSTITUTE TRAINING

Six questions were related to this point (see Table 8).
The statistics represented in these sections indicates that
respondents are supportive to Deming's point to clearly
understand how to improve their work performance. (σ=0.64)

However, they are undecided about whether:

- New employees understand what is expected of them.

- Their training keeps up with technological and
  organizational changes.

- Training department is actively involved in teaching
  employees the tools necessary for quality improvement.

Two questions had mean values below 2.5, showing
opposition to this Deming point in regards to:

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•   Training in LBNSY is done on a "hit or miss" basis.

•   Employees are not receiving appropriate and complete training before being given new jobs and responsibilities. (σ=0.84)

Indecisiveness is the general aspect contrived from the respondents. The average mean value lies almost on the undecided line (mean=3.02, S=1.22).

TABLE 8: QUESTIONS RELATING TO DEMING'S POINT 6.

DEMING POINT 6							
QUESTIONS	SA%	A%	U%	D%	SD%	Mean	σ
Q61. I want to learn more about how to improve my work process.	24.2	66.7	0.0	6.1	3.0	4.12 (+)	0.64
*Q50. New employees don't understand what is expected of them.	3.0	21.2	24.2	36.4	15.2	3.39 (?)	1.08
*Q17. My training fails to keep up with technological and organizational changes.	6.1	27.3	12.1	45.5	9.1	3.24 (?)	1.14
Q70. The training department is actively involved in teaching employees the tools necessary for quality improvement.	0.0	45.5	27.3	21.2	6.1	3.12 (?)	0.96
*Q7. Training in this shipyard is done on a "hit or miss" basis.	42.4	24.2	6.1	27.3	0.0	2.18 (-)	1.26
Q37. Before employees are given new jobs and responsibilities, they receive training that is appropriate and complete.	0.0	6.1	21.2	48.5	24.2	2.09 (-)	0.84

[Most of the questions rated SA=5 ... SD=1. Questions with (*) rated SA=1 ... SD=5]

According to interviewees, the availability of training is always related to the budget. Due to the recent cut-backs in the military budget, training has been affected by lack of availability. As training is not viewed as an investment,

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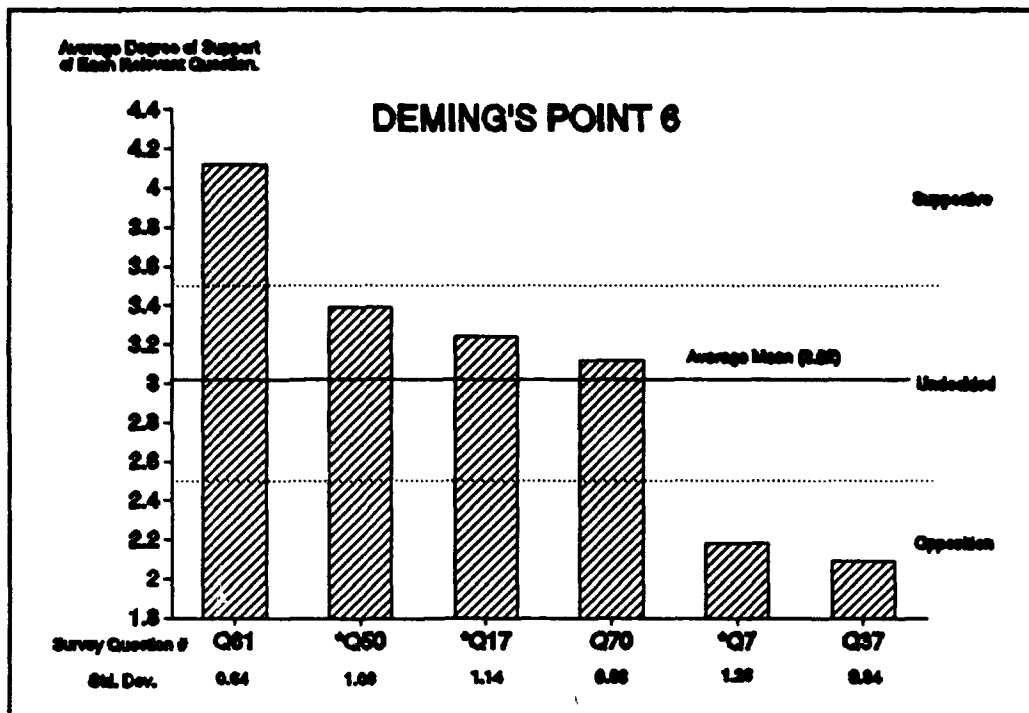
Figure 16: Degree of Support for Deming's Point 6

management is attempting to save money by reducing training expenses. According to an interviewee, the majority of the training in the past was mandatory or "nice-to-know." Most training given currently has very little to do with needed or required skills. However, an Apprenticeship Program, had been in operation previously.

Training is an effective way to change the culture and persuade employees that TQL is applicable, however, results are generally not seen for 5 to 10 years. People with enthusiasm for TQL have voluntarily applied for the facilitator positions in their departments. These people have occasional training sessions and are in contact with the TQL

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coordinator. They talk to other people in their departments and attempt to make them familiar with the new philosophy. They try to attract more enthusiasm for the TQL team and pull the organization together.

The survey questions and interviews indicate future study and improvement in the LBNSY general training and TQL programs are required to further the application of TQL.

G. DEMING'S POINT 7: INSTITUTE LEADERSHIP

Ten survey questions were related to this point (see Table 9). The statistics indicate that respondents believe that:

- Supervisors understand what their subordinates job is, and help them understand how quality and productivity are related. ($\sigma=0.78$)

- Management is supportive and understanding when they have new responsibilities.

The respondents are clearly undecided about whether:

- Effort is made to get their opinions and thoughts on work matters.

- Supervisors lead by setting a good example to follow.

- Management has been sensitive in working with employees to get their participation in the quality improvement effort.

- Management follows through on recommendations for process improvement submitted by improvement teams.

- Management seems afraid to meet employees face to face.

- Management seems afraid that they will lose control if personnel takes more responsibilities for their work.
- Their supervisor helps them to actively apply their training in their job.

None of the responses were opposed to this Deming Point.

Overall, respondents were undecided but very close to the supportive area. Implementation of this point has been somewhat effective (mean value=3.27 and s=1.08).

TABLE 9: QUESTIONS RELATING TO DEMING'S POINT 7.

DEMING POINT 7							
QUESTIONS	SA%	A%	U%	D%	SD%	Mean	σ
*Q73. My supervisor seems to understand little about my job.	0.0	9.1	9.1	66.7	15.2	3.87 (+)	0.78
Q11. Management has helped me understand how quality and productivity are related.	12.1	57.6	3.0	24.2	3.0	3.51 (+)	1.00
Q13. I feel that Management is supportive and understanding when we have new responsibilities and tasks to learn.	3.0	63.6	12.1	18.2	3.0	3.45 (?)	0.93
*Q46. Little effort is made to get my opinions and thoughts on work matters.	3.0	21.2	15.2	54.5	6.1	3.39 (?)	0.99
Q53. My supervisor leads by setting a good example to follow.	9.1	42.4	27.3	18.2	3.0	3.36 (?)	0.99
Q36. Management has been sensitive in working with employees to get their participation in the quality improvement effort.	3.0	39.4	30.3	24.2	3.0	3.15 (?)	0.93
*Q63. Management seems afraid to meet employees face to face.	15.2	21.2	3.0	54.5	6.1	3.15 (?)	1.27
Q48. Management follows through on recommendations for process improvement submitted by improvement teams.	0.0	36.4	39.4	18.2	6.1	3.06 (?)	0.89
*Q71. Management seems afraid that they will lose control if we are given more responsibility for our work.	21.2	15.2	9.1	51.5	3.0	3.18 (?)	1.01
Q19. My supervisor helps me to actively apply my training in my work.	12.1	18.2	18.2	2.2	9.1	2.51 (?)	1.21

[Most of the questions rated SA = 5 ... SD = 1. Questions with (*) rated SA = 1 ... SD = 5]

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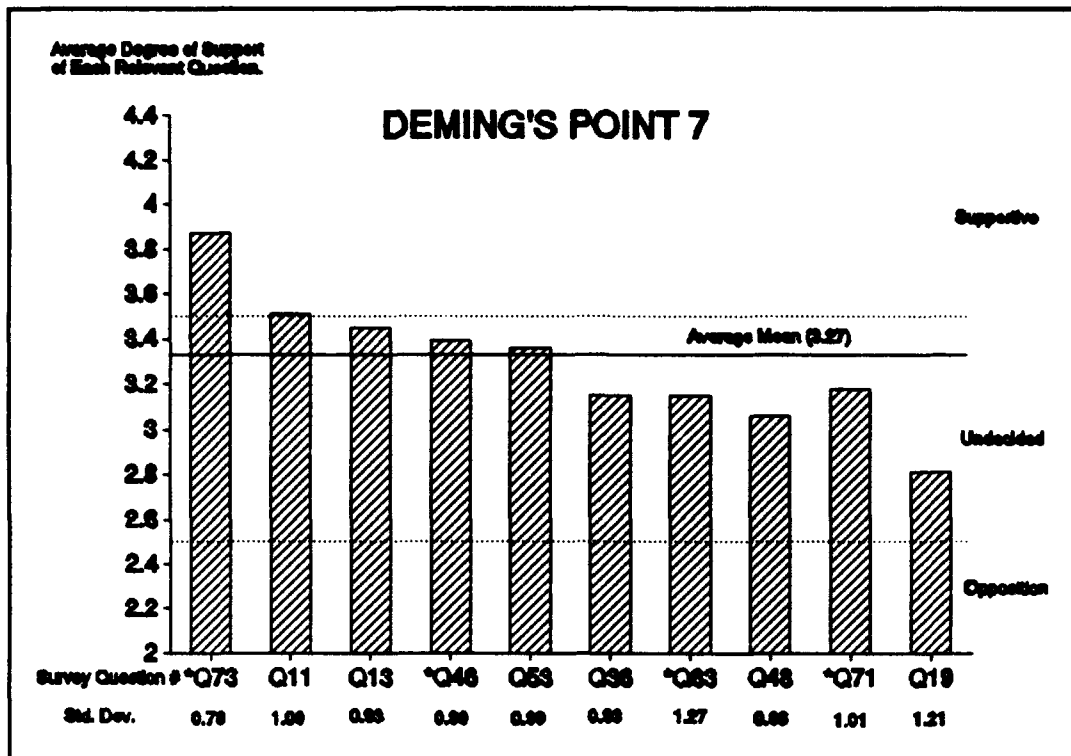
Figure 17:   Degree of Support to Deming's Point 7

From the interviews, it is difficult to determine how
supportive management is.   However, it is easier to explain
the indecisiveness of the respondents from an interviewee's
statements.   One interviewee said, that "The management is
reluctant to change any process or apply TQL techniques that
they have learned."   The indoctrination of the employees in
TQL allows the employees to understand that even senior-
management has been trained in the TQL philosophy.   The
actions of senior management, however, do not reflect this
philosophy. On the other hand, TQL is a long-term process and
especially so for LBNSY.   At this time it is too early to
fully evaluate the effectiveness of this point.

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The large number of undecided questions lead this author to believe that there is soon for improvement in this point. This is particularly true in the areas of follow up of improvement team recommendations and in assisting employees to apply their training to their work.

H. DEMING'S POINT 8: DRIVE OUT FEAR

Three survey questions were related to this point, (see Table 10). The statistics indicate that respondents were supportive to Deming's point and believe:

- They do not worry about being fired. $(\sigma=0.60)$

- They feel free to recommend improvements to their supervisors about their job. $(\sigma=0.78)$

However, they are less certain about whether other people in their department are afraid of job cuts if quality and productivity increase.

The average mean value of these questions is 4.12 and the standard deviation 1.01, indicating that considerable effort has been made to drive out fear.

TABLE 10:   QUESTIONS RELATING TO DEMING'S POINT 8.

DEMING'S POINT 8							
QUESTIONS	SA%	A%	U%	D%	SD%	Mean	σ
*Q80. I frequently worry about being fired.	0.0	0.0	6.1	24.2	69.7	4.63 (+)	0.60
Q29. I feel free to recommend improvements to my job to my supervisor.	51.5	36.4	9.1	3.0	0.0	4.36 (+)	0.78
*Q79. I believe that a lot of people in my department are afraid their jobs will be cut if quality and productivity increase.	9.1	15.2	12.1	57.6	6.1	3.36 (?)	1.11

[Most of the questions rated SA = 5 ... SD = 1. Questions with (*) rated SA = 1 ... SD = 5]
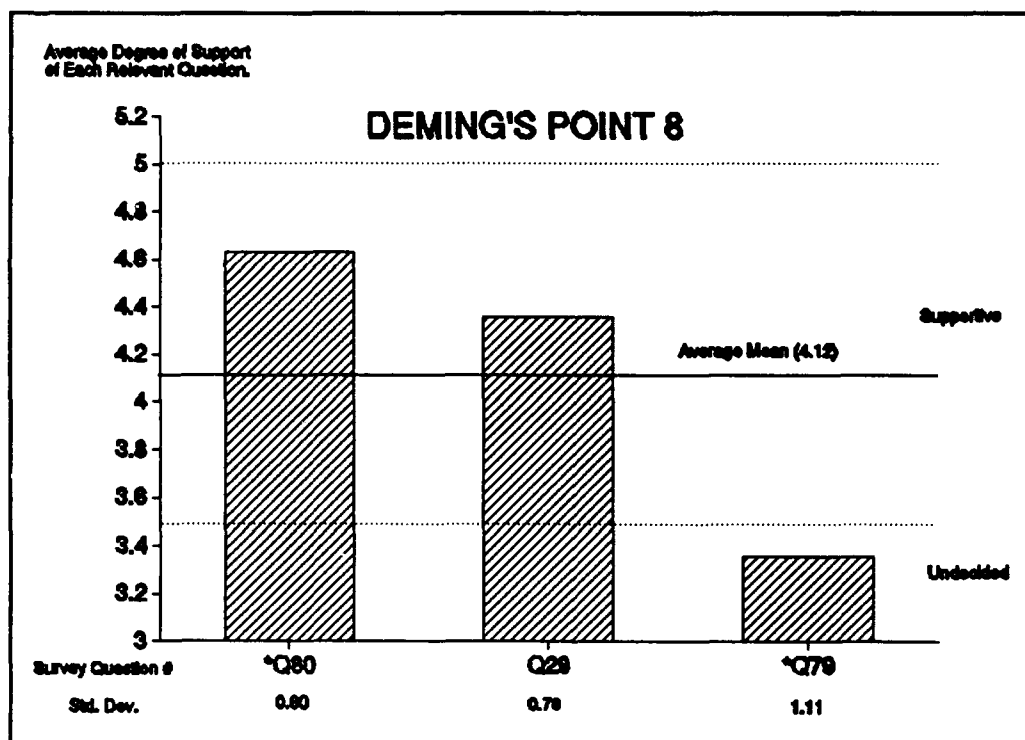
Figure 18:   Degree of Support to Deming's Point 8

Even if the general picture of the responses show evidence that there is no fear at LBNSY, the interviewees conveyed fear and anxiety about future government decisions on the fate of

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the shipyard. The employees worry about their jobs but this worry does not seem to be related to interactions with shipyard management, but with the current political climate.

