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TQL IN THE FLEET: From Theory to Practice

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Navy Personnel Research
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and

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94-04214



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ABOUT THE TQL OFFICE

The Total Quality Leadership (TQL) Office is a part of the Office of the Under Secretary of the Navy. Its mission is to provide technical guidance to Navy and Marine Corps senior leaders on the consistency between Department of the Navy (DON) policy and TQL principles and practices.

The TQL Office works on quality improvement efforts with many organizations inside and outside the Federal Government. The director and members of the TQL Office staff recently participated on the Vice President's National Performance Review (NPR) team. The Office is also a key player in an NPR follow-up effort called the Defense Performance Review (DPR). The DPR team tasked the DON to take the lead in developing and implementing a total quality in defense management prototype in the Department of Defense.

The TQL Office staff handles responsibilities in five key areas: TQL education and training, TQL consultation, networking with organizations inside and outside government, program management, and publications and videos.

TQL EDUCATION AND TRAINING

The TQL Office has worked closely with the Chief of Naval Education and Training (CNET) in developing a TQL curriculum and in implementing a train-the-trainer strategy. Staff members have provided much of the instruction needed to prepare TQL specialists, who themselves now conduct training of command-level leaders and TQL coordinators and quality advisors at two TQL training sites located at Little Creek, VA, and Coronado, CA.

The TQL Office also developed the Senior Leaders Seminar, which is offered to top Navy and Marine Corps leaders at the TQL training sites and in Washington, DC.

The TQL Office continues to be responsible for the management, update, and evaluation of the TQL curriculum to ensure technical accuracy and internal consistency.

TQL CONSULTATION

In addition to providing technical advice and guidance to DON senior leaders, TQL Office staff

members serve as consultants and facilitators to selected groups undertaking strategic planning.

NETWORKING

Benchmarking is a valuable tool for improving processes. Recently, in conjunction with the National Aeronautics and Space Administration and with the Internal Revenue Service, the TQL Office financed a one-time initiation fee required to join the International Benchmarking Clearinghouse (IBC) established by the American Productivity and Quality Center. As a result of this funding, all Federal agencies can now participate in IBC services without paying individual initiation fees.

The TQL Office also sponsored four people from the DON for membership in the IBC who are providing specific guidance on how the DON can benefit from benchmarking.

The TQL Office has established a Washington, DC-based TQL advocates group that meets monthly to share information about process improvement efforts.

As part of the TQL Office's networking function, staff members publish articles in technical and military journals and deliver papers at conferences and symposia on the DON TQL approach.

PROGRAM MANAGEMENT

The TQL Office evaluates nominee packages for productivity and quality awards that are given by the DON and by other government organizations. It also manages projects to develop TQL tools and products, such as survey instruments, for use by DON activities.

PUBLICATIONS AND VIDEOS

The TQL Office publishes the *TQL Leader*, a newsletter that reports on DON policy changes, presents case studies, and offers technical advice on quality issues. It also publishes other materials, such as this report. The intent of the publication series is to clarify what TQL is and how it works within the DON.

Recently, the TQL Office began a program to develop educational and informational videotapes.

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CHIEF OF NAVAL OPERATIONS

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To the reader:

TQL in the Fleet: From Theory to Practice is the end-product of a 2-year effort to determine if Total Quality Leadership (TQL) would work in the fleet. Although TQL was developed by the Department of the Navy for the Department of the Navy, it had not been tested systematically in an operational environment.

Skeptics were concerned that the pressures of deployment might make it impossible to transport TQL to a fleet setting. I subsequently tasked the TQL Office to train 20 officer and enlisted personnel to function as consultants to 11 fleet units--demonstration units--that represented the aviation, surface, and submarine communities on the east and west coasts. This report documents that experience and demonstrates conclusively that TQL can work at sea.

I also wanted to put to rest the idea that TQL would undermine the chain of command and be used to make decisions in the heat of battle. Nothing could be further from the truth. It has been my experience that TQL--through its cross-functional teams--actually strengthens the chain of command by improving communication both up and down the chain and across the chain.

These teams do not meet during times of crisis; however, they can and do meet to plan for those times. One fleet team member who is quoted in this report said it well: "When we sit down as a new team and say, 'Let's figure out how to make the sea-and-anchor detail more efficient,' everyone on the team has a say. But when the Captain says, 'Set the special sea-and-anchor detail and get underway,' we do just that. We don't discuss it first."

We have a powerful tool in TQL. We have a theory with which to assess our processes and our systems; we have the tools by which to measure our progress; and we have a mechanism by which to involve all of our people in Navy to make things better. Let's put it to use in our day-to-day operations to ensure that if we fight, we win.

Frank B. Kelso
FRANK B. KELSO, II
Admiral, U.S. Navy
Chief of Naval Operations

TQL IN THE FLEET: From Theory to Practice

Judy Wasik and Bobbie Ryan



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FOREWORD

Elements of the Department of the Navy's Total Quality Leadership (TQL) approach have been successfully applied in most types of Department of the Navy settings: at the headquarters level, including the Office of the Secretary of the Navy and systems commands; in industrial activities, such as the naval aviation depots and shipyards; and at shore support commands, such as supply centers. Some tough questions remained: How would TQL be applied in a Fleet setting, such as onboard an aircraft carrier? Would the demands of operations override those associated with TQL training and implementation? In other words, were Fleet requirements unique, different from those of shore commands?

ADM Frank B. Kelso II, Chief of Naval Operations, became an outspoken advocate of TQL in his first days as CNO and was determined to find the answers to those questions. His approach was to develop from the three warfare communities—surface, submarine, and aviation—TQL Fleet Teams to serve as consultants to Fleet "demonstration" units selected to initiate process improvement projects.

This report documents that early experience. It answers the basic questions posed by ADM Kelso about how TQL can be applied in an operational setting, and it presents some stories of early process improvement efforts. As the demonstration units gain experience, and as additional data are gathered, these and other stories will undoubtedly gain in richness.

This information will be useful not only to individual units beginning TQL implementation, but to the students taking TQL courses as well. However, what we read here represents only the first effort to document Fleet applications of TQL. We will be depending heavily in the future on individual units documenting their experiences and sending the information to the TQL Office. The Office can then systematically provide the information to the TQL training sites for inclusion in the courses and publish it as well in reports such as this one.

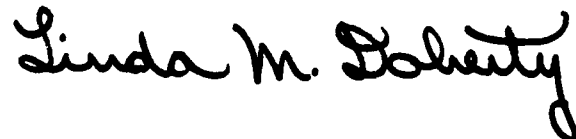
FOREWORD

Perhaps one of the most important lessons learned from this experience and that of shore organizations is that **organizations are really systems**, a concept long espoused by Dr. W. Edwards Deming. These systems are made up of **subsystems**, all loosely connected. However, when process improvements are made in one system at a unit level, there are implications for changes to an organization's culture, leadership style, and decision-making authority in the context of a team approach to improvement. Such changes can produce many benefits: Continuous process improvement can flourish, innovation in processes and in products/services can be realized, and units can move toward enhanced performance.

Changes are necessary at all levels in the chain of command, from headquarters to the deckplate. Actions taken at the headquarters level are especially critical to the effort, because it is only senior leaders who can address issues requiring significant changes to policies and Departmental direction.

Many people contributed to the preparation of this report. The authors extend appreciation to them in an acknowledgements section that follows. I would like to extend a personal thanks to the Organizational Systems Department, Navy Personnel Research and Development Center (NPRDC), for its support of this effort.

Questions about the report should be directed to the authors. Ms. Wasik is a member of the Organizational Systems Department, NPRDC (619-553-7987; FAX 619-553-7980). Ms. Ryan is a member of my staff (703-602-8952; FAX 703-602-8942).



LINDA M. DOHERTY
Director
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We would like to thank several people for contributions they made to this report. The CNO TQL Fleet Team members gave most generously of their time during the interviews and in response to the many questions we continued to ask as we prepared the material. A special thanks should go to CAPT Peter Kerr, officer in charge of the CINCLANTFLT Team, and to CAPT Robert McClendon, officer in charge of the CINCPACFLT Team, who paved the way for us to visit the various demonstration units. CAPT Paul Hennessy, who replaced CAPT McClendon on his retirement, has likewise provided invaluable assistance.

We want to thank the individual team members, some of whom have moved on to other assignments, for their contributions to this effort. From the CINCLANTFLT Aviation Team: LCDR Terry Merritt, LCDR Cheryl Fitzgerald, ETCM D. J. Kilpatrick, ETCS (SW) Emily Shannon, and ATC (AW) Steven O'Green; from the Surface Team: CAPT William Nurthen, CAPT (Sel) Harry Elam, CDR Jack Shick, MMCM (SW) Dean Mullis, and EMC (SW) Steven Drew; from the Submarine Team: CAPT James Voter, LCDR Ron Thompson, LCDR Jon Iverson, MMCM (SS) Brad Nelson, STSCM (SS) J. D. Delano, and STSCM (SS) Dennis Dooling. From the CINCPACFLT Team: CAPT Bill Gerken, CDR Joseph F. Driscoll, CDR Lew Witherspoon, CDR Troy Erwin, CDR Kirk S. Burgamy, ENS Garfield M. Sicard, ETCM (SW) Martin H. Teasdale, SMC (SW) Jim Norrell, ACCS (AW) Carol Kalinowski, SKCS (SW) David W. Thompson, STSCS (SS) Bill Colyar, and ICC (SW) Everett Jones.

We also want to thank all of the people from the demonstration units for their patience and high level of interest in what we were doing. Many of them opened their files to us so that we could examine for ourselves what the process improvement teams were accomplishing. A number of them helped us as well in the clarification and organization of materials and events. Without their enthusiastic support, this report could not have been completed.

ACKNOWLEDGEMENTS

A special thanks to Ms. Denise Wells, TQL Office, who interviewed key people onboard the USS TRENTON while it was on deployment in the Mediterranean.

Judy Wasik

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EXECUTIVE SUMMARY

Overview

Over the past year, the Department of the Navy Total Quality Leadership Office (DON TQL Office) has been interviewing members of the CNO TQL Fleet Teams as well as personnel from various Fleet demonstration units on both coasts. The TQL Office undertook this task at the request of the Chief of Naval Operations, who asked how the TQL approach would be applied within a Fleet setting.

The answers to that question appear as lessons learned in Part I of this report. The CNO also asked for stories about Fleet-based TQL training and implementation that illustrate how TQL concepts and practices can be applied in the Fleet. Some of the stories are embedded in the lessons learned; others appear in Part II as sample stories.

History

By 1991, elements of the DON's TQL approach had been successfully implemented in most types of shore establishments—headquarters, shore support commands, and industrial activities. Some difficult questions remained: How would TQL be applied in a fleet setting, such as onboard an aircraft carrier? Would the demands of operations override those associated with TQL training and implementation? In other words, were Fleet requirements unique, different from those of shore commands?

To answer those questions, the CNO tasked the TQL Office to train 20 military personnel he had hand-picked from the aviation, surface, and submarine communities. The intent was for them to serve as consultants to 11 operational units, called "demonstration units," to initiate process improvement efforts. These units were likewise selected by the CNO and reflected the three warfare communities.

EXECUTIVE SUMMARY

After training was completed, five CNO TQL Fleet Teams were formed based on their community affiliation. Three were assigned to Norfolk, VA—aviation, surface, and submarine teams; and two to San Diego, CA—aviation and surface teams. Since the project began, the CNO TQL Fleet Teams have also consulted with other units (e.g., USS GEORGE WASHINGTON and the USS CARL VINSON Battle Group), some in an official capacity through the CNO and others informally.

Methodology

The authors met with the CNO TQL Fleet Teams and a number of the demonstration units on both coasts, interviewing individuals with various responsibilities, from commanding officers to process action team members. Not all of the units were available for interviews because of deployment schedules. The interview questions focused on four areas: leadership style, culture, TQL training, and TQL implementation. The authors also reviewed Fleet team progress reports and documentation from demonstration units.

Findings

1. The leadership style of the CO and the culture of the organization have great impact on successful initiation of TQL practices. The personality and involvement of the top leader affect the organization's readiness for change and its continuing progress. The culture of a unit affects the attention and commitment that everyone gives to the TQL effort, the way people interact in teams, and the degree to which system optimization is achieved and overall performance improved.

EXECUTIVE SUMMARY

2. There are no essential differences between operational units and shore support commands with regard to *requirements* for TQL education, training, and implementation. TQL training content is the same for both Fleet and shore commands with regard to the message, courses delivered, target audiences, and TQL support roles. TQL implementation is the same with regard to the way supervisors relate to subordinates, the way decisions are made, the way quality is defined, and the way work processes are analyzed and improved.

3. There are differences between operational units and shore support commands with regard to the *conduct* of TQL education, training, and implementation because of Fleet deployment schedules and aspects of life unique to operational settings. TQL courses may need to be organized differently and the sequence of courses prescribed by the DON education and training program may differ as well to maximize learning within units deploying. Because of operational pressures, TQL implementation may differ with regard to the time available for process improvement, the focus that people bring to it, and how teams are composed and members interact.

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OVERVIEW

Over the past year, the Department of the Navy Total Quality Leadership Office (DON TQL Office) has been interviewing members of the CNO TQL Fleet Teams as well as personnel from the various Fleet demonstration units on both coasts (see Appendix). The TQL Office undertook this task at the request of the Chief of Naval Operations who asked how the TQL approach could be applied within an operational setting. The answers to that question appear as "lessons learned"¹ in Part I of this report. The CNO also asked for stories about Fleet-based TQL training and implementation that could illustrate how TQL concepts and practices are applied in selected Fleet units. Some of the stories are embedded in the lessons learned. Others appear in Part II of this report. Both lessons learned and sample stories have value to individual units about to begin implementation and to the DON TQL schoolhouses.

HISTORY

By 1991, elements of the Department of the Navy's TQL approach had been applied and improvements demonstrated in most types of DON work settings—headquarters, shore support commands, and industrial activities.

Up to this time there had been no systematic application of TQL concepts and principles in Fleet operational units. To identify specific fleet implementation issues, the CNO initiated process improvement projects. The TQL Office was tasked to train 20 military personnel the CNO had hand-picked from the aviation, surface, and submarine communities (Doherty, 1991). The intent was for them to serve as consultants to 11 operational units, called "demonstration units," to assist in initial process improvement efforts. These "demo" units, likewise selected by the CNO, reflected the three warfare communities.

¹"Lessons learned" is defined here as interpretations of events within the context of TQL theory.

OVERVIEW

Training of the teams took place at the Navy Personnel Research and Development Center (NPRDC) for 90 days between January and April 1991.² The intensive curriculum covered theory and principles of TQL, team skills and concepts, leadership roles and responsibilities, quantitative methods and tools for process improvement, the seven management and planning tools, and implementation planning. The teams also made site visits to Balboa Naval Hospital, Mare Island Naval Shipyard, McClellan Air Force Base, and Sacramento Army Depot, and attended a 4-Day Deming Seminar.

Following training, five CNO TQL Fleet Teams were formed based on their community affiliation—three teams (aviation, surface, and submarine) were assigned to Norfolk, VA, and two teams (aviation and surface) to San Diego, CA. The TQL Office provided consultation to the teams for 6 months following training.

Since July 1991, the CNO TQL Fleet Teams have been providing education, training, and consultation to the demo units.

METHODOLOGY

The authors interviewed the CNO TQL Fleet Teams and demo unit representatives on both coasts in March, September, and October 1992. USS TRENTON was visited on deployment in September 1992. Not all of the units were available for interview because of deployment schedules. Those interviewed were:

Atlantic: Helicopter Combat Support Squadron EIGHT, USS EMORY S. LAND, USS TRENTON, and Headquarters Support Activity, Norfolk, VA.

Pacific: USS McKEE, Helicopter Anti-Submarine Squadron TEN, Helicopter Anti-Submarine Squadron Light FORTY ONE, and Air Anti-Submarine Squadron FOUR ONE.

²The training was conducted by members of the TQL Office and the Navy Personnel Research and Development Center.

The authors met with individuals from all levels in the command, including commanding officers and TQL coordinators. They developed interview questions focused on four areas: leadership style,³ organizational culture,⁴ TQL training, and TQL implementation. These four areas addressed how TQL would be applied in the Fleet. The authors also reviewed Fleet team progress reports and documentation from the demo units.

Lessons learned were extracted from these materials and organized around the four basic questions:

1 - How does the leadership style of the top leader affect TQL training and implementation?

2a - What is the influence of the Navy culture on TQL training and implementation? 2b - What is the influence of TQL on the Navy culture?

3 - What are the requirements for TQL education and training and how are TQL education and training conducted in the Fleet?

4 - What are the requirements for TQL implementation and how is implementation conducted in the Fleet?

FINDINGS

The leadership style of the CO and the culture of the organization have great impact on successful initiation of TQL practices. The leadership style and involvement of the top leader affect the organization's readiness for change and its continuing progress. The culture of the unit affects the attention and commitment that everyone gives to the TQL effort, the way people interact in teams, and the degree to which system optimization is achieved and overall performance improved.

³"Leadership style" refers here to how leaders influence people in an organization to progress toward accomplishment of a goal (*Fundamentals of TQL course*, 1992).

⁴"Organizational culture" refers to a pattern of basic assumptions—invented, discovered, or developed by a given group—as it learns to cope with its problems of external adaptation and internal integration. This pattern has worked well enough to be considered valid and, therefore, is to be taught to new members as the correct way to perceive, think, and feel in relation to those problems (*Fundamentals of TQL course*, 1992).

OVERVIEW

There are no essential differences between operational units and shore support commands with regard to *requirements* for TQL education, training, and implementation. The TQL training content is the same for both Fleet and shore commands with regard to the message, the courses delivered, the target audiences, and TQL support roles. TQL implementation is the same with regard to the way supervisors relate to subordinates, the way decisions are made, the way quality is defined, and the way work processes are analyzed and improved.

There are differences between operational units and shore support commands with regard to the *conduct* of TQL education, training, and implementation. The conduct of TQL training is different in the Fleet because of deployment schedules and aspects of life unique to operational settings. The CNO TQL Fleet Teams and demo unit representatives found that courses may need to be organized differently to accommodate interruptions caused by operational schedules. They also found that the sequence of course offerings may have to depart from the DON TQL education and training strategy to maximize learning within units about to deploy (*DON TQL Course Catalog*, 1992).

Because of operational pressures, deployment schedules, and aspects of life unique to operational settings, TQL implementation may differ with regard to the time available for process improvement, the focus that people bring to it, and how teams are composed and members interact.

PART I: LESSONS LEARNED

Lessons learned were extracted from Fleet team and demo unit documentation and the answers to interview questions that focused on four areas: leadership style, organizational culture, TQL training, and TQL implementation. These questions provide the headings under which the lessons learned statements are listed. After each lesson learned, supporting quotations are provided. In most cases, the quotations indicate opinions expressed by more than one person and represent a collective view.

1 - How does the leadership style of the top leader affect TQL training and implementation?

- **An organization's readiness for change is CO/XO-dependent.**

"It's important that senior management be involved in the initial training efforts. The CO's presence in TQL classes can impact the success of TQL training."

"Not all leaders will support TQL with equal enthusiasm and involvement, but some progress is possible as long as they do not stand in the way of their teams' efforts."

"One CO increased the number of times he held Captain's Call, with the intent of driving out fear."

"One CO reported that TQL has given him an appreciation of and a receptivity to change. He no longer makes decisions based on 'gut' feelings. He allows thoughts to percolate and presents ideas to the group with the objective of gaining consensus."

"Once the CO and XO began to lead executive meetings focused on quality, more progress was made in a 3-week period than had been made in the previous 18 months."

"One CO reported that TQL has given him an appreciation of and a receptivity to change."

PART I: LESSONS LEARNED

- **Continued progress in TQL is dependent on the attention and commitment that a new CO brings to a command.**

"Many of the demo units have gone through a change of command since TQL training and implementation began. Where the new CO has shown interest in process improvement efforts, progress continues. Where the CO has shown little interest, progress stops."

- **Positive feedback from the CO and the ESC reinforces commitment within the unit to the TQL approach.**

"Praise counts. It says something to the rest of the command when the CO says, 'You are doing a heck of a good job looking at the way we can improve our operations, and I support what you're doing.'"

- **The atmosphere established by the CO has a tremendous influence on how teams function. The CO influences whether or not everyone's opinion has equal weight and whether or not decisions are reached by consensus.**

"Generally speaking, when the CO speaks, you read into that absolute authority. The attitude is bred into us. It is very difficult to disagree with the CO under any circumstances."

"In one team, regardless of whether the CO went first or last in brainstorming, very little changed. But once someone challenged the CO in a discussion, the atmosphere changed and everyone else began challenging the CO. Now there is full team participation. Everyone feels comfortable enough to agree or disagree with the captain in a quality team meeting."

"The CO should be sensitive to the fact that changes in team membership will affect progress as well as group dynamics."

"The CO should be sensitive to the fact that changes in team membership will affect progress as well as group dynamics."

"In the pressure for quick results, some individuals are focusing on problem-solving. While it is important to the quality improvement effort, it is not process improvement."

"Seating arrangements can be important. If the CO is not leading the group, he or she should not sit at the head of the table."

"COs have to work hard to avoid dominating team meetings and having their opinions come across as directives. The wise CO is aware of the influence he or she is exerting on the group and acts accordingly."