Of course, one must remember that the survey was limited to managers. The author has no data regarding fear in the labor Force. This could be a valuable area for further study.

I. DEMING'S POINT 9: BREAK DOWN BARRIERS BETWEEN STAFF AREAS

Five survey questions were related to this point. Responses to this point were significantly less positive than others (4 out of 5 questions had mean scores less than 3.0), indicating a need for emphasis. Table 11 gives the statistical breakdown for each question. Respondents are supportive to this Deming Point with the belief that:

- When necessary, they include members from other departments in their work teams. (σ=0.97)

They are undecided about whether:

- Information is shared and cooperation is emphasized between departments.

- There is a good cooperation and communication between departments.

- There is a strong sense of teamwork instead of an "us-vs-them" mentality.

However, there is an opposing belief that:

- Management rewards individual efforts more than team efforts, a practice not conducive to the promotion of the philosophy of the TQL. (σ=0.95)

The overall undecided result of this point 13 is substantiated with an average mean value=2.78 and standard deviation=1.17.

TABLE 11:   QUESTIONS RELATING TO DEMING'S POINT 9.

DEMING'S POINT 9							
QUESTIONS	SA%	A%	U%	D%	SD%	Mean	σ
Q76. Our work team includes members from other departments when they are needed to solve a problem.	9.1	57.6	9.1	24.2	0.0	3.51 (+)	0.97
Q26. Information is shared and cooperation is emphasized between departments	6.1	33.3	18.2	21.2	21.2	2.81 (?)	1.28
Q8. There is good cooperation and communication between departments.	0.0	36.4	15.2	33.3	15.2	2.72 (?)	1.12
*Q54. There is a strong sense of "us" vs. "them" between departments in the shipyard as a whole.	15.2	39.4	15.2	24.2	6.1	2.66 (?)	1.19
Q41. Management rewards team efforts more than individual ones.	0.0	12.1	18.2	45.5	24.2	2.18 (-)	0.95

[Most of the questions rated SA = 5 ... SD = 1. Questions with (*) rated SA = 1 ... SD = 5]
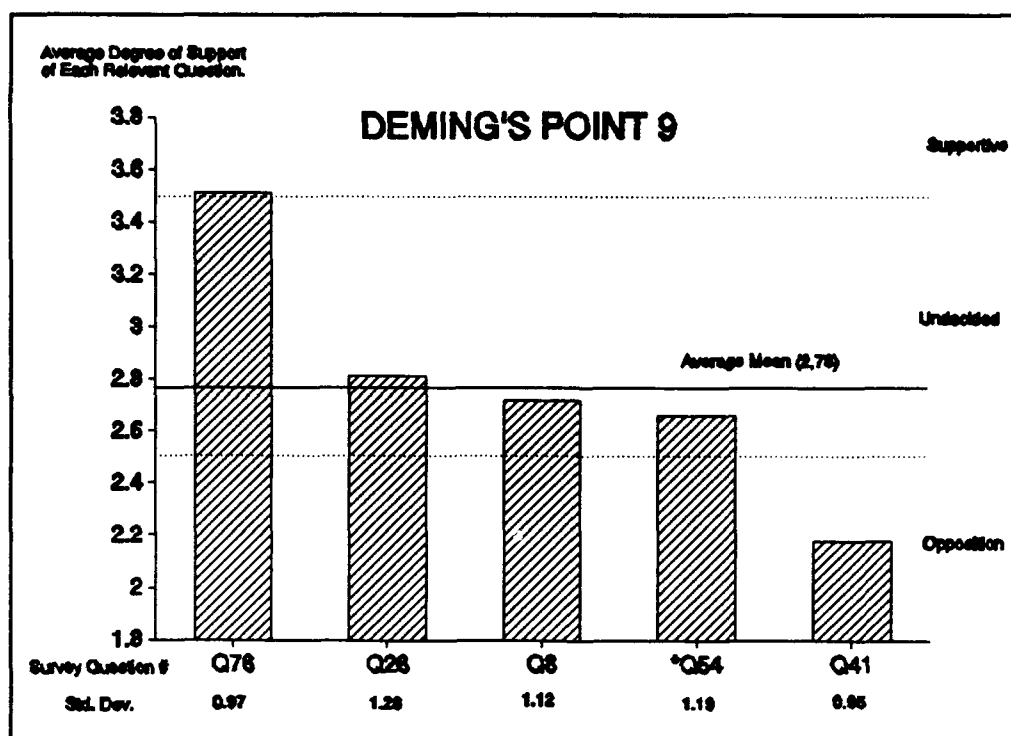
Figure 19:   Degree of Support for Deming's Point 9

One of the interviewees emphasized the need for communication as noted that the communication stream doesn't work properly because of the organizational structure of the shipyard. He said that the people that do the job know to improve the job better. Management needs to ask the employees for ideas and implement these ideas for improvement. Management has to look downward to the departments. They need to think of what needs to be done and what needs to be fixed. People have to communicate and speak out about their mistakes. Only by fixing the mistakes can a target of improvement be reached. By communicating properly and exchanging ideas, the organization can improve.

Another interviewee said pointed out that we should remember to apply what our parents taught us: honesty and affinity, whether we are at home or at work.

The terms blue-collar, white-collar, waterfront, administrative building, civilian and military are indications that barriers exist to creating one LBNSY team. The fact that LBNSY is a government organization and can't make decisions for their future promotes the feeling of "us" vs. "them."

The organizational schema of LBNSY and the heritage of traditional management does not enhance the information flow. An attitude of hierarchy and military tradition have been transferred to the civilians who have worked for many years with the military personnel. Because of this bias, information is communicated only on a need-to-know basis. According

to interviews, there is a belief in LBNSY that if and an individual needs to know a piece of information will he get that information. The communication seems to work better in the individual departments. The author's assessment is that communication and cooperation between departments has not been affected by the new philosophy due to the structural and cultural schema at LBNSY.

The LBNSY award system supports the individual rather than team efforts. This is yet another practice that makes it difficult to break down barriers. The shipyard should focus on enhancing ideas that unify the people, eliminate ideas that divide them (such as the current award system), and promote communication both vertically and horizontally.

J. DEMING'S POINT 10: ELIMINATE SLOGANS, EXHORTATIONS AND TARGETS FOR THE WORK FORCE

Three survey questions were related to this point (See Table 12). None of the responses are supportive to Deming's point 10. The statistics indicate that respondents are undecided about whether:

- If everyone just tries hard, the shipyard can solve their quality problems.

- Targets set by management include tools and methods for reaching them.

Question *Q44 has a particularly low score indicating that management is still trying to get quality by exhorting people to take pride in their work, a practice not consistent with Deming's philosophy.

The average mean value for these questions is the lowest
of all the other points, 2.67 with standard deviation 1.13.

TABLE 12: QUESTIONS RELATING TO DEMING'S POINT 10.

DEMING'S POINT 10							
QUESTIONS	SA%	A%	U%	D%	SD%	Mean	σ
*Q66.If everyone just tries hard, we can solve our quality problems.	21.2	27.3	0.0	45.5	6.1	2.87 (?)	1.36
Q52. Targets that are set by Management include tools and methods for reaching them.	3.0	39.4	30.3	27.3	0.0	2.81 (?)	0.88
*Q44. Management often asks us to "take pride in our work."	18.2	51.5	12.1	15.2	3.0	2.33 (-)	1.05

[Most of the questions rated SA = 5 ... SD = 1. Questions with (*) rated SA = 1 ... SD = 5]

Figure 20: Degree of Support for Deming's Point 10

According to Deming's theory slogans and exhortations never help the employees do better.

As the survey is the only source of data on this point, further study would be appropriate to determine the extent of the practice of exhortations and to develop actions to change the prevailing practice.

K. DEMING'S POINT 11: ELIMINATE NUMERICAL QUOTAS

Four survey questions were related to this point (See Table 13). The statistics presented indicate respondents believe:

- Work standards or quotas given to the respondents are not arbitrary and unreasonable.

- Current work standards or quotas do not make it difficult for me to produce good work. ($\sigma \approx 0.86$)

Respondents are undecided about whether:

- Management seems to believe that employees need numerical goals to stay motivated.

The respondents were opposed to this Deming point about whether:

- They can do better than the work standards if they work hard. ($\sigma = 1.00$)

The average mean value of these questions is 3.3, very close to being supportive for this area.

TABLE 13:   QUESTIONS RELATING TO DEMING'S POINT 11.

DEMING'S POINT 11							
QUESTIONS	SA%	A%	U%	D%	SD%	Mean	σ
*Q33. The work standards or quotas that I have been given are arbitrary and unreasonable.	3.0	9.1	21.2	42.4	24.2	3.75 (+)	1.03
*Q69. Current work standards or quotas make it difficult for me to produce good work.	3.0	12.1	9.1	72.7	3.0	3.60 (+)	0.86
*Q10. Management seems to believe that employees need numerical goals to stay motivated.	0.0	18.2	24.2	57.6	0.0	3.39 (?)	0.78
*Q58. If I work hard I can do better than the work standard that is set.	15.2	45.5	18.2	21.2	0.0	2.45 (-)	1.00

[Most of the questions rated SA = 5 ... SD = 1. Questions with (*) rated SA = 1 ... SD = 5]
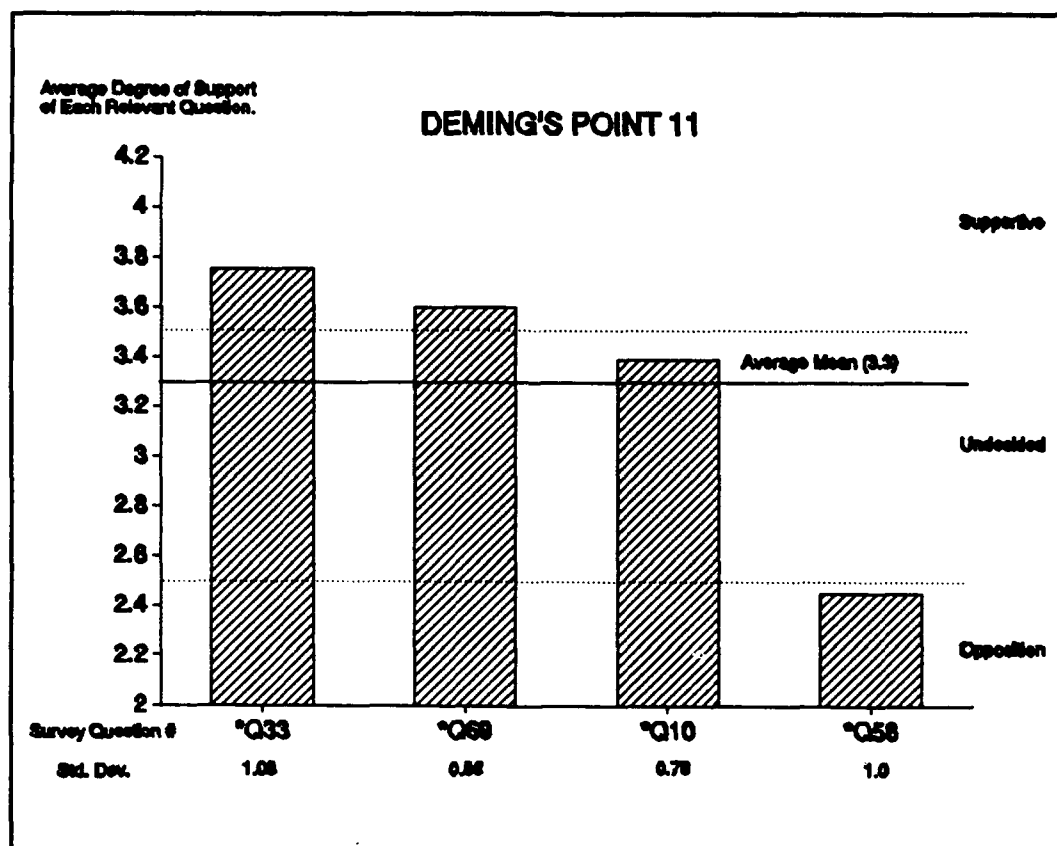
Figure 21:   Degree of Support for Deming's Point 11

I·BNSY seems to be influenced by TQL in this point. They understand that numbers mean nothing, and that people need methods by which they can attain the numbers. The need for time restrictions on available time for repairs on the ships were said to be related to: the nature of the job in the shipyard, the customer of the shipyard (the Navy), and security. This point also needs further study and improvement by the shipyard.