"The perception is that CO job ratings depend on inspection results. Because of this, one CO refused to relinquish any responsibility to the rest of the team."

- **Receptivity to change generally increases as the work experience of the CO increases.**

"A CO who is on a second or third command has a different 'comfort level' than one who is on a first command. Generally speaking, the more experienced CO is better able to handle operational pressures and may be more willing to entertain new ideas and ways of doing things. At the other end of the experience spectrum, a CO who is about to retire may not be as receptive to change because he or she will not be around to see the change through and may want to leave decision-making on major issues to the individual rotating into that position."

2a - What is the influence of Navy culture on TQL training and implementation?

- **Top leaders must understand and communicate that change is neither quick nor easy.**

"The leadership needs to demonstrate that successful transformation requires change, but that change takes time."

"In the pressure for quick results, some individuals are focusing on problem-solving. While it is important to the quality improvement effort, it is not process improvement."

PART I: LESSONS LEARNED

"In early implementation, rapid change should not be forced upon the organization. Successful transformation requires recognition of the need for change, a desire for change, and a change plan."

"Progress may not be a linear journey."

"Change is a slow process. Some people in the organization are harder to change than others. Some people are more comfortable with the status quo. This is why top-down is so critical. Even with top-down commitment and the knowledge that TQL will work, change comes over time in small steps."

"In early implementation, rapid change should not be forced upon the organization. Successful transformation requires recognition of the need for change, a desire for change, and a change plan."

- **People are reluctant to try new things because they are afraid of making mistakes.**

"The Navy expects perfection, zero defects, making it difficult to take risks."

"Progress may not be a linear journey. Successful implementation may also mean making some mistakes. We must not, however, blame the theory for mistakes we make in implementing and using the tools, etc. Mistakes do not invalidate the philosophy."

"Some perceive the organizational commitment to change as a personal attack. The stronger the internal culture—the more cohesive it is—the more readily people accept change."

"Most people appear to be very positive when you ask, 'How many of you would like to work in an organization where everyone has a say?' Even though people would like to work in this kind of climate, when it comes time for them to change, they are resistant. People perceive that the risk is too great to do something that is unfamiliar."

- **The reduction of fear is necessary to create a climate of trust and cooperation where system optimization can occur.**

"Some teams spend a lot of time generating ground rules for self-preservation. Once team members have learned to trust each other, they often revisit the ground rules and eliminate the ones they no longer need. Teams then become more efficient and effective."

PART I: LESSONS LEARNED

"Agendas give structure to team meetings and result in greater progress. In a climate of fear, however, agendas may be misused to inhibit communication and the introduction of new ideas."

"When there is distrust of the officers by the enlisted men, team members may be nonparticipative during team meetings. Enlisted people need to see an open commitment to TQL on the part of top leaders and junior officers. This promotes trust and participation."

"Because shipboard life is confined, it affects the way people interact in team efforts."

"Because shipboard life is confined, it affects the way people interact in team efforts. There was fear among some demo unit teams that what they would say and do in meetings would be communicated to the rest of the ship, thus inhibiting progress. They see this as unique to a shipboard environment."

"People are less fearful and more readily accept TQL as a management approach once they see how it benefits them and their organization. The better the understanding, the more supportive people are of team efforts."

"A team was established to study the Bachelor Enlisted Quarters (BEQ) check-in process. Some residents were willing to become involved in team efforts as customers after observing a climate of cooperation and improvement in the check-in process."

"An organization needs to have a plan for working with people who may resist change and negatively influence TQL implementation."

- **Units need to understand the influence of Navy culture on their readiness for change before initiating process improvement.**

"Organizational assessment is very important. It can tell you, for example, whether the organization is customer-oriented. People need to realize that an organizational assessment is not a pass-fail test."

"Barriers to change can often be identified through assessment instruments. COs need this information to plan for change."

"People need to realize that an organizational assessment is not a pass-fail test."

PART I: LESSONS LEARNED

"TQL should not be another block that is checked off in the predeployment workup; it's a whole new way of doing things."

"Trainers can be more effective if they know about organizational barriers ahead of time. For example, if they see that there is a high level of fear in the organization, they can approach training and implementation differently. The solution might be as simple as introducing team training earlier in the implementation process."

- **Operational pressures affect the focus that Fleet units bring to TQL training and implementation.**

"The pressure never goes away. This sense of urgency may carry over into TQL meetings to the detriment of team efforts."

"You are always under the gun to prepare to deploy. TQL should not be another block that is checked off in the predeployment workup; it's a whole new way of doing things. People understand this intellectually but lose sight of it because of operational pressures. These pressures come from inspections and sea-time preparation."

- **Deployment schedules and operational commitments affect the progress of process improvement efforts.**

"At sea, operations can affect the progress of process improvement. On a carrier, for example, it's too expensive not to fly, so crew commanders will not usually be available for team meetings when conditions for flying are favorable. Getting team members together on any kind of regular basis is an ongoing challenge."

"Initially what you do to support TQL and process improvement and what you sometimes have to do with your day-to-day operations when deployed can be different. For example, when we sit down as a new team and say, 'Let's figure out how to make sea-and-anchor detail more efficient,' everyone on the team has a say. But when the captain says, 'Set the special sea-and-anchor detail and get under way,' we do just that. We don't sit down and discuss it first."

PART I: LESSONS LEARNED

- **Military job rotation has a negative effect on productivity and maintaining constancy of purpose.**

"If you were to bar graph the performance of many individuals over the course of their military careers, it would probably look like a bell curve. The individual comes into a job, sometimes with little knowledge. It can take several months for him or her to become familiar with the new position, but finally that person becomes highly productive, at which point he or she is rotated to a new position. They're rewarded for rotating. Promotions are often given to military personnel who have excelled in many different jobs and are willing to change their jobs frequently for advancement. This ultimately has a negative bearing on productivity and maintaining constancy of purpose."

"If the top leaders and the TQL coordinators are rotated at the same time before the critical mass is established in a command, implementation efforts will slow down until the new leaders and coordinators are up to speed."

- **Ranking of personnel undermines cooperation and team efforts.**

"As downsizing continues and competition for jobs increases, the issue of cooperation vice competition becomes more acute. It may become more difficult to persuade people to work together in teams—to share information—when they are being ranked, one against the other, for promotion."

"The system should allow supervisors to recognize members of a team equally when the team is responsible for improving the process."

- **The "use or lose" practice of managing resources encourages wastefulness.**

"If resources are not used up at the end of a fiscal year, next year's allotment may be less than that of the current year. It is difficult to promote system optimization when such a practice continues."

"It may become more difficult to persuade people to work together in teams—to share information—when they are being ranked, one against the other, for promotion."

PART I: LESSONS LEARNED

"Working in teams is not new in the Navy; what is new is how teams interact."

"Managing people is an emotional experience."

2b - What is the influence of TQL on Navy culture?

- **Working in teams is not new in the Navy; what is new is how teams interact.**

"It's okay now to have a different opinion. This is a new concept in the Navy. People are more willing to express ideas than they were in the past because they believe their ideas will be looked at seriously in a team setting."

"Every organization has 'stars'—people who shine. Every organization also has people who do not do as well. But everyone should be able to do well as a team member as long as process improvement continues to be directed from the top."

- **TQL shifts negative attention from the individual to the system.**

"Managing people is an emotional experience. Under the old system, if there were any problems within the system, we would point fingers. Now if there are problems, we look at the process."

"The job of plane captains is to inspect aircraft before the pilot takes off. The time-traditional method for training plane captains was to select someone junior and assign him or her to a team to learn how to do the job by observing other team members. This was an extra task for the senior person and training was haphazard. No real process existed to ensure good training. To solve this problem, a school for plane captains was organized. Prior to this change, people would point fingers at people if there were problems with an aircraft. Now if there are problems, the training process is examined."

"It can take several months to become familiar with a particular work process. However, if a new person walks into a situation where the process has been properly identified, he or she can learn the system much faster. This saves time and money."

- **If the steps in a stable process are correctly flow-charted and documented, most people new to the job or from different departments within the organization can begin working more efficiently and effectively.**

"It can take several months to become familiar with a particular work process. However, if a new person walks into a situation where the process has been properly identified, he or she can learn the system much faster. This saves time and money."

3 - What are the requirements for TQL education and training and how are education and training conducted in the Fleet?

- **When initial TQL education and training are spread out over too long a period of time, learning is compromised.**

"The best way to conduct initial TQL education is over a 1-to-2-week period because it improves retention of material learned earlier in the session and reduces classroom interruptions caused by new personnel coming into the unit. New people should be trained in a separate session."

"TQL theory and philosophy were better understood when taught in one or two sessions, rather than broken up into many sessions presented over a long period of time [beyond one month]."

- **The teaching of TQL theory and philosophy can be conducted with large groups, representing a savings of both time and money.**

"Large group training offers an opportunity to consolidate resources. For example, TQL theory and philosophy can be taught to several newly formed teams or management levels (e.g., all department heads) across organizations that are located in the same geographic area or are part of the same battle group."

PART I: LESSONS LEARNED

"Process improvement teams need early training in team skills to function effectively. It is especially important if all of the TQL training has not been completed prior to deployment."

- **Teambuilding skills training should be conducted with people who are planning to work together on a process improvement effort.**

"Process improvement teams need early training in team skills to function effectively. It is especially important if all of the TQL training has not been completed prior to deployment. People are learning about a new way of interacting with one another, essential to success as team members. These skills also make it easier for a team to discuss the TQL concepts learned in later training sessions."

"Some team training (e.g., education about the roles and responsibilities of team members) can be taught to large groups of people who may not be working together in teams. However, teaching of teambuilding skills (e.g., how to provide feedback) should be limited to actual team members so that they can practice what they learn with each other."

"A subgroup of an ESC was formed to help create a charter for a prospective QMB. After 3 weeks the group members wanted to quit. We learned that we should have conducted teambuilding training when this group was first formed even though they were not an officially chartered group."

- **Learning is enhanced if there is time for people to discuss the concepts, for "incubation" to take place, and for their knowledge to be applied in training exercises.**

"Because there is fear that TQL education will not continue once deployed, there is pressure in units to complete it as soon as possible. The application of the knowledge in training exercises may be deleted from TQL education because of time constraints. Learning is compromised when this occurs."

"People need time to think about and discuss how application of TQL concepts and tools will affect them individually and as an organization. When learning is rushed, there is the possibility that people will not understand the DON TQL approach and will not be committed to it."

"When learning is rushed, there is the possibility that people will not understand the DON TQL approach and will not be committed to it."

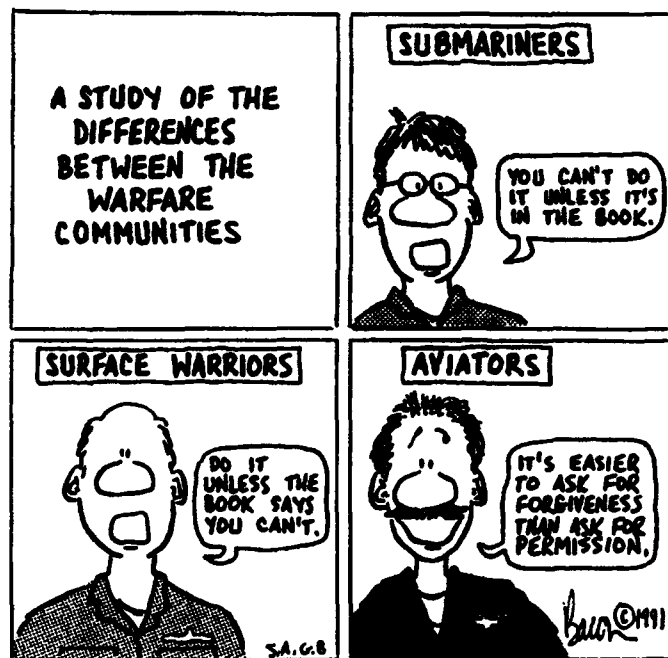
PART I: LESSONS LEARNED

- TQL education and training can be laid out in different ways to accommodate operational schedules.

"Flexibility in scheduling instruction is essential because of operational requirements. Some training may be split between predeployment and deployment. Some instruction may have to occur in segments of varying length. The TQL curriculum is organized by lessons and modules, making it relatively easy for trainers to present material segmentally."

- Different platforms have different missions and, therefore, different requirements. As a result, training opportunities will vary from platform to platform.

"For an aviation unit, the only time available in port for TQL training is coming off a cruise, and that period lasts for about a month. After that period there is continual maintenance and flight crew training to prepare for the next deployment. When a carrier is deployed, the pilots sometimes spend only half of their days flying. That leaves some time to schedule TQL training for pilots and other personnel over a 180-day deployment."



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PART I: LESSONS LEARNED

"Someone who already has a critical job, which may take 16-20 hours/day, is not available to conduct or receive training in a large block of time."

"TQL education does not end with SLS."

"In surface units, a 'yard' period is a better time for training than a full 'tempops' period. Training was easier to schedule in the shipyard. We were able to get teams together for an hour or two at a time. Once we went to sea, training slowed down dramatically. There is one exception: If the ship is undergoing a major overhaul and ship personnel are doing much of the work, training might be difficult to schedule."

"Because of the work schedule that people have during deployment, they sometimes have only 3-4 hours of sleep in a 24-hour period. With operational schedules like this, training for those personnel has to wait until the unit comes off deployment."

"The submarine environment impacts availability of personnel. There are fewer people to 'siphon off' for training. Someone who already has a critical job, which may take 16-20 hours/day, is not available to conduct or receive training in a large block of time."

- **The CO needs to attend the Senior Leaders Seminar and continue self-education in TQL to provide the necessary leadership and to ensure successful TQL implementation.**

"The Senior Leaders Seminar provides essential TQL education and training for leaders. While in attendance, COs have an opportunity to interact with each other, a valuable experience that reinforces commitment to TQL. TQL education does not end with SLS. COs also need to seek out other materials (e.g., readings, videotapes) to increase their understanding of this complex approach and to provide guidance in its application within their commands. COs should attend some of the command-level TQL training provided by their own trainers."

- **On-site TQL training can be as effective as off-site training, if managed correctly.**

"If ground rules are established and enforced (e.g., the 100-mile rule), on-site training can work well when operational commitments prevent scheduling of training off site or when department heads are not available at the same time."

"Examples do not have to be specific to a particular kind of organization or system to make a point. TQL principles are universal."

"Early in the training, specific military examples can lead to confusion when they don't apply to every situation. If examples are too specific, classes may focus more on the details than on the message."

- **For training purposes, both military and generic examples of TQL applications have value.**

"Examples do not have to be specific to a particular kind of organization or system to make a point. TQL principles are universal."

"The use of generic examples for teaching tools application and team skills may be less threatening than military examples and thus enhance learning. Once people are more familiar with the tools and team skills, they can apply them effectively to specific military processes."

"Early in the training, specific military examples can lead to confusion when they don't apply to every situation. If examples are too specific, classes may focus more on the details than on the message. To avoid confusion in a training situation, generic examples should be followed by military examples once there is some understanding of the concept being taught. Examples should come from all the different communities to make training more relevant."

- **Insufficient knowledge about TQL concepts and their application among newly formed process improvement teams or new members can lead to a rice bowl mentality.**

"Newly formed teams that are working on related efforts may have some difficulty in sharing information because of a culture that encourages competition. As knowledge about TQL concepts increases, team members see the benefits of cooperation."

- **The ESC should address the training of new team members of an established team as well as refresher training for other members.**

"Education and training in TQL should be provided to new members of the command as soon as possible. This will allow them to participate fully and knowledgeably in team activities with less of a negative effect on team progress or team dynamics."

"Refresher training should be provided to all teams from time to time as needed—particularly in the use of tools or team skills."

PART I: LESSONS LEARNED

4 - What are the requirements for TQL implementation and how is implementation conducted in the Fleet?

"Success as a TQL coordinator is more a function of initiative and commitment than of rank."

- Selection of a TQL coordinator is indicative of the importance that the organization places on TQL and is critical to an organization's progress.

"Success as a TQL coordinator is more a function of initiative and commitment than of rank. However, if the position is a military one, the CO's visible support for that position is critical to successful implementation. The TQL coordinator should also be well respected within the organization, someone who can carry on the initiatives as leadership rotates."

"The selectee should be permitted to devote 100 percent of his or her time initially to the training and implementation effort or have an assistant who can share TQL responsibilities."

"The selectee should be someone who has time to grow in the job, not someone who is midway through a tour or getting ready to rotate."

- TQL coordinators describe the requirements for successful TQL implementation:

"Firm direction from higher level teams to lower level teams"

"Structured team activities"

"Constant reference to the implementation plan to guide efforts"

"A reliable communications system"

"Careful selection of the linking pin and clear definition of that role"

"A charter for all teams"

"Leaders who walk the talk"

"ESC members who do not delegate ESC-level responsibilities"

PART I: LESSONS LEARNED

"ESCs that set realistic deadlines"

"Elimination of fear from the work place"

"Continuing TQL training for themselves"

"An understanding throughout the organization that group efforts take more time initially than individual efforts, but that the payoff is far greater in terms of process improvement and buy-in"

- **Memorandums of Understanding (MOUs) are useful in establishing a positive relationship between an organization and its DON consultants and even between it and its TQL staff as the organization begins to implement TQL.**

"MOUs spell out roles and responsibilities between consultants/TQL staff members and improvement teams. They can be used to clarify issues, such as confidentiality, to get concerns and fears out on the table for discussion, and to spell out what each party expects from the other. Once trust is established, MOUs may no longer be needed because everyone knows what to expect. Other MOUs might be modified with time."

- **The ESC must set boundaries for its QMBs, and the QMBs must likewise set boundaries for the PATs.**

"The QMB should not be given responsibility for setting boundaries for large, complex processes. This is the job of the ESC. It is also the job of the ESC to break down the strategic goals into manageable tasks for the QMBs."

"Teams need deadlines for completion of efforts."

"PATs should be directed to investigate the 'how' and 'why' of each step in a process prior to beginning a process improvement effort."

"Without boundaries, the morale of a QMB can swing from high to low as it gets off track or when the members realize the magnitude of their tasking. It is difficult after that to engender fresh enthusiasm."

"PATs should be directed to investigate the 'how' and 'why' of each step in a process prior to beginning a process improvement effort."

PART I: LESSONS LEARNED

"A charter forces an ESC to do initial planning. It can be an appropriate mechanism for ensuring that the Plan-Do-Check-Act cycle is followed by process improvement teams."

- **Chartered teams do a better job of planning and conducting process improvement than teams lacking written guidance.**

"A charter forces an ESC to do initial planning. It can be an appropriate mechanism for ensuring that the Plan-Do-Check-Act cycle is followed by process improvement teams."

"Team charters provide guidance and operational definitions, reduce the risk of suboptimization, and ensure the team has the cooperation and resources to do its work."

- **The ESC may need to prioritize goals before chartering QMBs to address them.**

"Prioritizing goals may be more important in smaller organizations with limited resources. This would influence the order in which QMBs are chartered. In larger organizations with more resources, several QMBs may be chartered at the same time."

- **Early implementation efforts should focus on process improvement rather than strategic planning.**

The overall intent of initial process improvement efforts is to:

"Provide experience to organization members in applying new methods and tools to analyze and improve processes related to customer requirements"

"Achieve some successes"

"Provide a lever for breaking down organizational resistance to change as well as barriers between groups"

"Provide the time necessary for leaders to learn about quality principles, to see how TQL can be applied to the day-to-day business of the organization, and to 'incubate the ideas' without devoting full resources to the effort"

"Allow time for the ESC to determine the impact of process improvement efforts on the work culture"

"Demonstrate leadership"

PART I: LESSONS LEARNED

"New team members who understand the history of the process improvement effort and the rationale for decisions may be more motivated to continue the team's effort."

- **Improvement efforts that have been well documented will most likely survive changing team membership.**

"When teams keep records of their efforts, corporate history is maintained regardless of job rotation. New team members who understand the history of the process improvement effort and the rationale for decisions may be more motivated to continue the team's effort."

"New team members will be more likely to avoid duplicating earlier steps or making the same mistakes."

"New members of higher level teams are more apt to sustain interest in ongoing lower level team efforts if they have a complete understanding of the effort."

- **Ideas for initial process improvement efforts may come from all levels of the organization.**

"Ideas for initial improvements can come from any level of the organization through its suggestion program. Every suggestion should be followed up, sent through the chain, serialized, and answered."

"Students reporting for flight training were required to report first to the people who maintain the flight gear. Once the gear is issued, it must be inspected on a regular basis even though the students will not fly for 8-9 months. A suggestion was made to the ESC that students check in just one month prior to flying to pick up their flight gear. The change resulted in a savings of 900 hours of inspection of flight gear per year as well as an annual savings of \$12,000. These results were publicized to the rest of the unit."

PART I: LESSONS LEARNED

"Team participation can be impeded when the same individual 'links' up and down."

"Teams formed in port may not have the same members onboard during deployment, making progress difficult."

"A team was chartered by the ESC to review the current working uniform policy for the flight line and offer suggestions for revising it for personnel engaged in 'dirty work.' People did not know what the uniform policy should be—coveralls or dungarees, etc. The team considered worker comfort, safety, conformity with regulations, standardization, and cost. Recommendations to the ESC included the number of coveralls that should be initially issued, where they should be worn, and requirements for what should be worn underneath. Some results were surprising (e.g., dungarees worn under coveralls hinder motion and are therefore a safety problem)."