L. DEMING'S POINT 12: REMOVE BARRIERS TO PRIDE OF WORKMANSHIP

Ten survey questions were related to this point (see Table 14). The statistics indicate that respondents are supportive to Deming Point 12 and believe:

- They are not encouraged to compete with others to be productive. $(\sigma=0.98)$

- They have enough opportunities to use their abilities in their jobs.

The respondents are undecided about whether:

- They are confident that their work process produces excellent quality.

- Supervisors try to remove barriers that prevent them from doing their job well.

- They often feel frustrated or angry because they don't have control over their workload.

- The tools and work environment that they have enable them to produce quality work.

- They have time to spend on defining and improving their job.

- The procedures that they use in their departments help them to produce a good job.

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- People who get promoted in their departments really deserve it.

- They want more time to improve their work.

The average mean value of these questions is close to agreement area (mean=3.26, s=1.12).

TABLE 14: QUESTIONS RELATING TO DEMING'S POINT 12.

DEMING'S POINT 12							
QUESTIONS	SA%	A%	U%	D%	SD%	Mean	σ
*Q40. I am often encouraged to compete with others to be more productive.	0.0	15.2	21.2	42.4	21.2	3.60 (+)	0.98
*Q6. I don't have enough opportunity to use my abilities in my present job.	9.1	15.2	57.6	18.2	0.0	3.60 (+)	1.22
Q68. I am confident that my work process produces excellent quality.	3.0	51.5	27.3	18.2	0.0	3.39 (T)	0.82
Q31. My supervisor tries to remove barriers that prevents me from doing my work well.	9.1	51.5	15.2	15.2	9.1	3.36 (T)	1.14
*Q20. I often feel frustrated or angry because I have no control over my workload.	3.0	33.3	9.1	39.4	15.2	3.30 (T)	1.18
Q60. The tools and work environment I have enable me to produce quality work.	3.0	57.6	12.1	18.2	9.1	3.27 (T)	1.09
*Q51. I am so busy that I don't have enough time to spend on defining and improving my process.	0.0	39.4	3.0	54.5	3.0	3.21 (T)	1.02
Q32. The procedures we use in this department help me to do a good job.	6.1	48.8	15.2	18.2	12.1	3.18 (T)	1.18
Q21. People who get promoted in my department truly deserve it.	6.1	16.4	18.2	27.3	12.1	2.9 (T)	1.18
*Q47. I often wish I had more time to improve my work.	12.1	42.4	9.1	36.4	0.0	2.69 (T)	1.10

[Most of the questions rated SA = 5 ... SD = 1. Questions with (*) rated SA = 1 ... SD = 5]

DEMING'S POINT 12

Figure 22:   Degree of Support for Deming's Point 12

TQL doesn't appear to influence the LBNSY in this point.
The LBNSY managers realize the personnel are willing to do a
good job and good performance. They know that the requirement
for that is good supervision, education, good materials and
tools.   Although, the LBNSY managers have learned the TQL
methods, they are still, however, running the business with
traditional management practices.

The traditional reward system appears to be a barrier to
people's pride in workmanship. According to one interviewee
the attitude is, "It is not what you do, but who you know,"
for rewards and promotions. Further study and practice by the

LBNSY management is required in order to improve this particular Deming Point.

M. DEMING'S POINT 13: INSTITUTE VIGOROUS PROGRAM OF EDUCATION AND RETRAINING

Three survey questions were related to this point (see Table 15). None of the responses were supportive or opposed to this point. As in points 9 and 10, the respondents rated all questions to this point significantly lower than earlier points. Statistics presented in this section indicate that respondents are undecided about the following:

- The shipyard as an organization is willing to invest in developing their potential to be the best employees that they can be.

- The shipyard supports their desire to improve themselves, even if it is not related to their current jobs.

- Management encourages and provides education and retraining necessary to meet the future needs of the shipyard.

The average mean value of these questions is lower than the undecided line, 2.75 with standard deviation 1.0.

TABLE 15:   QUESTIONS RELATING TO DEMING'S POINT 13.

DEMING'S POINT 13							
QUESTIONS	SA%	A%	U%	D%	SD%	Mean	σ
Q77. The shipyard as an organization is willing to invest in developing my potential to be the best employee I can be.	0.0	39.4	27.3	24.2	9.1	2.96 (?)	1.01
Q38. The shipyard supports my desire to improve myself even if it is not related directly to my current job.	3.0	18.2	36.4	33.3	9.1	2.72 (?)	0.97
Q55. Management encourages and provides education and re-training necessary to meet the future needs of the shipyard.	0.0	24.2	21.2	42.4	12.1	2.57 (?)	1.00

[Most of the questions rated SA = 5 ... SD = 1. Questions with (*) rated SA = 1 ... SD = 5]

Figure 23:   Degree of Support for Deming's Point 13

LBNSY managers understand that the requirement of employees is to improve their education and to be updated. The TQL implementation by itself is proof of that. However, according to interviews, budget restrictions prevent regular framing and TQL training programs from meeting the present needs of personnel.

Further study and practice in TQL are required in order for management to provide training for the shipyard. The Government must also understand the necessity and priority of training and retraining to achieve improvement.

N. DEMING'S POINT 14: TAKE ACTION TO ACCOMPLISH THE TRANS- FORMATION

Two survey questions were related to this point (see Table 16). The statistics indicate that respondents are undecided about whether information is available about the overall quality improvement activities of the shipyard, and whether they trust management to act on most of the issues brought to its attention through this survey.

TABLE 16: QUESTIONS RELATING TO DEMING'S POINT 14

DEMING'S POINT 14							
QUESTIONS	SA%	A%	U%	D%	SD%	Mean	σ
Q72. Adequate information is available about the overall quality improvement activities of the shipyard.	3.0	48.5	15.2	30.3	3.0	3.18 (7)	1.01
Q57. I trust Management to act on most of the issues brought to its attention through this survey.	0.0	24.2	21.2	42.4	12.1	2.57 (7)	1.00

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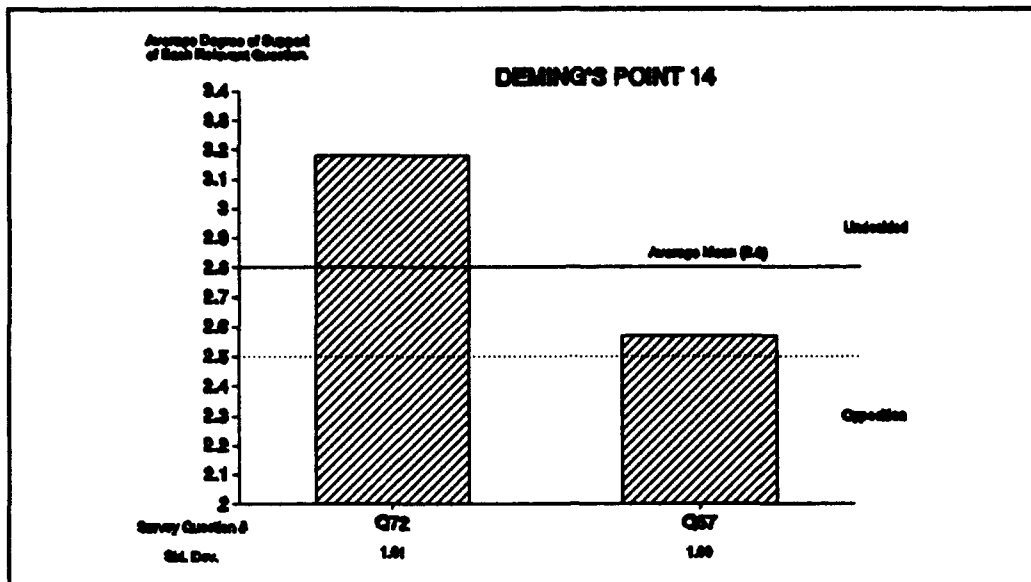
Figure 24: Degree of Support for Deming's Point 14

The transformation of LBNSY is going to take place through education and training. The quality teams, QMB's and PAT's, spread throughout the organization improve the shipyards processes toward TQL.

TQL by itself is a long-term process and requires study, discussion, patience and constant activity by everyone. LBNSY managers can improve more in this point.

O. OVERVIEW

Figure 25 shows the "degree of support" scores for each point. We can see that LBNSY management's efforts have had a positive influence on the constancy of purpose (Point 1), and the elimination of fear (Point 8).

Less influence has been attained on adoption of the new philosophy (Point 2), improvement of the system, $\sigma=0.96$ (Point

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5), institute training (Point 6), institute leadership (Point 7), elimination of numerical quotas (Point 11), and elimination of barriers to pride of workmanship (Point 12).
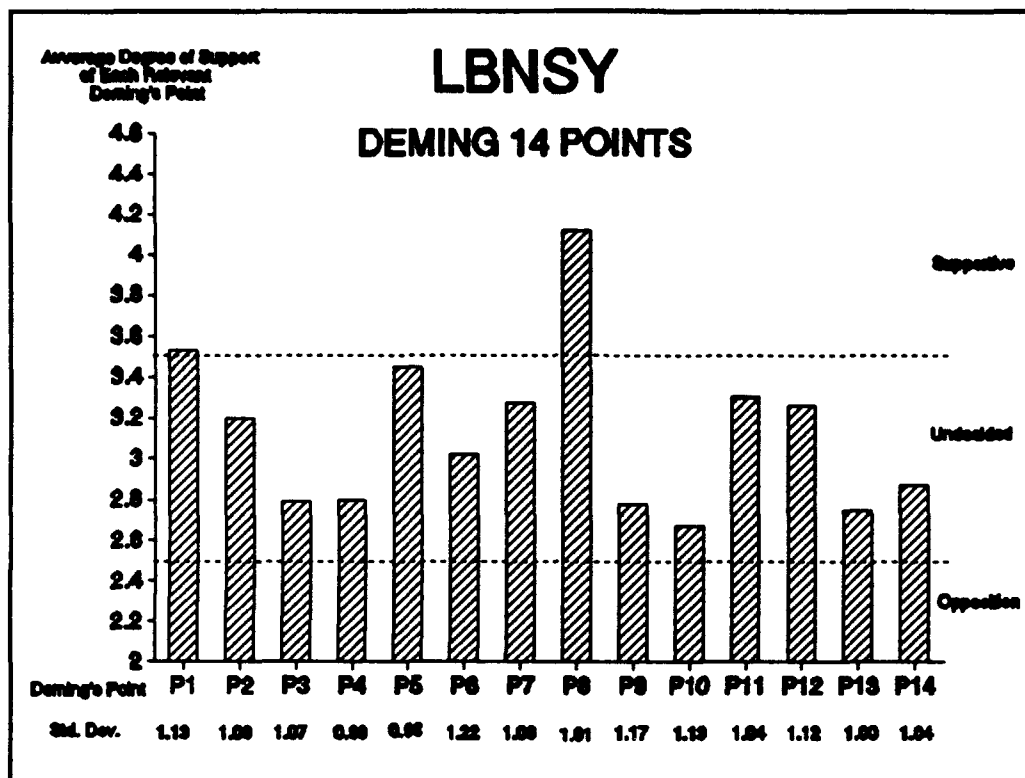
Figure 25: The Deming's Fourteen Points. (LBNSY, August 1993)

Points that appears to need more attention are ceasing dependence on mass inspection (Point 3), elimination of practices of awarding business on the basis of price tag alone, $\sigma=0.96$ (Point 4), breaking down barriers between staff areas (Point 9), institute vigorous program of education and training (Point 13), taking action to accomplish transformation (Point 14). The point with the lowest score was

elimination of slogans, exhortations and targets for the work force (Point 10).

VI. IMPLICATIONS FOR THE HELLENIC NAVY STATIONS

A. THE HELLENIC CHARACTER

It is widely accepted that all human beings have more or less the same physiological functions, wants and desires, talents and weaknesses. Yet, there are clear cultural differences between groups. When we examine different groups, both large and small, we notice that they appear to have particular characteristics. Some examples of plausible characteristic identities are as follows: The British are well known for their cool-headedness and unexcitability; the Germans for their love for work and obedience; the Americans for their pride in their Constitution. In the same way, one can say the Greeks are well known for their vigorous egoism, love of freedom, and lack of discipline. These characteristic identities are influenced by cultural and environmental factors as well as long term consistent training. Each of these characteristic features make each nationality unique.

Other nations are no better or worse than the Greek nation, but due to profound cultural influences, social pressures, education and training, the Greeks have developed a unique personality. The Greek character is strongly family oriented. They have maintained this character throughout the centuries. They take great pride in the roots of their families and maintain the belief that Greece is the Center of

the Universe. This belief is cultivated in the Greek environment itself. The archeological ruins, Byzantine Churches and monuments are not just the Greek ancestors' inheritance to modern Greece today, but are a part of the Greek character and modern Greece.

Through the study of 3000 years of Greek history, one can find evidence to support the enduring identity of the Greek character. This evidence is found in Greek Mythology, Homer's Iliad, the Thucydides' Peloponnesian War, the Tragedies of Aeschylus and comedies of Aristofanes, the Byzantine Empire, and the Revolution of 1821, the First and the Second World Wars, as well as the Resurrection of Democracy from the ashes of the Dictatorship. Through these lessons, we can say that history provides repeated evidence of the continuous reassertion of the character of the Greek people.