- **The same person should not serve as the upward and downward link because of a possible filtering of information.**

"Team participation can be impeded when the same individual 'links' up and down. The filtering of information or a perception that information will not be accurately transferred between higher and lower level teams can reduce team effectiveness."

"The downward link can be a major impediment to lower level team participation if the person holding the position is trying to influence lower level team decision-making."

"When assigning the link pin to a team, the ESC or QMB should consider the impact on the lower level team. For example, the link pin should probably not be the CO or XO, someone who is seen as an authority figure."

- **The team structure and membership must take into account the size and complexity of the command.**

"In designing the quality improvement team structure, the number and size of teams should be tailored to the size and complexity of the organization."

"The size of the unit can change with deployment, affecting team membership and group dynamics. Teams formed in port may not have the same members onboard during deployment, making progress difficult."

"The leader has an essential role as a member of any team—to focus the command's activities on processes important to customers."

"Teams need to be reminded of what systems and processes are important to the command's mission and what they should be trying to improve."

- **In promoting consensus building among team members, care must be taken not to negate the responsibilities of the CO.**

"The leader has an essential role as a member of any team—to focus the command's activities on processes important to customers."

"We talk about the importance of the leader role, but often we ask the organization's leader to step out of this role to encourage other team members to participate. We don't want to make the leader a nonparticipant. What we really want from the CO is one who listens and asks the members for help in guiding the organization."

- **Because of time constraints, team meetings have to be well planned and executed.**

"Adequate lead time is required in scheduling meetings to accommodate operational commitments."

"A policy on meeting attendance needs to be established to meet the needs of the organization."

"Meeting agendas, ground rules, and charters are necessary for efficient and effective meetings."

"Team member roles and responsibilities need to be defined. Also, every team should have a recorder to ensure documentation of team discussions and decisions."

"Ideally, new team members, or members who have missed meetings, play a passive role until they are 'up to speed'; otherwise, team progress will be impeded."

- **A strong link between a unit's implementation plan and the various process improvement teams needs to be maintained to ensure a sustained commitment to command goals.**

"All teams should review the unit's implementation plan because of changes in team membership. Teams need to be reminded of what systems and processes are important to the command's mission and what they should be trying to improve."

"Review of a command's implementation plan by teams promotes ownership and commitment."

PART I: LESSONS LEARNED

- **Process improvement teams should consider inviting the customer to participate in team meetings when appropriate.**

"After initial process improvement changes have been implemented, customers can help a team evaluate the success of change and provide input for additional improvement."

- **The need for facilitation skills may not diminish with time because of deployment and the military rotation policy, which can work against team maturity.**

"TQL staff members may need to spend more time facilitating process improvement teams when there is a high turnover of membership and when continuity of team activity is difficult to sustain because of interruptions."

"Ideally, the facilitator has no investment in the outcome of the process improvement effort and therefore is not afraid to challenge coworkers and supervisors. This role should be held by someone with a strong personality who feels free to comment and is willing to provide necessary recommendations."

- **ESCs should be alert to the impact of process improvements on other processes within the organization to ensure optimization of the entire system.**

"Process improvement in one area can have a positive effect on a related process. The loss of a piece of valuable equipment from a security area initiated a process improvement effort. The improvement team learned that the receiving area was screened from general view. The solution was to relocate the receiving area so that it was always within view and to put in place a two-man rule for inventorying and storing equipment. Sometime later, a piece of equipment was delivered minus a part. The supplier claimed that even though the item was not listed, it had been shipped. Because of the two-man rule for inventorying and storing equipment, the unit was able to convince the supplier that the part had not arrived. In addition, the team convinced the shipping company to change its procedures, to list every box being shipped. Under the old procedure there was no way for the supplier to prove that the item had been delivered."

"TQL staff members may need to spend more time facilitating process improvement teams when there is a high turnover of membership and when continuity of team activity is difficult to sustain because of interruptions."

LESSONS LEARNED ADDRESSED

Almost all of the lessons learned and concerns raised by the fleet units during this study are addressed in the DON TQL education and training courses. Because the lessons learned described here were developed over time, it was possible to incorporate some of these new findings into courses undergoing revision and to give fresh emphasis to those areas important to fleet units.

Below are the lessons learned, as they appear in Part I, and a brief description of how they are addressed in the various TQL courses. Abbreviations are used for the six courses, as follows: SLS (Senior Leaders Seminar), FTQL (Fundamentals of TQL), ITQL (Implementing TQL), MMQ (Methods for Managing Quality), TS&C (Team Skills and Concepts), and SAPI (Systems Approach to Process Improvement).

Lessons Learned**Issues Addressed**

1. How does the leadership style of the top leader affect TQL training and implementation?

- An organization's readiness for change is CO/XO-dependent.

- Continued progress in TQL is dependent on the commitment of the new CO.

The entire TQL curriculum emphasizes a top-down approach—leadership commitment is the key to successful TQL implementation.

One of the major tenets of the DON TQL approach is that change is led from the top. This concept is emphasized in all of the courses. The CNO has stressed that every CO should attend SLS.

TS&C discusses Blanchard's seven dynamics of change, one of which emphasizes the need to recognize that people will be at different levels of readiness for change.

SLS is under revision to emphasize the CO's role in conducting process improvement.

ITQL directs the ESC to brief the new CO on what actions the organization has taken to date. The TQL coordinator is instructed to work with the top leader to strengthen his or her personal commitment and to encourage the CO to take the lead on process improvement activities.

PART I: LESSONS LEARNED

- Positive feedback from the CO and ESC reinforces a unit's commitment to TQL.

The proper environment is critical to TQL implementation. SLS, FTQL, and ITQL emphasize that the top leader and the ESC shape that environment. Positive feedback is just one of the many actions that the top leaders take.

TS&C also stresses that management's feedback to teams should be timely.

- The atmosphere set by the CO influences team functioning.

SLS and ITQL state that the atmosphere set by the top leader goes beyond a belief in quality to actions taken to lead the change. FTQL and TS&C stress that the CO supports team functioning by leading strategically, chartering teams, providing resources, removing impediments to organizational change, and acting on the team's recommendations.

- Receptivity to change generally increases as the work experience of the CO increases.

SLS, FTQL, and ITQL discuss the evolutionary nature of change. Everyone needs time to become committed to change, and this commitment may grow slowly based on involvement in quality-focused efforts, or it may be instantaneous when the CO becomes convinced that this is the way to go.

Authors' Note: Over time, this may be less of an issue as more and more COs receive training.

2a. What is the influence of Navy culture on TQL training and implementation?

- Top leaders must understand that change is neither quick nor easy.

SLS, FTQL, and ITQL state that change requires preparation, training, planning, data gathering, resources, and leadership. Change, and eventually organizational transformation, takes time and needs a supportive environment to flourish.

People can only handle so much change (Blanchard). Change must be introduced in increments they can accept (TS&C).

PART I: LESSONS LEARNED

- People are reluctant to try new things because they are afraid of making mistakes.

ITQL takes the position that while some individuals are afraid to try something new because of fear of failure, poor ratings, etc., others welcome change.

Change tends to make people feel awkward, ill-at-ease, self-conscious, alone. It is important to recognize that this is normal for some and that it is normal for people to react differently (Blanchard)(TS&C).

- Reduction of fear is necessary to create a climate of trust and cooperation where system optimization can occur.

Dr. Deming's Point 8, which deals with driving out fear and creating trust, is discussed in SLS, FTQL, ITQL, TS&C, and MMQ. Trust is crucial to the organization's ability to achieve quality.

- Units need to understand the influence of Navy culture on readiness for change before starting process improvement.

This influence is addressed in SLS.

ITQL states that leaders must understand the implications of organizational culture as they prepare and plan for TQL implementation because "current assumptions, beliefs, and attitudes . . . may inhibit or facilitate organizational change." DON organizational assessment instruments are provided for this purpose.

TS&C identifies and discusses cultural values that are requisite for a successful TQL organization.

- Operational pressures affect the focus that Fleet units bring to TQL training and implementation.

Units should document their experiences to determine how much of an impact operational pressures have on TQL training and implementation.

- Deployment schedules/operational commitments affect progress of process improvement.

Likewise, units should document their experiences to determine how much of an impact deployment schedules/operational commitments have on TQL training and implementation.

PART I: LESSONS LEARNED

- **Military job rotation has a negative effect on productivity and maintaining constancy of purpose.**

From a Navy system perspective, this is an important problem, but a short-term one.

Military job rotation may be beneficial in the sense that it provides a vehicle for transporting TQL knowledge to other units within the DON (ITQL).

- **Ranking of personnel undermines cooperation and team efforts.**

The officer fitness and evaluation system needs to be addressed with regard to its consistency with TQL concepts and applications.

- **The "use or lose" practice of managing resources encourages wastefulness.**

This issue is related to the federal budgeting system. Recommendations are in the National Performance Review findings for multiyear budgeting.

2b. What is the influence of TQL on Navy culture?

- **Working in teams is not new in the Navy; what is new is how teams interact.**

The formal team structure (ESC, QMB, PAT) provides a structured approach to quality improvement. Each of the DON TQL courses discusses some aspect of the team structure (e.g., the selection of process improvement projects, the roles and responsibilities of the various members).

TS&C discusses the benefits of the TQM team structure, how cross-functional teams help to break down barriers and further the transformation.

- **TQL shifts negative attention from the individual to the system.**

SLS, FTQL, and SAPI address this issue in their treatment of systems.

A fundamental tenet of TQL is that the organization is viewed as a system and that workers should not be blamed for problems inherent in the system. The TQL philosophy, tools, and techniques necessary for system optimization are central to the DON TQL curriculum. SAPI presents an extended view of the system which includes customers and suppliers.

- Documenting the steps in a process can help people new to a job begin to work efficiently and effectively.

SLS, FTQL, TS&C, and SAPI address how tools and their products (e.g., flowcharts, control charts) are used to understand the processes in an organization. ITQL stresses that lessons learned should be documented and success stories publicized. TS&C introduces the storyboard technique for documenting and publicizing PAT work.

3. What are the requirements for TQL education and training and how are TQL education and training conducted in the Fleet?

- When initial training is spread out over too long a period, learning is compromised.
- TQL theory can be taught in large groups, a savings of time and money.
- Teambuilding skills training should be conducted with people who will work together.

Commands should develop their own training plan. Units can assess what works "best" for them. Just-in-time skills training is recommended in all the TQL courses.

Commands vary in size and ability to conduct education. Each command must tailor material to its needs through a training plan.

A 2-hour briefing package on TQL is handed out to senior leaders at SLS for use at the command level. It can be presented easily to large groups. This package is discussed in ITQL. All courses are modularized to permit alternate presentation lengths and formats, which may be a help.

MMQ assumes that most participants are members of the same QMB. If the class is composed of "intact QMB teams," class exercises are changed, with real data replacing generic data.

Teambuilding skills are only briefly mentioned in ITQL to avoid redundancy with material in TS&C. Just-in-time training is stressed for skills training in SLS and FTQL.

PART I: LESSONS LEARNED

- **People need time for discussion, for "incubation," and for knowledge to be applied in training exercises.**

TS&C is focused on in-depth treatment of team dynamics, teambuilding, and communication as well as team roles and relationships.

SLS and ITQL discuss the need for an "incubation period." ITQL states that the education and training of the CO and ESC should be followed by initial process improvement efforts (pilot projects). During this incubation period, the top leaders learn about TQL (what it is, what their responsibilities are, how the team structure works, how quality methods and tools are used, what training is needed by teams, how to assess customer requirements, how to improve the quality of a product or service, etc.). This information is reflected in the revised SLS.

The design of MMQ is based on this premise. Participants begin with consideration of present practices through flowcharting and move from there to the ideal. Extensive practice in the use of the seven management and planning tools is an essential part of MMQ.
- **TQL education and training can be laid out in different ways to meet operational schedules.**

The DON TQL education and training strategy, as outlined in the *DON TQL Course Catalog*, is that training should be done "just-in-time" so that skills are learned as needed. Each of the courses contains lessons or modules that can be taught as stand-alones at the unit level. This structure permits TQL coordinators and quality advisors to tailor education and training to the needs of individual units.

The TQL coordinator and quality advisor are taught in ITQL to provide training based on the needs and knowledge of a particular team and based on where they are in their implementation/process improvement efforts.
- **Training opportunities vary from platform to platform.**

A fact of life. The extent to which this is a problem needs to be communicated by units up through the chain of command.

PART I: LESSONS LEARNED

- **The CO needs to attend SLS and to continue personal education.**

Emphasized by the CNO and the CMC in messages, speeches, etc; the *DON TQL Course Catalog* reiterates the message. SLS and FTQL emphasize the need for continuing education.

The education and training needs of the top leader and the ESC are discussed in depth in ITQL.

- **On-site TQL training can be as effective as off-site.**

Data indicate that learning from mobile training teams and schoolhouses is equally effective.

- **Both military and generic TQL examples have value.**

SLS, FTQL, SAPI, and MMQ use numerous examples, both generic and military. Examples continue to be developed that reflect the various military communities.

SLS, FTQL, and ITQL discuss how quality initiatives in both the private and military sectors led to the development of TQL within the DON.

MMQ focuses on a generic case study and exercises. However, if classes are made up of actual teams, data from the team's actual work are used for the exercises.

SLS uses a DON example to teach flowcharting. TS&C uses a DON mailroom exercise to teach tools on the premise that the scenario could fit any Navy organization and that application of the tools is universal.

- **Insufficient knowledge about TQL concepts and application can lead teams to assume a rice-bowl mentality.**

SLS and FTQL emphasize that education and training should precede process improvement. These two courses and SAPI stress the use of a systems approach to process improvement, which, if applied properly, should prevent this problem from happening.

- **The ESC should address training of new team members as well as refresher training.**

MMQ directs the QMB to provide additional training to PAT leaders because of new responsibilities.

TS&C discusses the importance of evaluating team training needs and developing a training plan for just-in-time or refresher training, as appropriate.

PART I: LESSONS LEARNED

4. What are the requirements for TQL implementation and how is implementation conducted in the Fleet?

- Selection of an appropriate TQL coordinator is critical to an organization's progress.

ITQL was developed for the TQL coordinator. The lesson on the roles and responsibilities of the TQL coordinator provides selection criteria and outlines the coordinator's role as internal consultant and advisor to the organization and its leaders.

SLS and FTQL also discuss the selection criteria for the TQL coordinator and the importance of selecting the right individual.

- Characteristics of successful TQL implementation.

ITQL describes the characteristics of successful implementation, providing the "big picture" for the TQL coordinator. Other DON TQL courses provide either a general overview or focus on specific aspects of implementation, depending upon the particular audience.

- MOUs are useful for establishing a positive relationship between a unit and TQL staff and between a unit and DON consultants.

In describing the TQL coordinator's relationship with the top leader, ITQL recommends that there be a written or verbal contract between the top leader and the TQL coordinator.

- ESC must set boundaries for QMBs; QMBs must set boundaries for PATs.

These boundaries are specified in charters. This information is discussed in MMQ, ITQL, TS&C, and the other TQL courses. MMQ describes what a QMB can do to focus its efforts if its purpose has not yet been defined by a higher level team.

PART I: LESSONS LEARNED

- Charters help teams do a better job of planning and conducting process improvement.

FTQL, SLS, and MMQ emphasize the necessity of chartering teams. MMQ, TS&C, and ITQL discuss this subject in depth, with ITQL providing chartering worksheets to help determine the purpose of the project, the support needed, and the improvements desired. MMQ classes that are made up of actual teams are instructed to bring their charters to class.

TS&C includes an exercise in writing and negotiating team charters.

- The ESC may need to prioritize goals.

In SAPI, there is discussion about the need for top leaders to prioritize their stakeholders in terms of their needs and wants. MMQ and TS&C assume the ESC has identified and prioritized its critical processes.

As discussed in ITQL, one of the responsibilities of the ESC is to prioritize organizational goals as part of their planning efforts. If the task is delegated to lower levels, suboptimization is likely to occur. Both SLS and ITQL list criteria to be used by the ESC for selecting processes for improvement.

- Early implementation efforts should focus on process improvement rather than strategic planning.

The primary focus of MMQ is process improvement. The learning vehicle is a case study that the class uses to understand process management.

This approach is being emphasized in the revised SLS. The exercise at the end of the course directs the participants to develop an implementation plan so that the senior leader can begin practicing process improvement.

ITQL states that early implementation efforts should focus on process improvement, enabling a CO to demonstrate measurable improvements, including cost reductions.

TS&C teaches basic tools (brainstorming, cause-and-effect, flowcharting, data collection) to begin process improvement efforts.

PART I: LESSONS LEARNED

- Documented improvements are more likely to be sustained as team membership changes.

SAPI, ITQL, and MMQ discuss the importance of documenting process improvement efforts. In TS&C, storyboarding is part of team exercises used in class.

MMQ points out that the task of recording process steps in a flowchart often reveals bottlenecks, duplicated steps, and waste. Documentation acts as a daily catalyst for process improvement. MMQ also uses a customer needs form to gather input as well as other forms to align customer needs with major products/services.

- Ideas for initial process improvement efforts may come from all levels of an organization.

SLS, FTQL, and ITQL emphasize that initial process improvement efforts selected by the ESC should be those that directly affect external customers. Input may come from all levels of the organization to the ESC in the form of assessment data or feedback from external customers and organizational members.

MMQ uses a process management flowchart to gather information from employees about processes.

- The same person should not serve as the upward and downward link because of a possible filtering of information.

MMQ stresses that the downward link not serve in the role of a team leader, but instead help the team interpret the charter and take decisions to higher levels that cannot be resolved by the team.

The upward and downward linking pins are discussed in SLS, FTQL, and ITQL.

- Team structure and membership should be tailored to the size and complexity of a command.

ITQL states that the membership of the teams and the number and levels of teams are dependent on the size and structure of the organization and on the complexity of the process. SLS discusses why organizations might need to establish second-level QMBs.

TS&C states the importance of selecting the right members and of clearly defining roles and responsibilities.

- CO responsibilities should not be negated in promoting team consensus.

This is emphasized in SLS. The CNO has stated this point strongly in many publications.

PART I: LESSONS LEARNED

- **Because of time constraints, team meetings need to be well planned and executed.**

For the DON ESG meetings, a policy was established that all members must attend.

MMQ stresses the importance of planning team activities and documenting team actions.

TS&C devotes an entire module to conducting effective team meetings. Participants frequently cite this section as one of the most helpful modules of the course.

- **A strong link between a unit's implementation plan and the various process improvement teams needs to be maintained to ensure a sustained commitment to command goals.**

ITQL states that there should be a strong link between the unit's implementation plan and process improvement efforts. The implementation plan outlines the sequence of implementation activities, specifying who does what and in what time frame.

MMQ uses the process management flowchart to tie implementation planning to process improvement efforts.

- **Process improvement teams should consider inviting the customer to participate in team meetings.**

All of the courses address the need for customer input to help identify strategically important processes. SAPI discusses various ways of collecting information from customers, one of which is forming focus groups that bring customers and suppliers together.

- **Facilitation skills may always be needed because of changing team membership and the military rotation policy.**

This is why an internal training plan that includes replacement/refresher training is strongly recommended at the unit level.

TS&C will soon be revised to incorporate extensive training in facilitation skills. The course also contains in-depth discussion of the balance between the roles of team leader and quality advisor.

PART I: LESSONS LEARNED

- **ESCs should be alert to the impact of process improvements on other processes in the organization to avoid suboptimization.**

SLS, SAPI, FTQL, and MMQ discuss the risk of suboptimization in process improvement efforts and the importance of giving up parochial interests.

SLS, FTQL, and ITQL state that process improvement efforts should be led from the top to avoid suboptimization. The importance of the leader's role is stressed in all of the courses in the DON TQL curriculum.

REFERENCES

Department of the Navy (October 1992). *Fundamentals of Total Quality Leadership (Instructor Guide)*. San Diego, CA: Navy Personnel Research and Development Center.

Department of the Navy (November 1992). *Department of the Navy Total Quality Leadership Course Catalog (TQLO Pub. No. 92-05)*. Washington, DC: Author.

Doherty, L. M. (May 1990). *Managing the Transformation: A Two-Phase Approach to Implementing TQM*. Presented at the Third Conference on Federal Quality and Productivity Improvement, Vienna, VA.

Doherty, L. M. (1991). *TQL Mobile Training Team (MTT) Concept Paper* (attached to 22 February 1991 memo from the VCNO to L. M. Doherty). San Diego: Navy Personnel Research and Development Center.

PART II: SAMPLE STORIES

STORY A — ROTOR BLADE REMOVAL

In the past we changed H-46 rotor blades by climbing up on the aircraft, by unbolting them, holding onto the blade, manually removing pins from the blade grip, and carrying the blades from the top of the aircraft. Everybody, including the COs, knew this was an "acrobatic performance," a real scary procedure. Crewman have to use a very narrow, often slippery, walkway. You worry about accidents, destroying the blades, and tearing up the aircraft.

We researched what other helicopter communities were doing. Everyone admitted it was a problem. When our XO went to Cherry Point to pick up a part and to see what they might be doing there to deal with the problem, he saw a new method. The civilian NADEP workers were using a forklift apparatus that lifted the blades from underneath.

It was a break in the paradigm. Before that we had always looked at lifting the blades from above. The NADEP workers had, in one step, found a way to remove the blades by supporting them from below.