General Wellington, the winner in the battle of Waterloo said:

> It would be much easier to manage 40,000 British soldiers than 500 Greeks even for one hour. [Ref. 14:p. 121]

The American author, Samuel Gridley Howe, paraphrased that there is no better evidence to support that modern Greeks are the descendants of the ancient Greeks than the fact that their language is essentially identical, with minimal changes, as compared with other nations. For example, the names of cities are classical Greek. But the most substantial evidence is supported by the actual personality of the Greek. They are

astute, love their country and are full of life, yet they are also erratic and shrewd. [Ref. 14:p. 54]

The German historian, Karl Mendelssohn Bartholdy, as well as the American Ambassador in Greece, Thomas Takerman, in 1870 testified that the modern Greeks are descendants of the ancient Greeks because of their traditions and customs that have survived from ancient Greece. This observation is not characteristic of many other nations [Ref. 14:p. 59].

The Greeks have many things that unify them. This unification is obtained through their religion, their pride as a country, their language and their history. But these characteristics also divide their attempts to unify as a nation.

That egoism that sharpens the mind and made the Greeks first to see the world with their own eyes and not with the eyes of others is their major obstacle to national unity. It is this obstacle that has caused damage to their civilization. The independent individual arbitrary spirit but free ego of the Greeks makes them unable to tolerate loss of freedom or captivity. This is characteristic of the dissatisfaction and restlessness of the Greek character [Menius Apius p. 61] (nec libertatem nec servitutem pati possunt).

Freedom is appreciated by nearly all human beings and is the corner stone for Western civilization. We attain freedom through conquering our adversaries, our own anguish, our

egotistic intentions, in order to achieve self-actualization. According to Plato, freedom means self-control .

"Το'άρχον αὐτό ἑαυτοῦ." [Ref. Plato rules 415a]
"Αὐτοκράτιαν ἐν παντί." [Ref. Plato rules 415d]

The uncontrollable selfishness of the Greek political leaders, encompassed by their denial to lower their prodigious egos in order to attain team work, has had disastrous consequences throughout the centuries. The political leaders are full of ideas and theories but can't accept the idea of someone else being superior and, therefore, are unwilling to cooperate, or matter if the opponent is superior, equivalent or inferior to him. Impatience is a major flaw in the Greek character.

Many great Greek scholars have failed to receive recognition in life only to attain recognition after death through their writings and reputation. Only when out of the contest on out of the competition is the person offering something appreciated.

The Greek character typically wants to be the first in everything, from attaining power and recognition to the point of naming himself Mr. President or Mr. Director of the smallest individually-owned company to the largest organization. By attaining this power and authority, he becomes a bureaucrat and tyrannical landlord to the faithful civilian, and thereby justifies his superiority.

The goal of the Greek is not to be equal to his competitor or rival but to bypass him with disregard and to relegate his

The goal of the Greek is not to be equal to his competitor or rival but to bypass him with disregard and to relegate his competitor to an insignificant level - thereby never again having the capability to be threatened by him. [Ref. 14:p. 293]

Most of the businesses in the private sector are usually family-owned businesses. Even in the large companies, the top management is governed by the family. Personal contacts have stronger value than educational degrees. The same phenomenon exists in the public sector. Only members in the "family" may be in family organizations. For example, the grandfather opens the door for the father and the father for the son, and so on. In this system, people with true abilities, but without contacts, stay in the margins and never have the opportunity to contribute their assets and abilities. The realization is that Greece is a poor country with limited opportunities for the educated masses, thereby encouraging the masses to become ingenious in their methods to attain their goals.

Dr. Charalambos Andoniadis, a Greek Professor of Harvard University, said:

Εχουμε του κόσμου τούς ειδήμονες, ανθρώπους μεγάλου επιστημονικού κύρους. Τό ερώτημα ειναι, γιατί οι άνθρωποι μαραζώνουν, οταν έρχονται στην Ελλάδα; Οποια κυβέρνηση καταφέρει να τους προσελκύσει να εργαστούν, θα αλλάξει οριστικά το μέλλον της χώρας.

This quote is paraphrased as follows:

We have many smart and valuable people but they cannot work in Greece and therefore are forced to leave their

country. The Greek Government that can attract these people will change the future of the country. [Ref. 14:p. 308]

This writing describes the advantages and the disadvantages of being a Greek. This aspect of the Greek culture has not changed for centuries.

B. THE HELLENIC NAVY STORY

The story begins in about 485 BC. The Athenians and all the Greek cities faced the threat of invasion from the Persians. The Gods through Pethia in Delfy advised:

"Τά ξύλινα τοίχη θά σώσουν την πόλιν."

The translation being, "The city will survive only with wooden walls." That was the beginning, the establishment of a powerful Naval Fleet. All the Greek cities contributed financially for the Athenians to maintain the fleet for protection, and to maintain dominance in the area.

This sea dominance remained during the Macedonian and Hellenistic, the Roman, and Byzantine periods. Occasionally the Byzantine Empire was too weak to protect inland areas, but their power was never lost at sea. This dominance at sea continued after the fall of Constantinoupolis, the capital of the Empire. The Ottoman Empire, however, did not have a good reputation at sea nor had the intentions to expand their activities in that area. The fact that pirates attacked the merchant ships and cities by sea gave them the privilege to have cannons and other ammunition. Therefore, the Hellenic

Navy maintained the merchant schema. During the Greek Revolution in 1821, the Hellenic Navy was ready for action and offered many services.

Not until the First World War did Greece again have sea dominance. During the Second World War, the Hellenic Navy contributed to the repeal of the Fascist Italian Invasion. When the Germans invaded Greece, the Hellenic Navy moved the fleet to Egypt and continued the fight against Fascism with the other free world countries.

In 1970 the DD VELOS sailed to Italy to demonstrate the dissatisfaction of the military Government who gained power through coup d'etat.

The above historical writings give a sampling of the environment and the culture of the Hellenic Navy, the Navy that never ceased to serve their country.

The Hellenic Naval Academy and the schools for petty officers were established in 1845. Young people from the age of 16 and 18 years old joined the Navy and spent their entire lives in it.

The Hellenic Navy is a type of family organization, like a club for people whose job is a type of hobby. The saying is that the Navy is not a job to make money, but a prestigious job. This idea has been maintained throughout the centuries, even with major political changes in the Government. The Hellenic Navy is an organization strictly based on tradition and hierarchy. The honor belongs to the rank. The Hellenic

Navy as an organization has proved how the Greeks can attain discipline and how they can improve their life.

The Hellenic Navy has a notably different mentality and culture as an organization in comparison to the public and private sectors. The people who join the Navy spend their entire career and sometimes their entire lives in the Navy. Many retirees are working for the Navy as consultants. Thereby, many opportunities are available to naval officers.

The Naval Leaders have the power to make decisions with minimal bureaucratic controls over them. The egotistic and independent Greek character is an advantage for the Navy. Naval leaders impose their viewpoint and preferences because the Navy is their "family" and thereby treat the members of the organization as family members.

Greece's location in a geographically crucial area, dictates that Greece should have a powerful fleet. The Hellenic fleet has been renovated from time to time, but maintains many of her ships as long as possible. This demands extra effort from the people. The working hours may be fixed, but, in reality, no one leaves until the work is completed. This is not an order, it is a way of life. The people in the Navy know that the ship is the Navy and the Navy is a part of themselves.

On closer observation we see that the Hellenic Navy, the organization with a long history and traditional values, is a unique element in the Greek society. The Hellenic Navy

enables the best aspects of the Greek character to unfold via "family" discipline and respect.

Hellenic Naval Stations are a part of the Hellenic Navy. In Greece there are three main Naval Stations. Salamina, Souda Bay, and Leros (the smallest). The organizational pyramids of these Naval Stations place civilians and military people at all levels. These civilians and military diversified personnel are cooperative resources who keep the Hellenic fleet in readiness.

C. TQL IN THE HELLENIC NAVAL STATIONS

By reviewing Deming's Fourteen Points and relating the reality of the Long Beach Naval Shipyard to the Hellenic Navy, one can scrutinize the applicability of TQL to the Hellenic Naval Stations.

1. Constancy of Purpose

The point of constancy of purpose could be adaptable to the Hellenic Navy, because there is both a need and a tradition of determination. For thousands of years Greece has had a Naval tradition and depended on the Navy for protection and to maintain its trade routes in the Mediterranean. Because of economic restrictions and international economic crises, Greece tries to reduce military expenses. The Navy personnel often work under less than ideal conditions to maintain the new ships and to apply ingenious methods in order to reduce the cost of maintenance.

Like LBNSY, the personnel in the Hellenic Naval Stations recognize their customers and "do their best" to satisfy them. Some of their customers are:

- The people that operate and maintain the ships.
- The leadership of the fleet.
- The General Staff.
- The Minister of Defense.
- The Government.
- The European Community (proposed).
- The North Atlantic Treaty Organization (NATO).

TQL will probably enable help the Hellenic Naval Stations to focus more on long range results, minimizing crisis Management and unifying Military and Civilian personnel under the same goals.

2. Adopt New Philosophy

Greeks are known for their curiosity and immediate openness to new ideas. About 300 Hellenic Navy personnel, military and civilians, graduate annually from various postgraduate and other professional schools in Greece and western countries' institutions. Therefore, they maintain the educational background to understand and create changes in their jobs. TQL has many new revolutionary concepts which would be very attractive to the Greeks. On the other hand, because Greeks must be convinced of TQL's usefulness, they must first examine it very critically. For TQL to be embraced by the Greek Naval Stations, a strategy is needed, which is

discussed at the end of this chapter under Deming's fourteenth point. However, when the Hellenic Naval Leaders become acquainted and familiar with the TQL philosophy, it will be much easier to transfer it to subordinates - due to strong discipline inherent in the Greek Navy. This philosophy, after it is reformed and adapted to the Hellenic mentality, needs and environment, will be of great service to the Hellenic Navy.

Like LBNSY, TQL in Hellenic Naval Stations will help people understand the idea of the customer and his expectations. There should be no difficulty with the statistical techniques because people have the proper educational background. The time of transformation will probably not be less than other U.S. organizations because of the uniqueness of the Hellenic character and his criticism.

3. Cease Dependence on Mass Inspection

Due to a large bureaucracy, an enormous and overloaded inspection system exists in the Hellenic Naval Stations, even for routine jobs. Under this system, it is difficult for any job to be accomplished. The Naval Leaders must take the responsibility and adapt the process according to the circumstances. In this way the inspection may be bypassed when easily instituted, but the rules may still be enforced if somebody thinks that they are required. TQL can change this process to allow only necessary inspections without leadership risk.

4. Awarding Business On the Price of the Label

We have shown that the idea of saving money by awarding business based on price alone is basically wrong. However, the idea of being economical versus expensive is applicable. There always appears to be something else that the Navy must have -- something better -- which is often expensive. The optimal solution is to be clear on what is needed and to be able to define that need specifically.

Like LBNSY, Hellenic Naval Stations make purchasing decisions based on cost. Because of economic restrictions and the National strategy to improve the economy of the country, Hellenic Navy Stations try to motivate the local market to produce spare parts and supplies. This requires flexibility in cost and in quality. Since the national strategy cannot be circumvented, there will be some difficulty in applying this point effectively unless economies of scale can be proven.

5. Improve the System of Production and Service

The major goal of the Hellenic Navy Stations is to minimize the time for repair, to minimize operational cost, to optimize the human and material resources, and to support the local market.

The organization will be more effective following implementation of the PDCA cycle and statistical control methods because better communication will occur between the Naval Station and its customers. This idea should be easily accepted because it is a key that opens new areas to

improvement and reveals new perspectives of the organization. It will be helpful to have a new way to think and act. TQL is also helping the American Naval Shipyards to improve systems and processes, similar to systems and processes in the Hellenic Navy.

6. Institute Training

This point is relevant for Hellenic Naval Stations. The Hellenic Navy provides specific technical training for every type of every particular job. Military or Civilian personnel that serve are taught the appropriate skills to perform their job. The need for improvement of this point is similar to that of LBNSY, where training is sometimes conducted on a hit or miss basis and affected by money constraints. The training program in the Hellenic Naval Stations could be improved by changing the belief that training is just a luxury, to a concept that training is a necessity for efficient operation.

The establishment of TQL training would not be difficult because institutions already exist to conduct it. TQL could be practiced in the Naval schools at different levels. TQL seminars can be included in the already existing weekly seminar program. Also, guest lecturers can be brought from the US to speak to senior leaders about the TQL program.

7. Institute Leadership

The small size of the Hellenic Naval Stations as well as the Greek Family aspect allows the Naval Leaders to know

almost everyone personally and to be able to handle each of them as family members. Hellenic Naval leaders are very interested in improving their organizations and TQL will assist them in promoting better leadership at all levels. Through TQL Hellenic Navy leaders can improve their mentoring skills as well as their supervisory skills. This will improve cooperation between civilians and military personnel. A focus on leadership will relate clearly the concepts of quality and productivity. Management will be more supportive and understanding when new responsibilities come on. This philosophy is similar to that at LBNSY.

The liberal and humanistic spirit cultivated in the Naval Schools and War Colleges parallel with Deming's approach to Leadership. The War Colleges provide the opportunity for Naval Leaders to handle people with new methods and techniques about leadership. TQL will expand that knowledge and help the Naval Leaders to readily accept the opinions and recommendations of their subordinates.

8. Drive Out Fear

Like LBNSY, fear is not characteristic of the atmosphere in the Hellenic Naval Stations. It is very difficult for an employee (civilian or military) to lose his job. The power of the Unions is strong and protects the rights of the civilian employees.

The liberal attitude of the civilian employees changed the traditional militaristic mentality. Only rarely does one

meet a military leader believing that authority and power comes through fear.