The CO formed a team made up of people from the Maintenance Department. One of the first tasks was to gather data on the existing process for removal of each blade, which usually took 25-30 minutes.

Based on what we learned, we developed storage cages and put them on forklifts. We built a work platform on the cage to support the blade. The crewmen were strapped into the cage and forklifted up. There is almost no safety hazard with this new way. Now, the process takes half the time (10-15 minutes), involves only two people instead of three or four, and there are cost savings on materials. Safety has improved dramatically, with zero accidents since its introduction.

"It was a break in the paradigm. Before that we had always looked at lifting the blades from above. The NADEP workers had, in one step, found a way to remove the blades by supporting them from below."

PART II: SAMPLE STORIES

This problem had been looked at for over 20 years. Now we have a new process that took less than one week to develop. It is now the only way we change the blades. We are learning better ways to position the forklift, raise the basket, move the blade, etc. The process continues to improve.

We are also in the process of rewriting the maintenance manual sections concerned with blade change to reflect what we have learned using this new method.

STORY B — TRACKING THE BLADES AND BALANCING THE ROTOR HEAD AND BLADES OF THE H-46D "SEA KNIGHT" HELICOPTER



Figure B-1—H-46D "Sea Knight" helicopter landing on aircraft carrier deck.

For an explanation of track and balance mechanics, see NOTE at the end of Story B.

Background

Our squadron flies the H-46D "Sea Knight," the Navy's premier logistics helicopter. In addition to its primary role in vertical replenishment (moving cargo by a sling from flight deck to flight deck), the Sea Knight also performs a wide array of other missions, including special operations with Navy SEALs, internal cargo-passenger transport, and search and rescue. The demanding flight characteristics of these missions place a constant strain on the H-46. One source of airframe stress results from the action of the tandem rotor system.

PART II: SAMPLE STORIES

The Vibration Reduction (VIBREX) program reduces the vibrations in the dynamic components of the Sea Knight rotor system. This is accomplished by tracking the blades so all are in the same plane of rotation, and by balancing the rotor head and blades to reduce overall vibration levels. We had a problem at our squadron in tracking and balancing our aircraft.

Process Analysis

"We found it took an average of 6.3 adjustment runs to track and balance a helicopter. This meant that the helicopter was out of service for 2-3 days."

We found it took an average of 6.3 adjustment runs to track and balance a helicopter. This meant that the helicopter was out of service for 2-3 days. In an effort to reduce the time required to complete the VIBREX process and therefore increase aircraft availability, the squadron commander formed a team to investigate the tracking and balancing process and make recommendations for improvement. The team started by reviewing the maintenance instruction manuals, reviewing historical data, and talking with those individuals actually performing the process.

After a review of all applicable publications and historical data, the team used a "cause-and-effect" diagram to display the information about possible problems in the process. Figure B-2 is a simplified version of the diagram the VIBREX team developed.

Once the diagram was complete, the group examined each topic, critically assessed its impact on the process, and discussed preliminary process improvements. Causes were classified into three categories: local action, long-term problems, and causes beyond our ability to control.

The cause-and-effect diagram highlighted several problem areas that we could fix:

Training of both air crew and maintenance personnel was not standardized, so not everyone knew how to hook up, run the test, and read the test equipment. Consequently, accelerometers were installed backwards, test sets were not set up properly, and test results were not consistent from crewman to crewman, even though nothing had been changed.

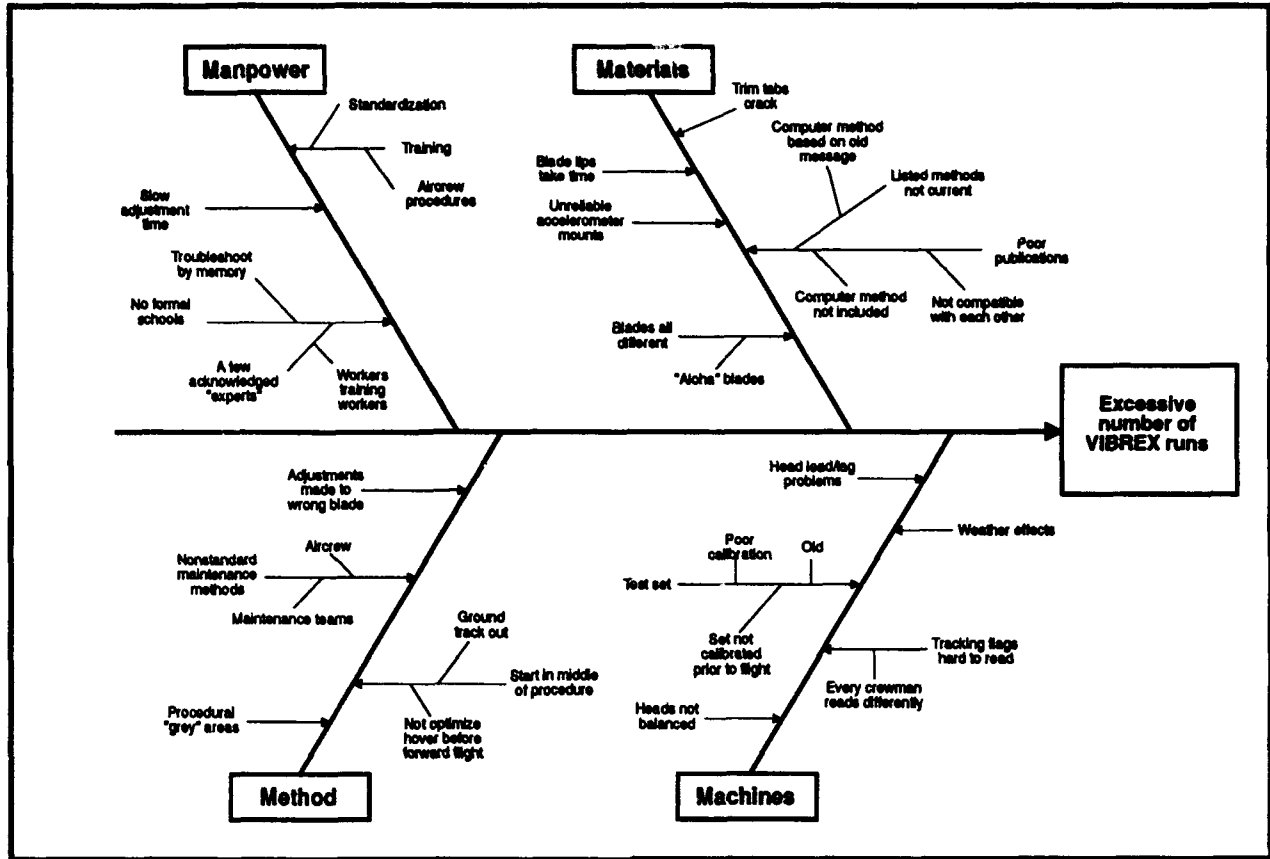


Figure B-2 — Cause-and-effect diagram.

"Research indicated that the hover readings were the key to a quick and successful VIBREX, yet there was no agreed-upon standard for hover vibration levels, no operational definition for 'good enough.'"

Research indicated that the hover readings were the key to a quick and successful VIBREX, yet there was no agreed-upon standard for hover vibration levels, no operational definition for "good enough." The standard changed depending on who was making the decisions.

There was no procedural standardization. Depending on who was making the decision, sometimes it was decided to start the VIBREX procedure in forward flight, bypassing the ground and hover phases, and, in effect, only verifying the track and balance even though major components had been changed.

The source of many of these problems was easy to see: There was no clear guidance on the VIBREX procedure in the technical publications. Adequate troubleshooting guides and detailed maintenance procedures were lacking. In addition, the guidelines for "optimum" and "acceptable" results were based on a 2-year-old message, which was vague in many areas, leading to different interpretations.

PART II: SAMPLE STORIES

These shortcomings in the maintenance manuals resulted in the development of VIBREX program "resident experts," who became experts because they were lucky more often than not in solving VIBREX problems. These "resident experts" trained others in the arcane mysteries of VIBREX (workers training workers), which gave birth to a plethora of procedures that resulted in extreme variation in the number of runs required to track and balance the helicopter.

Data Analysis

The team analyzed the data to determine what effect each component had on overall vibrations and to see if there was a significant difference between replacing components or simply removing and reinstalling them. The data for all functional check flights that included a VIBREX evolution were analyzed for the preceding 6 months and tallied to determine the average number of VIBREX runs caused by the replacement of each major component and the number caused by the removal and reinstallation of the same component. These tallies were plotted on a Pareto chart (Figure B-3).

Three components appeared to be responsible for the majority of the high-run occurrences. Only blade, rotor head, and swashplate replacements averaged more than four VIBREX runs.

A second Pareto chart was constructed comparing the average number of runs required, by component, when conducting forward flight verifications only. Several significant discoveries came from use of this chart. When the same parts were reinstalled and the prior settings were not changed, VIBREX runs were significantly below the average. However, if any part was replaced, use of the verification-only process invariably caused problems.

PART II: SAMPLE STORIES

Problems with the three components identified in Figure B-3 became even more prominent. Verification attempts on these components accounted for almost all of the VIBREX evolutions that required more than five runs. However, if the VIBREX process started at the beginning, with both ground and hover checks, the average number of runs for these components was significantly reduced. Most of the few remaining high-run evolutions resulted from one or more of the causes mentioned above (e.g., accelerometers installed backwards or failure to properly calibrate the test set).