TQL can further help bring about further improvement in changing the militaristic attitudes of the rare old style leaders. All senior leaders should recognize that if their subordinates (civilian or military) feel free to give their opinions and ideas, the whole operation of the station and communications can be improved. At LBNSY there is already increased freedom to make recommendations for improvement, due both to TQL and the culture.

9. Break-Down Barriers Between Staff Areas

Many barriers exist in the Hellenic Navy between civilian and military, officers and petty officers, members of different political affiliations, different specialties and other divisions. TQL can help break some of these barriers by educating the different areas and groups in the importance of working in teams, both interdepartmental and cross-functional. The communication among areas ranges from adequate to slow and occurs only in particular areas. Similar to the LBNSY situation, Hellenic Navy Stations communicate only vertically to departments because of the hierarchical structure of the organization.

Using quality teams in the organizational schema of the Hellenic Naval Stations will help to break down communication barriers.

10. Eliminate Slogans, Exhortations and Targets for the Work Force

This is an ambiguous point for the Hellenic reality. Slogans and exhortations are needed to promote morale and have long been a part of the Greek culture. But according to TQL, slogans and exhortations destroy the quality of the organization. As shown at LBNSY, the U.S. Navy also has difficulty with this point.

People sometimes like to have slogans. But the important Point is that these slogans be created by them and not imposed on them by others. TQL can improve operations in the Hellenic Naval Stations by eliminating the use of unnecessary or useless slogans.

Achieving specific goals, even unreasonable ones, is common to the Greek character. Slogans work positively when they are connected with the past and the old experience. Implementing this point in the Hellenic Naval Stations will be more difficult than some of the others.

11. Eliminate Numerical Quotas

Bureaucracy has instituted some quotas without planning or practical rationale. Therefore, TQL will add improvements to this area. An example of a numerical quota that is not useful is that for assignments. Many skilled personnel, such as machinists, are crucial to operations on land in Naval Stations. However their skills are wasted when they are assigned to sea duty as duties on the ship fall outside of their extremely specialized training. As a result,

the Navy does not fully maximize the potential contributions of its personnel. In addition, not being able to perform the tasks that these personnel were trained for causes low satisfaction.

As previously discussed, the Greek culture must change to this new concept before TQL can be implemented. Greek Naval leaders must be educated to understand the negative impact of the numerical quotas. TQL will then be accepted and supported in their organizations.

12. Remove Barriers to Pride of Workmanship

Implementation of this point is hampered somewhat by age and the material condition of Greek warships. Many of the Greek Naval ships were commissioned between the end World War II and the 1960's. The mean age of the fleet is 20-25 years. This fleet of ships has been maintained by the persistence and quality of the training achieved by the Greek Navy. Maintaining and repairing an old ship or old machinery is not always cost effective nor does it guarantee job satisfaction. Trying to maintain a ship that is practically non-maintainable make it very difficult to achieve pride of workmanship.

However, the Hellenic Navy is gradually replacing the old ships with modern ones. The Hellenic Naval Stations are following that lead by expanding their repair and service capability. TQL will help the Naval leaders to bypass the skepticism that poor tools and machinery create. Along with

the acquisition of newer and more modern ships by the Hellenic Navy, pride of workmanship will be enhanced.

13. Institute Vigorous Program of Education and Training

As Greece has a small military force, its effectiveness must be enhanced through a fast technological evolution. Training must therefore be a basic element in the Hellenic Navy. Only with experience and the ability to learn from mistakes can one pass into and be a part of the future.

The Hellenic Navy institutes training not only for the organization's benefit but also for the employees' benefit. There are optional training packages that the personnel can complete to obtain extra knowledge. However, the implementation of, TQL could help leaders to realize the high value of training for its members and the organization. Also, it can assist them to see the value of retraining, especially for those personnel who change jobs.

14. Take Action to Accomplish the Transformation

Greeks historically cannot accept imposed changes. Changes are accepted only through strategic planning. The following example makes this point clear.

In 1840 the President of the Greek Government, Ioannis Kapodistrias, attempted to persuade the Greek people to cultivate the potato to improve the Greek agriculture and economy. The Greek people resisted and were uncooperative. Ioannis Kapodistrias, understanding the Greek mentality, placed all the potatoes in storage and gave instructions for

them to be guarded. This action, planted the idea in the mind of the Greek people that the potato was something of great worth. The Greek curiosity and foxiness was therefore stimulated. After only a few months the first potatoes were growing in the fields. The Greek people would not let something of such great value be held back from them.

An identical transformation could take place in Greek organizations. TQL should be implemented in the beginning on a small scale without declarations and festivities. For instance, a small naval station that is not highly visible would be appropriate. This experiment should be secretly implemented and initiated by the people in the organization. The people outside of the experimental group should not be aware of what the experimental group is doing. Stimulate their curiosity but don't give them details. Allow them to obtain the answers to their questions by themselves. If they obtain the answers easily, they will not appreciate it. The greater their curiosity, the greater their desire to learn and understand. In this way the Greek people will be able to adapt TQL to their reasoning and to their individualized requirements. When they believe that it is their invention, a part of their evolution, created by them, they will fight to maintain the "Hellenic Quality Cooperation (HQC)."

VII. CONCLUSIONS AND RECOMMENDATIONS

A. CONCLUSIONS

The _primary_ question of this thesis is:

- Is TQL as it is practiced by the LBNSY applicable to Hellenic Naval Stations? If so, how?

The _secondary_ questions needed to be addressed are:

- What problems occurred in the implementation of TQL at the LBNSY and how were the problems resolved?

- How does the work force view the effectiveness of TQL at the LBNSY?

- How was the transformation from traditional management practices to TQL initiated and how was it maintained?

The conclusions from the findings of this study are as follows, beginning with the secondary questions:

1. Secondary Questions

Q: What problems occurred in the implementation of TQL at the LBNSY and how were the problems resolved?

The cultural resistance, downsizing of U.S. military expenses; organizational structure, and the length of the TQL training program are the major problems faced for the implementation of TQL in LBNSY. The LBNSY management is trying to handle these problems of transformation through training and expansion of the quality team activities.

Q: How does the work force view the effectiveness of TQL at the LBNSY?

Both the military and the civilian management leaders at LBNSY understand the necessity for quality and therefore

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their enthusiasm for the TQL philosophy allows them to overcome these obstacles. According to surveyed management personnel, transformation is seen in most of Deming's Fourteen Points as follows:

- LBNSY management's efforts have had a positive influence on the constancy of purpose (Point 1), and the elimination of fear (Point 8).

- Less influence has been attained on adoption of the new philosophy (Point 2), improvement of the system, (Point 5), institute training (Point 6), institute leadership (Point 7), elimination of numerical quotas (Point 11), and elimination of barriers to pride of workmanship (Point 12).

- Points that appears to need more attention are ceasing dependence on mass inspection (Point 3), elimination of practices of awarding business on the basis of price tag alone (Point 4), breaking down barriers between staff areas (Point 9), institute vigorous program of education and training (Point 13), taking action to accomplish transformation (Point 14).

- The point that needs particular care is elimination of slogans, exhortations and targets for the work force (Point 10).

Current military leaders at the LBNSY are acquainted with TQL methods and are supportive for the transformation from traditional management.

Q: How was the transformation from traditional management practices to TQL initiated and how was it maintained?

Training of the senior personnel was the major lever to move the LBNSY management from the traditional management practices to quality methods. Training and retraining all the management levels is how LBNSY management plan to guide the shipyard towards full TQL implementation.

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2. Primary Question

Q: Is TQL as it is practiced by the LBNSY applicable to Hellenic Naval Stations? If so, how?

TQL is essentially the only measure to effectively manage recent problems and the future needs of the Hellenic Naval Stations at a reasonable cost. The expected obstacles in implementation are:

- Recent economic problems of the country.

- Cultural uniqueness of the military and civilian employees.

Due to the economic situation in Greece, the expectation for increased financial investment in training programs is low. These economic obstacles will obviously affect the TQL training program. But the path to quality is through proper training.

The employees are accustomed to the principles of pride in workmanship, awarding businesses on the price tag alone, and having slogans and exhortations for the work force.

It is difficult to tell whether cultural uniqueness will cause positive or negative reactions to the implementation of TQL. The reaction will depend largely on the strategy used to persuade the Naval leaders that TQL is what the Hellenic Naval Stations need. The length and cost of TQL training and education will definitely be a negative element. Hellenic leaders tend to be more attracted to programs that provide immediate results.

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If TQL can be implemented at the Hellenic Naval Stations, it could change the current status quo performance to a quality performance.

B. RECOMMENDATIONS

1. LBNSY

No limit to improvement exists in TQL. The LBNSY must continue improvement in all of Deming's Fourteen Points, but according to this research, the following points need the greatest attention: (1) Elimination of slogans and exhortation targets for the work force; (2) Cease dependence on mass inspection; (3) Breaking down barriers between staff areas; (4) Institute a program of education and retraining; and (6) Taking action to accomplish the transformation.

2. Hellenic Naval Stations

The combination of the Greek culture, the critical Greek character, and the unique TQL ideas require a particular strategy to obtain benefit from TQL. The enthusiasm for TQL methods from the Hellenic Naval students that graduate from NPS could be a lever to move the Hellenic Navy towards Quality. All Hellenic Naval students at NPS should take all TQL courses offered. These officers can then transfer the idea of TQL in Hellenic Navy and particularly in Hellenic Naval Stations. The results of individual experiments conducted by these officers can be used to persuade senior Hellenic Naval leaders of the necessity for implementing TQL in Naval Stations. A course describing the implementation of

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TQL at the LBNSY and other shipyards could be designed as a training tool for the Hellenic Naval Stations. It is imperative that the Hellenic Naval leaders understand that Quality Methods are the future of organizations.

Closer cooperation with U.S Government and particularly with U.S. Naval Shipyards working with TQL will be valuable for the Hellenic Naval Stations and the Hellenic Navy.

3. Suggestions for Further Research

This thesis has focused on a narrow target: Implementation of TQL at one shipyard. This study could be expanded and extensively analyzed at other government or private sector shipyards. Comparison of the effectiveness of the applied quality methods for transformation at these shipyards will give us valuable information.

At the present time, TQL is expanded only throughout the management areas at LBNSY. Research of future interest would be to examine the implementation of TQL practices and training with the water front employees. This research should then be compared to the improvement made by the LBNSY management.

Each individual point of Deming's Fourteen Points could also provide individual research questions with regard to behavioral aspects of the individual in the organization.

Studies in the area of Quality have no boundaries. To obtain quality, one must be willing to change and to improve himself first and then apply these principles to organizational life.

APPENDIX A

TQL SURVEY QUESTIONNAIRE

The following pages present the TQL questionnaire that was distributed to LBNSY, together with the cover letter that was sent to all management personnel who had received the TQL training graduates in 1992.

MEMORANDUM

From: Code 100Q.1
To: Questionnaire Participants

Subj: TQL SURVEY

Encl: (1) TQL Survey Questionnaire

1.   LCDR Leonidas Maganares of the Hellenic Navy is a post graduate student from the Naval Post Graduate School in Monterey, California. He is here to conduct a random survey in TQL.

2.   Please complete the following questionnaire to the best of your capability. Answer each question with only one response. Upon completion, return questionnaire to Code 100Q.1 by Friday, 10 September 1993.

SHIRLEY WATKINS

This survey is designed to obtain your thoughts about your job and organization. Your answers will be used for thesis research at Naval Postgraduate School(NPS). Your honest opinions are important and sincerely welcome. Please read each question carefully before responding. Most can be answered by **circling the letter** that most nearly represents your opinion.

EXAMPLE QUESTION:

In the following questions   A = strongly Agree

    circle one letter   a = agree

                       U = Undecided

                       d = disagree

                       D = strongly Disagree

1. I like working with my fellow   A   a   U   d   D

    employees.

Your individual answers to questions will not be given to anyone in your organization. Please do not sign your name to this survey. The information you provide will be combined with the information of other employees to evaluate general attitudes and opinions of employees in your organization. The answers to these questions will be used for research purposes and will not be used to identify you or reveal your individual responses.

       Some Definitions You Will Need To Know Before You Start The Survey:

Management: All leaders from first line supervisors to the Shipyard Commander

Customer: The person or organization for whom you provide a product or service

Employees: All people working and/or assigned to the Shipyard, including management

     "Your assistance in this effort is appreciated"

In the following questions
eircle one letter.

A - strongly Agree
a - agree
U - Undecided
d - disagree
D - strongly Disagree

1. Management believes and acts as though   A   a   U   d   D
   employees are the most important asset of the
   shipyard.

2. The great emphasis on statistical process   A   a   U   d   D
   control has been a waste of time and money.

3. I sense that Management is starting to pay   A   a   U   d   D
   more attention to the long range results of
   their actions.

4. Many employees talk as though they accept the   A   a   U   d   D
   new quality philosophy while actually resisting
   it.

5. I have a clear idea of who my immediate   A   a   U   d   D
   customers are and what they need.

6. I don't have enough opportunity to use   A   a   U   d   D
   my abilities in my present job.

7. Training in this shipyard is done on a   A   a   U   d   D
   "hit or miss" basis.

8. There is good cooperation and communication   A   a   U   d   D
   between departments.

9. I frequently worry about the future of   A   a   U   d   D
   the shipyard.

In the following questions
circle one letter.

A = strongly Agree
a = agree
U = Undecided
d = disagree
D = strongly Disagree

10. Management seems to believe that employees need numerical goals to stay motivated.   A   a   U   d   D

11. Management has helped me understand how quality and productivity are related.   A   a   U   d   D

12. Our Management seem to be unable to plan well for tomorrow because of problems they need to deal with today.   A   a   U   d   D

13. I feel that Management is supportive. and understanding when we have new responsibilities and tasks to learn.   A   a   U   d   D

14. The shipyard often fails to live up to its commitment to customer satisfaction.   A   a   U   d   D

15. I am actively involved in trying to improve my work.   A   a   U   d   D

16. We depend heavily on inspection to make sure that quality products and services are being delivered to our customers.   A   a   U   d   D

17. My training fails to keep up with technological and organizational changes.   A   a   U   d   D

18. With all of the changes going on, I am no longer certain what my responsibilities are.   A   a   U   d   D

In the following questions
circle one letter.

A = strongly Agree
a = agree
U = Undecided
d = disagree
D = strongly Disagree

19. My supervisor helps me to actively apply
my training in my work.   A   a   U   d   D

20. I often feel frustrated or angry because
I have no control over my workload.   A   a   U   d   D

21. People who get promoted in my
department truly deserve it.   A   a   U   d   D

22. Management sees to it that, whenever
possible, all areas of the shipyard share
in sacrifices that need to be made.   A   a   U   d   D

23. There is a great waste of materials and
suplies in my department.   A   a   U   d   D

24. My department works closely with our
suppliers in order to improve the
quality of the materials they send us.   A   a   U   d   D

25. Statistical process control is the only
really essential thing we need to
continuously improve our quality.   A   a   U   d   D

26. Information is shared and cooperation is
emphasized between departments.   A   a   U   d   D

27. I don't really understand what
Management is trying to do in the area
of quality improvement.   A   a   U   d   D

In the following questions   A - strongly Agree
    circle one letter.   a - agree
                              U - Undecided
                              d - disagree
                              D - strongly Disagree

28. To achieve greater productivity,   A   a   U   d   D
    Management emphasizes quantity more than
    quality.

29. I feel free to recommend improvements to   A   a   U   d   D
    my job to my supervisor.

30. I believe that the focus on quality is   A   a   U   d   D
    just one more program that will fade
    away like all the others.

31. My supervisor tries to remove barriers   A   a   U   d   D
    that prevent me from doing my work well.

32. The procedures we use in this department   A   a   U   d   D
    help me to do a good job.

33. The work standards or quotas that I have   A   a   U   d   D
    been given are arbitrary and unreasonable.

34. It often seems like this operation is   A   a   U   d   D
    run on the "idea of the month".

35. I have a clear idea of what the   A   a   U   d   D
    mission of this shipyard is.

36. Management has been sensitive in working   A   a   U   d   D
    with employees to get their
    participation in the quality improvement
    effort.

In the following questions
circle one letter.

A = strongly Agree
a = agree
U = Undecided
d = disagree
D = strongly Disagree

37. Before employees are given new jobs and
responsibilities, they receive training
that is appropriate and complete.   A   a   U   d   D

38. The shipyard supports my desire to
improve myself even if it doesn't relate
directly to my current job.   A   a   U   d   D

39. Unless we inspect incoming materials, we
cannot trust our suppliers to provide
quality materials.   A   a   U   d   D

40. I am often encouraged to compete with
others to be more productive.   A   a   U   d   D

41. Management rewards team efforts more
than individual ones.   A   a   U   d   D

42. Management is actively involved in
helping me to stabilize and improve
my work process.   A   a   U   d   D

43. I have a clear idea how my department's
goals fit in with the organization's goals.   A   a   U   d   D

44. Management often asks us to "take pride
in our work".   A   a   U   d   D

45. There is too much rework necessary for
us to eliminate inspections.   A   a   U   d   D

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In the following questions   A = strongly Agree
    circle one letter.   a = agree
                                U = Undecided
                                d = disagree
                                D = strongly Disagree

46. Little effort is made to get my opinions
    and thoughts on work matters.   A   a   U   d   D

47. I often wish I had more time to improve
    my work.   A   a   U   d   D

48. Management follows through on recommendations   A   a   U   d   D
    for process improvement submitted by
    improvement teams.

49. I am having difficulty relating the new   A   a   U   d   D
    quality improvement philosophy to my work.

50. New employees don't understand what is   A   a   U   d   D
    expected of them.

51. I am so busy that I don't have enough   A   a   U   d   D
    time to spend on defining and improving
    my work process.

52. Targets that are set by Management   A   a   U   d   D
    include tools and methods for reaching them.

53. My supervisor leads by setting a good   A   a   U   d   D
    example to follow.

54. There is a strong sense of "us" vs."them"   A   a   U   d   D
    between departments in the shipyard as a
    whole.

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In the following questions
circle one letter.

A = strongly Agree
a = agree
U = Undecided
d = disagree
D = strongly Disagree

55. Management encourages and provides
education and re-training necessary to
meet the future needs of the shipyard.

A a U d D

56. Management relies less on inspection and
rework and more on helping us improve the
work process we use.

A a U d D

57. I trust Management to act on most of the
issues brought to its attention through
this survey.

A a U d D

58. If I work hard I can do better than the
work standard that is set.

A a U d D

59. I believe that Management is strongly
committed to carrying out the mission of the
shipyard as stated in the mission statement.

A a U d D

60. The tools and work environment I have
enable me to produce quality work.

A a U d D

61. I want to learn more about how to
improve my work process.

A a U d D

62. Management doesn't appear to have adequate
understanding of statistical methods for
improving our work processes.

A a U d D

63. Management seems afraid to meet
employees face to face.

A a U d D

In the following questions
<u>circle one letter.</u>

A = strongly Agree
a = agree
U = Undecided
d = disagree
D = strongly Disagree

64. Our shipyard really seeks to learn who our customers are and what they expect.   A   a   U   d   D

65. Management may stress quality of supplies, but they still make purchasing decisions based on the immediate cost.   A   a   U   d   D

66. If everyone just tries harder, we can solve our quality problems.   A   a   U   d   D

67. We have been using statistical process control for a while, but it doesn't seem to be working.   A   a   U   d   D

68. I am confident that my work process produces excellent quality.   A   a   U   d   D

69. Current work standards or quotas make it difficult for me to produce good work.   A   a   U   d   D

70. The training department is actively involved in teaching employees the tools necessary for quality improvement.   A   a   U   d   D

71. Management seems afraid that they will lose control if we are given more responsibility for our work.   A   a   U   d   D

72. Adequate information is available about the overall quality improvement activities of the shipyard.   A   a   U   d   D

In the following questions
circle one letter.

A = strongly Agree
a = agree
U = Undecided
d = disagree
D = strongly Disagree

73. My supervisor seems to understand little
    about my job.   A   a   U   d   D

74. Important values are often compromised
    in decisions made here.   A   a   U   d   D

75. The risks of having a single supplier
    for an item out weigh the benefits.   A   a   U   d   D

76. Our work team includes members from
    other departments when they are needed
    to solve a problem.   A   a   U   d   D

77. The shipyard as organization is willing
    to invest in developing my potential to
    be the best employee I can be.   A   a   U   d   D

78. Improvement activities are limited
    almost entirely to manufacturing and
    production.   A   a   U   d   D

79. I belive that a lot of people in my
    department are afraid their jobs will
    be cut if quality and productivity
    increase.   A   a   U   d   D

80. I frequently worry about being fired.   A   a   U   d   D

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	Yes	No	Don't Know

81. Have you served as a member of a Process Action Team?   Y   N   ?

82. Have you served as a member of a Quality Management Board?   Y   N   ?

83. Have you served as a member of the Executive Commitee?   Y   N   ?

84. Have you served as a TQL team advisor / facilitator?   Y   N   ?

85. Have you ever had any training in TQL?   Y   N   ?

86. What is your employment status? (choose one only.)

    ☐ Civilian: Career/career conditional
    ☐ Civilian: Temporary
    ☐ Civilian: Contractor
    ☐ Military: Active duty
    ☐ Military: Reserve on temporary active duty
    ☐ Other

87. How long have you worked for this shipyard? (choose one only.)

    ☐ Less than one year   ☐ 11-15 years
    ☐ 1-5 years   ☐ 16-20 years
    ☐ 6-10 years   ☐ more than 20 years

"THANK YOU FOR COMPLETING THIS SURVEY"

APPENDIX B

SURVEY QUESTIONS GROUPED BY DEMING'S FOURTEEN POINTS

Questions grouped by Deming's Fourteen Points are presented, showing the aggregate responses to the survey. The response frequencies, mean values and standard deviations are shown for each question. The data are presented in descending order of mean values, indicating the measure of support for each Deming's points.

APPENDIX B

SURVEY QUESTIONS GROUPED BY DEMING'S POINT

QUESTIONS	SA%	A%	U%	D%	SD%	MEAN	σ
DEMING'S POINT 1							
Q5. I have a clear idea of who my immediate customers are and what they need.	57.6	39.4	3.0	0.0	0.0	4.54 (+)	0.56
Q35. I have a clear idea of what the mission of this shipyard is.	30.3	54.5	9.1	6.1	0.0	4.09 (+)	0.8
*Q18. With all of the changes going on, I am no longer certain what my responsibilities are.	3.0	18.2	3.0	45.5	30.3	3.8 (+)	1.1
Q43. I have a clear idea how my department's goals fit in with the organization's goals.	24.2	48.5	12.1	12.1	3.0	3.78 (+)	1.05
Q27. I don't really understand what Management is trying to do in the area of quality improvement.	3.0	12.1	15.2	60.6	9.1	3.60 (+)	0.93
Q59. I believe that Management is strongly committed to carrying out the mission of the shipyard as stated in the mission statement.	15.2	45.5	21.2	15.2	3.0	3.54 (+)	1.03
*Q34. It often seems like this operation is run on the "idea of the month."	6.1	15.2	33.3	33.3	12.1	3.30 (?)	1.07
Q3. I sense that Management is starting to pay more attention to long range results of their actions.	0.0	39.4	18.2	39.4	3.0	2.93 (?)	0.96

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QUESTIONS	SA%	A%	U%	D%	SD%	MEAN	σ
Q12. Our Management seems to be unable to plan well for tomorrow because of problems they deal with today.	6.1	57.6	12.1	24.2	0.0	2.54 (?)	0.93
*Q22. Management sees to it that, whenever possible, all areas of the shipyard share in the sacrifices that need to be made.	0.0	24.2	21.2	39.4	15.2	2.54 (?)	1.03
DEMING'S POINT 2							
*Q28. To achieve greater productivity, Management emphasizes quantity more than quality.	0.0	0.0	27.3	60.6	12.1	3.84 (+)	0.61
Q64. Our shipyard really seeks to learn who our customers are and what they expect.	9.1	66.7	9.1	15.2	0.0	3.69 (+)	0.84
*Q49. I am having difficulty relating the new quality improvement philosophy to my work.	3.0	9.1	15.2	66.7	6.1	3.63 (+)	0.85
*Q30. I believe that the focus on quality is just one more program that will fade away like all the others.	3.0	18.2	12.1	60.6	6.1	3.48 (?)	0.97
*Q14. The shipyard often fails to live up to its commitment to customer satisfaction.	6.1	27.3	15.2	45.5	6.1	3.18 (?)	1.10
*Q74. Important values are often compromised in decisions made here.	3.0	27.3	18.2	51.5	0.0	3.18 (?)	0.95
Q1. Management believes and acts as though employees are the most important asset of the shipyard.	3.0	42.4	21.2	27.3	6.1	3.09 (?)	1.04

QUESTIONS	SA%	A%	U%	D%	SD%	MEAN	σ
*Q4. Many employees talk as though they accept the new quality philosophy while actually resisting it.	0.0	39.4	18.2	39.4	3.0	2.93 (?)	0.96
*Q9. I frequently worry about the future of the shipyard.	45.5	42.4	0.0	12.1	0.0	1.78 (-)	0.96
DEMING'S POINT 3							
*Q16. We depend heavily on inspection to make sure that quality products and services are being delivered to our customers.	9.1	27.3	6.1	48.5	9.1	3.21 (?)	1.21
Q56. Management relies less on inspection and rework and more on helping us improve the work process we use.	0.0	24.2	30.3	42.4	3.0	2.75 (?)	0.86
*Q39. Unless we inspect incoming materials, we cannot trust our suppliers to provide quality materials.	12.1	42.4	21.2	18.2	6.1	2.63 (?)	1.11
*Q45. There is too much rework necessary for us to eliminate inspections.	18.2	24.1	39.4	18.2	0.0	2.57 (?)	1.00
DEMING'S POINT 4							
*Q75. The risk of having a single supplier for an item out weigh the benefits.	3.0	18.2	33.3	42.4	3.0	3.24 (?)	0.90
*Q65. Management may stress quality of supplies, but they still make purchasing decisions based on the immediate cost.	6.1	42.4	36.4	15.2	0.0	2.60 (?)	0.82
Q24. My department works closely with our suppliers in order to improve the quality of the materials they send us.	6.1	15.2	21.2	45.5	12.1	2.57 (?)	1.09

QUESTIONS	SA%	A%	U%	D%	SD%	MEAN	σ
DEMING'S POINT 5							
Q15. I am actively involved in trying to improve my work.	27.3	69.7	0.0	3.0	0.0	4.21 (+)	0.59
*Q25. Statistical process control is the only really essential thing we need to continuously improve our quality.	0.0	0.0	21.2	51.5	27.3	4.06 (+)	0.70
*Q23. There is a great waste of materials and supplies in my department.	3.0	12.1	12.1	63.6	9.1	3.63 (+)	0.92
Q2. The great emphasis on statistical process control has a waste of time and money.	0.0	3.0	51.5	33.3	12.1	3.54 (+)	0.75
Q42. Management is actively involved in helping me to stabilize and improve my work process.	3.0	48.5	21.2	24.2	3.0	3.24 (?)	0.96
*Q67. We have been using statistical process control for a while, but it doesn't seem to be working.	0.0	9.1	63.6	21.2	6.1	3.24 (?)	0.70
*Q62. Management doesn't appear to have adequate understanding of statistical methods for improving our processes.	3.0	27.3	27.3	42.4	0.0	3.09 (?)	0.91
DEMING'S POINT 6							
Q61. I want to learn more about how to improve my work process.	24.2	66.7	0.0	6.1	3.0	4.12 (+)	0.64
*Q50. New employees don't understand what is expected of them.	3.0	21.2	24.2	36.4	15.2	3.39 (+)	1.08
*Q17. My training fails to keep up with technological and organizational changes.	6.1	27.3	12.1	45.5	9.1	3.24 (?)	1.14

QUESTIONS	SA%	A%	U%	D%	SD%	MEAN	σ
Q70. The training department is actively involved in teaching employees the tools necessary for quality improvement.	0.0	45.5	27.3	21.2	6.1	3.12 (?)	0.96
*Q7. Training in this shipyard is done on a "hit or miss" basis.	42.4	24.2	6.1	27.3	0.0	2.18 (-)	1.26
Q37. Before employees are given new jobs and responsibilities, they receive training that is appropriate and complete.	0.0	6.1	21.2	48.5	24.2	2.09 (-)	0.84
DEMING'S POINT 7							
*Q73. My supervisor seems to understand little about my job.	0.0	9.1	9.1	66.7	15.2	3.87 (+)	0.78
Q11. Management has helped me understand how quality and productivity are related.	12.1	57.6	3.0	24.2	3.0	3.51 (+)	1.09
Q13. I feel that Management is supportive and understanding when we have new responsibilities and tasks to learn.	3.0	63.6	12.1	18.2	3.0	3.45 (?)	0.93
*Q46. Little effort is made to get my opinions and thoughts on work matters.	3.0	21.2	15.2	54.5	6.1	3.39 (?)	0.99
Q53. My supervisor leads by setting a good example to follow.	9.1	42.4	27.3	18.2	3.0	3.36 (?)	0.99
Q36. Management has been sensitive in working with employees to get their participation in the quality improvement effort.	3.0	39.4	30.3	24.2	3.0	3.15 (?)	0.93
*Q63. Management seems afraid to meet employees face to face.	15.2	21.2	3.0	54.5	6.1	3.15 (?)	1.27

QUESTIONS	SA%	A%	U%	D%	SD%	MEAN	σ
Q48. Management follows through on recommendations for process improvement submitted by improvement teams.	0.0	36.4	39.4	18.2	6.1	3.06 (?)	0.89
*Q71. Management seems afraid that they will lose control if we are given more responsibility for our work.	21.2	15.2	9.1	51.5	3.0	3.18 (?)	1.01
Q19. My supervisor helps me to actively apply my training in my work.	12.1	18.2	18.2	2.2	9.1	2.81 (?)	1.21
DEMING'S POINT 8							
*Q80. I frequently worry about being fired.	0.0	0.0	6.1	24.2	69.7	4.63 (+)	0.60
Q29. I feel free to recommend improvements to my job to my supervisor.	51.5	36.4	9.1	3.0	0.0	4.36 (+)	0.78
*Q79. I believe that a lot of people in my department are afraid their jobs will be cut if quality and productivity increase.	9.1	15.2	12.1	57.6	6.1	3.36 (?)	1.11
DEMING'S POINT 9							
Q76. Our work team includes members from other departments when they are needed to solve a problem.	9.1	57.6	9.1	24.2	0.0	3.51 (+)	0.97
Q26. Information is shared and cooperation is emphasized between departments	6.1	33.3	18.2	21.2	21.2	2.81 (?)	1.28
Q8. There is good cooperation and communication between departments.	0.0	36.4	15.2	33.3	15.2	2.72 (?)	1.12

QUESTIONS	SA%	A%	U%	D%	SD%	MEAN	σ
*Q54. There is a strong sense of "us" vs. "them" between departments in the shipyard as a whole.	15.2	39.4	15.2	24.2	6.1	2.66 (?)	1.19
Q41. Management rewards team efforts more than individual ones.	0.0	12.1	18.2	45.5	24.2	2.18 (-)	0.95
DEMING'S POINT 10							
*Q66. If everyone just tries hard, we can solve our quality problems.	21.2	27.3	0.0	45.5	6.1	2.87 (?)	1.36
Q52. Targets that are set by Management include tools and methods for reaching them.	3.0	39.4	30.3	27.3	0.0	2.81 (?)	0.88
*Q44. Management often asks us to "take pride in our work."	18.2	51.5	12.1	15.2	3.0	2.33 (-)	1.05
DEMING'S POINT 11							
*Q33. The work standards or quotas that I have been given are arbitrary and unreasonable.	3.0	9.1	21.2	42.4	24.2	3.75 (+)	1.03
*Q69. Current work standards or quotas make it difficult for me to produce good work.	3.0	12.1	9.1	72.7	3.0	3.60 (+)	0.86
*Q10. Management seems to believe that employees need numerical goals to stay motivated.	0.0	18.2	24.2	57.6	0.0	3.39 (?)	0.78
*Q58. If I work hard I can do better than the work standard that is set.	15.2	45.5	18.2	21.2	0.0	2.45 (-)	1.00
DEMING'S POINT 12							
*Q40. I am often encouraged to compete with others to be more productive.	0.0	15.2	21.2	42.4	21.2	3.69 (+)	0.98

QUESTIONS	SA%	A%	U%	D%	SD%	MEAN	σ
*Q6. I don't have enough opportunity to use my abilities in my present job.	9.1	15.2	57.6	18.2	0.0	3.60 (+)	1.22
Q68. I am confident that my work process produces excellent quality.	3.0	51.5	27.3	18.2	0.0	3.39 (?)	0.82
Q31. My supervisor tries to remove barriers that prevents me from doing my work well.	9.1	51.5	15.2	15.2	9.1	3.36 (?)	1.14
*Q20. I often feel frustrated or angry because I have no control over my workload.	3.0	33.3	9.1	39.4	15.2	3.30 (?)	1.18
Q60. The tools and work environment I have enable me to produce quality work.	3.0	57.6	12.1	18.2	9.1	3.27 (?)	1.09
*Q51. I am so busy that I don't have enough time to spend on defining and improving my process.	0.0	39.4	3.0	54.5	3.0	3.21 (?)	1.02
Q32. The procedures we use in this department help me to do a good job.	6.1	48.8	15.2	18.2	12.1	3.18 (?)	1.18
Q21. People who get promoted in my department truly deserve it.	6.1	16.4	18.2	27.3	12.1	2.9 (?)	1.18
*Q47. I often wish I had more time to improve my work.	12.1	42.4	9.1	36.4	0.0	2.69 (?)	1.10
DEMING'S POINT 13							
Q77. The shipyard as an organization is willing to invest in developing my potential to be the best employee I can be.	0.0	39.4	27.3	24.2	9.1	2.96 (?)	1.01
Q38. The shipyard supports my desire to improve myself even if it is not related directly to my current job.	3.0	18.2	36.4	33.3	9.1	2.72 (?)	0.97

QUESTIONS	SA%	A%	U%	D%	SD%	MEAN	σ
Q55. Management encourages and provides education and re-training necessary to meet the future needs of the shipyard.	0.0	24.2	21.2	42.4	12.1	2.57 (?)	1.00
DEMING'S POINT 14							
Q72. Adequate information is available about the overall quality improvement activities of the shipyard.	3.0	48.5	15.2	30.3	3.0	3.18 (?)	1.01
Q57. I trust Management to act on most of the issues brought to its attention through this survey.	0.0	24.2	21.2	42.4	12.1	2.57 (?)	1.00

APPENDIX C

SURVEY QUESTIONS WITH MEAN VALUES IN DESCENDING ORDER

The following three tables present the survey questions in descending order of their mean values. The items range from those most supportive of Deming's philosophy (high mean value) to those least supportive (low mean value). These data are presented in 3 tables:

C.1.   Questions in which the respondents seem to support Deming's Points.

C.2.   Questions in which the respondents seem to be indecisive about supporting Deming's Points.

C.3.   Questions in which the respondents seem to oppose Deming's Points.

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APPENDIX C.1

QUESTIONS IN WHICH THE RESPONDENTS
SEEM TO SUPPORT DEMING'S POINTS

QUESTION #	DEMING'S POINT	MEAN
Q.80. I frequently worry about being fired.	8	4.63
Q.5. I have a clear idea of who my immediate customers are and what they need.	1	4.54
Q.29. To achieve greater productivity, management emphasizes quantity more than quality.	8	4.36
Q.15. I am actively involved in trying to improve my work.	5	4.21
Q.61. I want to learn more about how to improve my work process.	6	4.12
Q.35. I have a clear idea of what the mission of the shipyard is.	1	4.09
Q.25. Statistical process control is the only really essential thing we need to continuously improve our quality.	5	4.06
Q.73. My supervisor seems to understand little about my job.	7	3.87
Q.28. To achieve greater productivity, management emphasizes quantity more than quality.	2	3.84
Q.18. With all the changes going on, I am no longer certain what my responsibilities are.	1	3.81
Q.43. I have a clear idea how my department's goals fit in with the organization's goals.	1	3.78
Q.33. The work standards or quotas that I have been given are arbitrary and unreasonable.	11	3.75
Q.40. I am often encouraged to compete with others to be more productive.	12	3.69
Q.64. Our shipyard really seeks to learn who our customers are and what they expect.	2	3.69

QUESTION #	DEMING'S POINT	MEAN
Q.23. There is a great waste of materials and supplies in my department.	5	3.63
Q.49. I am having difficulty relating to the new quality improvement philosophy to my work.	2	3.63
Q.6. I don't have enough opportunity to use my abilities in my present job.	12	3.60
Q.27. I don't really understand what management is trying to do in the area of quality improvement.	1	3.60
Q.69. Current work standards or quotas make it difficult for me to produce good work.	11	3.60
Q.2. The great emphasis on statistical process control has been a waste of time and money.	5	3.54
Q.59. I believe that management is strongly committed to carrying out the mission of the shipyard as stated in the mission statement.	1	3.54
Q.3. I sense that management is starting to pay more attention to the long-range results of their actions.	1	3.51
Q.11. Management has helped me understand how quality and productivity are related.	7	3.51
Q.76. Our work team includes members from other departments when they are needed to solve a problem.	9	3.51

APPENDIX C.2

QUESTIONS IN WHICH THE RESPONDENTS SEEM TO BE INDECISIVE ABOUT SUPPORTING DEMING'S POINTS

QUESTION #	DEMING'S POINT	MEAN
Q.30. I believe that the focus on quality is just one more program that will fade away like all the others.	2	3.48
Q.13. I feel that management is supportive and understanding when we have new responsibilities and tasks to learn.	7	3.45
Q.10. Management seems to believe that employees need numerical goals to stay motivated.	11	3.39
Q.46. Little effort is made to get my opinions and thoughts on work matters.	7	3.39
Q.50. New employees don't understand what is expected of them.	6	3.39
Q.68. I am confident that my work process produces excellent quality.	12	3.39
Q.31. My supervisor tries to remove barriers that prevent me from doing my work well.	12	3.36
Q.53. My supervisor leads by setting a good example to follow.	7	3.36
Q.79. I believe that a lot of people in my department are afraid their jobs will be cut if quality and productivity increase.	8	3.36
Q.20. I often feel frustrated or angry because I have no control over my workload.	12	3.30
Q.34. It often seems like this operation is run on the "idea of the month."	1	3.30
Q.60. The tools and work environment I have enable me to produce quality work.	12	3.27
Q.17. My training fails to keep up with technological and organizational changes.	6	3.24
Q.42. Management is actively involved in helping me to stabilize and improve my work process.	5	3.24

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QUESTION #	DEMING'S POINT	MEAN
Q.67. We have been using statistical process control for awhile, but it doesn't seem to be working.	5	3.24
Q.75. The risks of having a single supplier for an item outweigh the benefits.	4	3.24
Q.16. We depend heavily on inspection to make sure that quality products and services are being delivered to our customers.	3	3.21
Q.51. I am so busy that I don't have enough time to spend on defining and improving my work process.	12	3.21
Q.14. The shipyard often fails to live up to its commitment to customer satisfaction.	2	3.18
Q.32. The procedures we use in this department help me to do a good job.	12	3.18
Q.72. Adequate information is available about the overall quality improvement activities of the shipyard.	14	3.18
Q.74. Important value are often compromised in decisions made here.	2	3.18
Q.36. Management has been sensitive in working with employees to get their participation in the quality improvement effort.	7	3.15
Q.63. Management seems afraid to meet employees face to face.	7	3.15
Q.70. The training department is actively involved in teaching employees the tools necessary for quality improvement.	6	3.12
Q.1. Management believes and acts as though employees are the most important asset of the shipyard.	2	3.09
Q.62. Management doesn't appear to have adequate understanding of statistical methods for improving our work processes.	5	3.09
Q.48. Management follows through on recommendations for process improvement submitted by improvement teams.	7	3.06
Q.71. Management seams afraid that they will lose control if we are given more responsibility for our work.	7	3.00

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QUESTION #	DEMING'S POINT	MEAN
Q.21. People who get promoted in my department truly deserve it.	12	2.96
Q.77. The shipyard as organization is willing to invest in developing my potential to be the best employee I can be.	13	2.96
Q.4. Many employees talk as though they accept the new quality philosophy while actually resisting it.	2	2.93
Q.66. If everyone just tries harder, we can solve our quality problems.	10	2.87
Q.19. My supervisor helps me to actively apply my training in my work.	7	2.81
Q.26. Information is shared and cooperation is emphasized between departments.	9	2.81
Q.52. Targets that are set by Management include tools and methods for reaching them.	10	2.81
Q.56. Management relies less on inspection and rework and more on helping us improve the work process we use.	3	2.75
Q.8. There is good cooperation and communication between departments.	9	2.72
Q.38. The shipyard supports my desire to improve myself even if it doesn't relate directly to my current job.	13	2.72
Q.47. I often wish I had more time to improve my work.	12	2.69
Q.54. There is a strong sense of "us" vs. "them" between departments in the shipyard as a whole.	9	2.66
Q.39. Unless we inspect incoming materials, we cannot trust our suppliers to provide quality materials.	3	2.63
Q.65. Management may stress quality of supplies, but they still make purchasing decisions based on the immediate cost.	4	2.60
Q.24. My department works closely with our suppliers in order to improve the quality of the materials they send us.	4	2.57
Q.45. There is too much rework necessary for us to eliminate inspections.	3	2.57

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QUESTION #	DEMING'S POINT	MEAN
Q.55. Management encourages and provides education and re-training necessary to meet the future needs of the shipyard.	13	2.57
Q.57. I trust Management to act on most of the issues brought to its attention through this survey.	14	2.57
Q.78. Improvement activities are limited almost entirely to manufacturing and production.	5	2.57
Q.12. Our Management seems to be unable to plan well for tomorrow because of problems they need to deal with today.	1	2.54
Q.22. Management sees to it that, whenever possible, all areas of the shipyard share in sacrifices that need to be made.	1	2.54

APPENDIX C.3

QUESTIONS IN WHICH THE RESPONDENTS SEEM
TO OPPOSE DEMING'S POINTS

QUESTION #	DEMING'S POINT	MEAN
Q.58. If I work hard I can do better that the work standard that is set.	11	2.45
Q.44. Management often asks us to "take pride in our work."	10	2.33
Q.7. Training in this shipyard is done on a "hit or miss" basis.	6	2.18
Q.41. Management rewards team efforts more that individual ones.	9	2.18
Q.37. Before employees are given new jobs and responsibilities, they receive training that is appropriate and complete.	6	2.09
Q.9. I frequently worry about the future of the shipyard.	2	1.78

APPENDIX D

SURVEY QUESTIONS WITH STANDARD DEVIATIONS IN ASCENDING ORDER

The following two pages present the survey questions in ascending order of their standard deviation measures. The items range from those with a narrow spread of opinions (low σ, less than or equal to 1) to those with a wide spread or divergence of opinion (high σ, greater than 1). The data are presented in 2 points:

D.1. Questions in which the respondents seem to have a relatively narrow range of opinion.

D.2. Questions in which the respondents seems to have a relatively wide range of opinion.

APPENDIX D.1

QUESTIONS IN WHICH THE RESPONDENTS SEEM
TO HAVE A RELATIVELY NARROW RANGE OF OPINION

QUESTION #	DEMING'S POINT	MEAN
Q.5. I have a clear idea of who my immediate customers are and what they need.	1	0.56
Q.15. I am actively involved in trying to improve my work.	5	0.59
Q.80. I frequently worry about being fired.	8	0.60
Q.28. To achieve greater productivity, management emphasizes quantity more than quality.	2	0.61
Q.61. I want to learn more about how to improve my work process.	6	0.64
Q.25. Statistical process control is the only really essential thing we need to continuously improve our quality.	5	0.70
Q.67. We have been using statistical process control for awhile, but it doesn't seem to be working.	5	0.70
Q.2. The great emphasis on statistical process control has been a waste of time and money.	5	0.75
Q.73. My supervisor seems to understand little about my job.	7	0.78
Q.29. To achieve greater productivity, management emphasizes quantity more than quality.	8	0.78
Q.10. Management seems to believe that employees need numerical goals to stay motivated.	11	0.78
Q.35. I have a clear idea of what the mission of the shipyard is.	1	0.80
Q.68. I am confident that my work process produces excellent quality.	12	0.82
Q.65. Management may stress quality of supplies, but they still make purchasing decisions based on the immediate cost.	4	0.82

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QUESTION #	DEMING'S POINT	MEAN
Q.37. Before employees are given new jobs and responsibilities, they receive training that is appropriate and complete.	6	0.84
Q.64. Our shipyard really seeks to learn who our customers are and what they expect.	2	0.84
Q.49. I am having difficulty relating to the new quality improvement philosophy to my work.	2	0.85
Q.69. Current work standards or quotas make it difficult for me to produce good work.	11	0.86
Q.56. Management relies less on inspection and rework and more on helping us improve the work process we use.	3	0.86
Q.52. Targets that are set by Management include tools and methods for reaching them.	10	0.88
Q.48. Management follows through on recommendations for process improvement submitted by improvement teams.	7	0.89
Q.75. The risks of having a single supplier for an item outweigh the benefits.	4	0.90
Q.62. Management doesn't appear to have adequate understanding of statistical methods for improving our work processes.	5	0.91
Q.23. There is a great waste of materials and supplies in my department.	5	0.92
Q.27. I don't really understand what management is trying to do in the area of quality improvement.	1	0.93
Q.13. I feel that management is supportive and understanding when we have new responsibilities and tasks to learn.	7	0.93
Q.12. Our Management seems to be unable to plan well for tomorrow because of problems they need to deal with today.	1	0.93
Q.36. Management has been sensitive in working with employees to get their participation in the quality improvement effort.	7	0.93
Q.41. Management rewards team efforts more that individual ones.	9	0.95

QUESTION #	DEMING'S POINT	MEAN
Q.74. Important value are often compromised in decisions made here.	2	0.95
Q.70. The training department is actively involved in teaching employees the tools necessary for quality improvement.	6	0.96
Q.9. I frequently worry about the future of the shipyard.	2	0.96
Q.4. Many employees talk as though they accept the new quality philosophy while actually resisting it.	2	0.96
Q.42. Management is actively involved in helping me to stabilize and improve my work process.	5	0.96
Q.76. Our work team includes members from other departments when they are needed to solve a problem.	9	0.97
Q.30. I believe that the focus on quality is just one more program that will fade away like all the others.	2	0.97
Q.38. The shipyard supports my desire to improve myself even if it doesn't relate directly to my current job.	13	0.97
Q.40. I am often encouraged to compete with others to be more productive.	12	0.98
Q.53. My supervisor leads by setting a good example to follow.	7	0.99
Q.46. Little effort is made to get my opinions and thoughts on work matters.	7	0.99
Q.45. There is too much rework necessary for us to eliminate inspections.	3	1.00
Q.55. Management encourages and provides education and re-training necessary to meet the future needs of the shipyard.	13	1.00
Q.57. I trust Management to act on most of the issues brought to its attention through this survey.	14	1.00
Q.58. If I work hard I can do better that the work standard that is set.	11	1.00

APPENDIX D.2

QUESTIONS IN WHICH THE RESPONDENTS SEEMS TO HAVE A RELATIVELY WIDE RANGE OF OPINION

QUESTION #	DEMING'S POINT	MEAN
Q.72. Adequate information is available about the overall quality improvement activities of the shipyard.	14	1.01
Q.77. The shipyard as organization is willing to invest in developing my potential to be the best employee I can be.	13	1.01
Q.51. I am so busy that I don't have enough time to spend on defining and improving my work process.	12	1.02
Q.33. The work standards or quotas that I have been given are arbitrary and unreasonable.	11	1.03
Q.78. Improvement activities are limited almost entirely to manufacturing and production.	5	1.03
Q.59. I believe that management is strongly committed to carrying out the mission of the shipyard as stated in the mission statement.	1	1.03
Q.22. Management sees to it that, whenever possible, all areas of the shipyard share in sacrifices that need to be made.	1	1.03
Q.1. Management believes and acts as though employees are the most important asset of the shipyard.	2	1.04
Q.44. Management often asks us to "take pride in our work."	10	1.05
Q.43. I have a clear idea how my department's goals fit in with the organization's goals.	1	1.05
Q.34. It often seems like this operation is run on the "idea of the month."	1	1.07
Q.50. New employees don't understand what is expected of them.	6	1.08
Q.24. My department works closely with our suppliers in order to improve the quality of the materials they send us.	4	1.09

QUESTION #	DEMING'S POINT	MEAN
Q.3. I sense that management is starting to pay more attention to the long-range results of their actions.	1	1.09
Q.11. Management has helped me understand how quality and productivity are related.	7	1.09
Q.60. The tools and work environment I have enable me to produce quality work.	12	1.09
Q.14. The shipyard often fails to live up to its commitment to customer satisfaction.	2	1.10
Q.47. I often wish I had more time to improve my work.	12	1.10
Q.79. I believe that a lot of people in my department are afraid their jobs will be cut if quality and productivity increase.	8	1.11
Q.39. Unless we inspect incoming materials, we cannot trust our suppliers to provide quality materials.	3	1.11
Q.8. There is good cooperation and communication between departments.	9	1.12
Q.31. My supervisor tries to remove barriers that prevent me from doing my work well.	12	1.14
Q.17. My training fails to keep up with technological and organizational changes.	6	1.14
Q.18. With all the changes going on, I am no longer certain what my responsibilities are.	1	1.15
Q.32. The procedures we use in this department help me to do a good job.	12	1.18
Q.20. I often feel frustrated or angry because I have no control over my workload.	12	1.18
Q.21. People who get promoted in my department truly deserve it.	12	1.18
Q.54. There is a strong sense of "us" vs. "them" between departments in the shipyard as a whole.	9	1.19
Q.19. My supervisor helps me to actively apply my training in my work.	7	1.21
Q.16. We depend heavily on inspection to make sure that quality products and services are being delivered to our customers.	3	1.21

QUESTION #	DEMING'S POINT	MEAN
Q.6. I don't have enough opportunity to use my abilities in my present job.	12	1.22
Q.7. Training in this shipyard is done on a "hit or miss" basis.	6	1.26
Q.63. Management seems afraid to meet employees face to face.	7	1.27
Q.26. Information is shared and cooperation is emphasized between departments.	9	1.28
Q.71. Management seams afraid that they will lose control if we are given more responsibility for our work.	7	1.29
Q.66. If everyone just tries harder, we can solve our quality problems.	10	1.36

LIST OF REFERENCES

1. Garrett H. L. III, "Secretary of the Navy G. H. Lawrence III Speaks Out on the Need for Change," *TQ Leader*, Bulletin, Fall, 1991.

2. CNO Washington, D.C., Subject: Navy-Wide Implementation of Total Quality Leadership (TQL), R231518Z May 91.

3. Kelso, II, F. B., "CNO Says: Improving With Quality," *Surface Warfare*, pp. 30-31, March - April 1991.

4. U.S. Department of Defense, *Fundamentals of Total Quality Leadership*, Chief of Naval Education and Training, NAVEDTRA, January 1992.

5. Garrett H.L. III, "DON Executive Steering Group Guidance on Total Quality Leadership (TQL)," Handout from, TQL Coordinator, Naval Postgraduate School, undated Bulletin.

6. U.S. Department of Defence, *Starter Kit for Basic Process Improvement*, Chief of Naval Operations, Handout from, TQL Coordinator, Naval Postgraduate School, December 1992.

7. Scherkenbach, W. W., *Deming's Road to Continual Improvement*, SPC Press, 1991.

8. Walton, M., *Deming Management at Work*, The Putnam Publishing Group, New York, 1991.

9. Long Beach Naval Shipyard, *TQL is not Easily Accepted*, Handout, from Code 100Q.1, Long Beach Naval Shipyard, Long Beach, undated Bulletin.

10. Deming, W. E., *Out of the Crisis*, Massachusetts Institute of Technology, Center for Advanced Engineering Study, May 1992.

11. Long Beach Naval Shipyard, *A Day With Dr. Deming*, Handout from Code 100Q.1, Long Beach Naval Shipyard, Long Beach, undated Bulletin.

12. Kossoff, L. L., *Closing the Gap*, LLK Associates, Newport Beach, 1992.

13.   Goldstein, I. J., *"Training Program Development and Evaluation,"* Chapter 8, Handout from Code 100Q.1, Long Beach Naval Shipyard, Long Beach, undated Bulletin.

14.   Vakalopoulos A.E., *The Character of Greeks; Seeking our Identification as Nation,* Altintzis, Thessaloniki, Greece, 1983.

15.   Long Beach Naval Shipyard, *Historical Background of Long Beach Naval Shipyard,* Handout from Code 100Q.1, Long Beach Naval Shipyard, Long Beach, undated Bulletin.

16.   Long Beach Naval Shipyard, *Biography of Captain Bernard Janov,* Handout from Code 100Q.1, Long Beach Naval Shipyard, Long Beach, undated Bulletin.

17.   Long Beach Naval Shipyard, "Biography of Jeff Gooding," *Digest,* p. 2, Code 100Q.1, Long Beach Naval Shipyard, Long Beach, February 15, 1991.

18.   Long Beach Naval Shipyard, "Shirley J. Watkins LBNSY's TQL Advisor," *Digest,* Vol. I, No. 1, Long Beach Naval Shipyard, June 4, 1992.

19.   Long Beach Naval Shipyard, *Organizational Chart of Long Beach Naval Shipyard,* Handout from Code 100Q.1, Long Beach Naval Shipyard, Long Beach, January 1993.

20.   Long Beach Naval Shipyard, *TQL Awareness Training Implementation Status at LBNSY,* Handout from Code 100Q.1, Long Beach Naval Shipyard, Long Beach, January 1992 - June 1993.

21.   Long Beach Naval Shipyard, *The LBNSY's Road to Quality,* Handout from Code 100Q.1, Long Beach Naval Shipyard, Long Beach, undated Bulletin.

22.   *What TQL Is and What is Not,* Handout from Code 100Q.1, Long Beach Naval Shipyard, Long Beach, undated Bulletin.

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