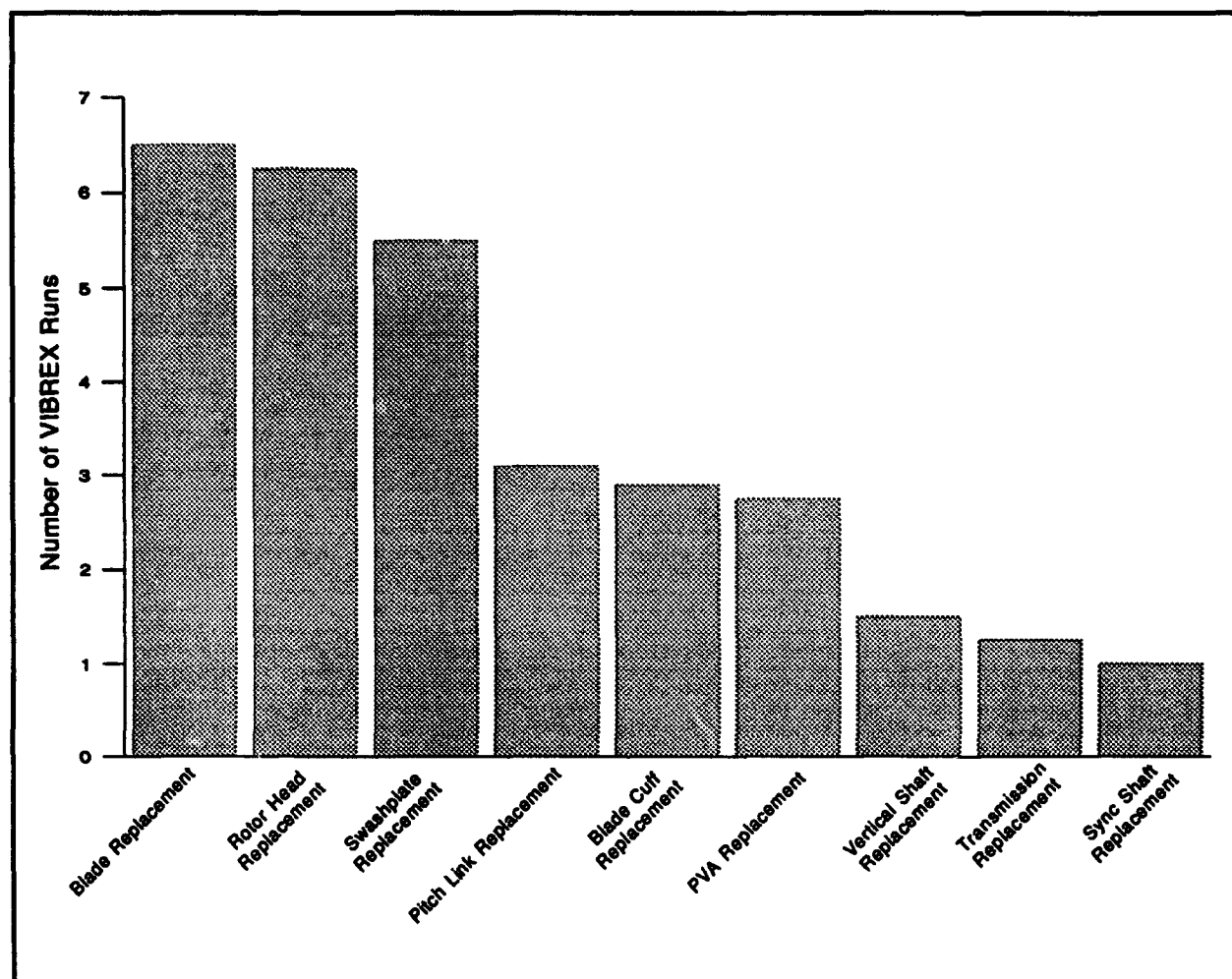


Figure B-3 — Pareto chart displaying how replacement of different components contributed to the number of VIBREX runs required to return the aircraft to full mission-capable status.

PART II: SAMPLE STORIES

Process Improvement

With the major problem areas identified and armed with the data from the Pareto charts, the team could develop solutions. Personnel were added to the team from the training department, maintenance teams, and the technical publications branch. Extensive discussion with the engineers at Cherry Point taught us the theory behind the VIBREX program. With this knowledge, the command initiated the necessary reports to correct the maintenance manuals, resulting in a rewrite of these manuals about 8 months later.

The team then devised solutions to the other causes of variation:

- (1) Operational definitions were developed so everyone worked to the same standard.
- (2) A rigorous training program was instituted so everyone knew how to hook up the accelerometers, hook up and calibrate the test set, and read what the test set was displaying.
- (3) Pilots were taught the critical role that precise air speed and rotor control had in the VIBREX program.
- (4) The decision-making process for when to do a VIBREX verification-only was streamlined and standardized, with VIBREX verifications limited to those functions indicated by the data in the second Pareto chart.
- (5) Initiatives were put in place to ensure that future personnel would receive the same training.

Results

With these changes in place, our VIBREX process was brought into statistical control. We can now accurately predict, and therefore plan, how many VIBREX runs will be required to track and balance the helicopter. By reducing the causes of variation in our VIBREX process, we lowered the average number of VIBREX runs from the historic level of 6.3 to the current level of 3.7. This represents a productivity increase of 41 percent. Charts are being used now to constantly monitor the process (Figure B-4).

"By reducing the causes of variation in our VIBREX process, we lowered the average number of VIBREX runs from the historic level of 6.3 to the current level of 3.7. This represents a productivity increase of 41 percent."

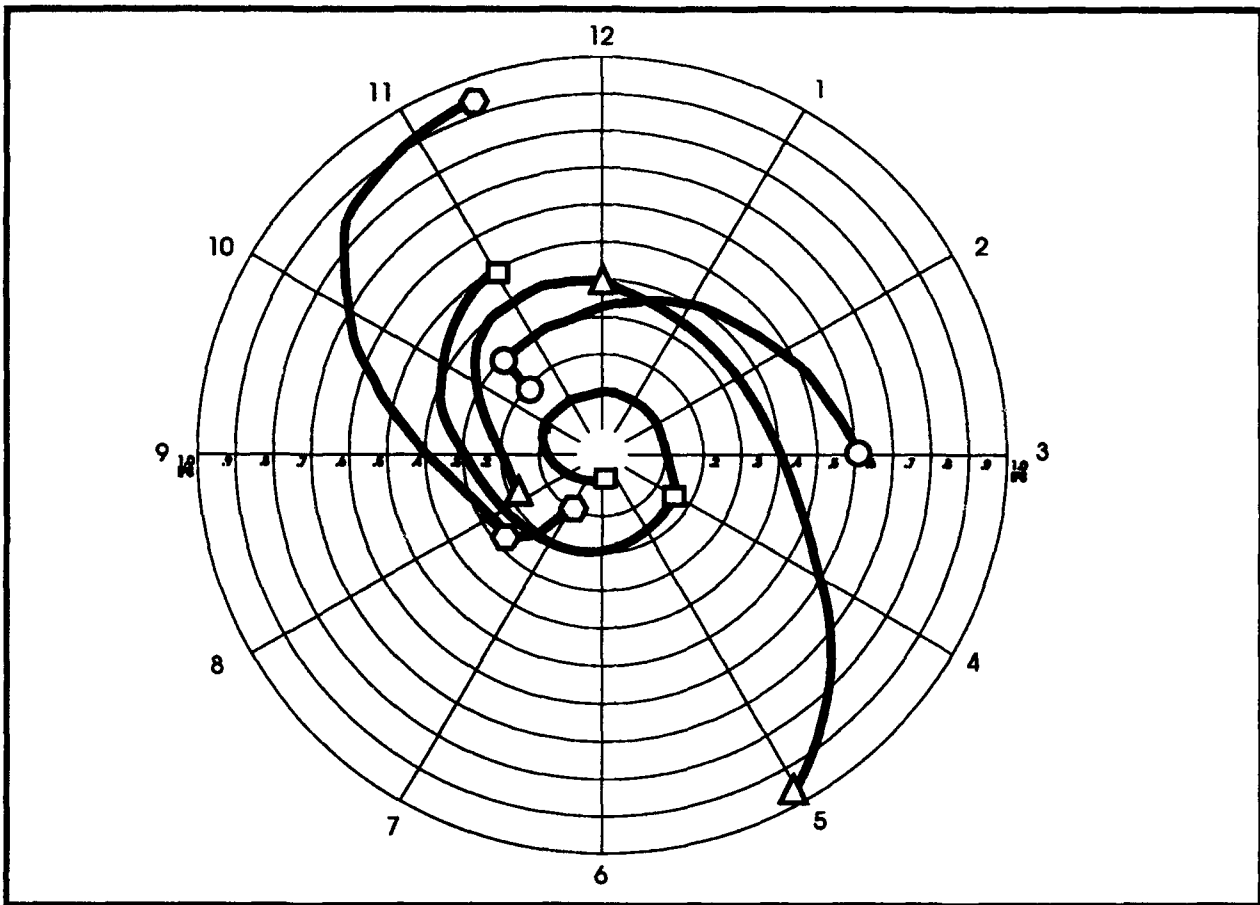


Figure B-4 — Manual plotting chart of clock angles and iterations per second (ips) readings for four rotor blades, each designated here by a different symbol. The goal is for the ips reading to fall below .3 as a result of adjustments made to the blades following a series of flights. This particular helicopter required 3 flights before the readings for all 6 blades fell below the .3 value. (This information no longer has to be manually plotted. The readings are now read into a computer program that stores information about the blades from one maintenance check to another.)

Conclusions

This is a single example of the ways the philosophy and the tools of TQL can be applied at the squadron level. We took a real-world problem and through process analysis realized a significant improvement in operational readiness. Our helicopters are back on the line, ready to fly, in just over half the time it took before investigating the process.

NOTE: To accomplish tracking and balancing, three different adjustments are made to each blade: to the pitch link, which controls the pitch angle of the blade; to the blade trim tab, which affects the aerodynamic characteristics of the blade; and to the blade and weights, which affect the center of gravity of the blade.

PART II: SAMPLE STORIES

Tracking results in a smooth, flat blade path, with no blades climbing or dipping out of the plane of rotation. This reduces the vibrations caused by blade "flapping." Proper tracking is accomplished both on the ground and in a hover by adjusting the pitch links of the individual blades to compensate for any differences in blade aerodynamics.

In forward flight, the proper blade track is accomplished by adjustment of the blade trim tabs. Rotor balancing reduces the lateral and vertical vibrations in the rotor system. Balancing is accomplished by adjusting the blade center of gravity by adding or subtracting weight from the blade tips.

A test set connected to four accelerometers mounted on the air frame provides vibration levels. The specific adjustments for pitch link changes and blade weight are calculated by a computer program, and accomplished through a test run, followed by the required adjustments.

Testing and adjustments are performed on the ground, then in a hover, and finally in forward flight. When no components are changed, just removed and reinstalled in order to accomplish other maintenance, the VIBREX is checked only in forward flight. This is known as a "VIBREX verification."

STORY C — AMMUNITION TRANSACTION REPORTS

"I was sitting in my hot tub one night, envisioning the sinking of the other seven tenders. Then we'd be the best. Not realistic and not the thing to do. But I was going to prove to myself that TQL was valuable or that it was a real waste of time, and I'd collect data to support either thing."

I was sitting in my hot tub one night, envisioning the sinking of the other seven tenders. Then we'd be the best. Not realistic and not the thing to do. But I was going to prove to myself that TQL was valuable or that it was a real waste of time, and I'd collect data to support either thing.

I was new on the job as weapons officer. There were problems with ordnance count and transmission errors in the ammunition transaction reports (ATRs). As a result, we had low morale in this division. I was receiving monthly messages from the central command (ammunition managers) concerning deficiencies or errors in our ATRs. This central command reconciles the Navy's ammunition count. The deficiencies occur when there are (1) differences between the amount of ordnance listed that is expended or transferred and the amount listed in the master file or data base, and (2) transmission errors. I thought this situation was unsatisfactory, so I decided to give TQL a try to see if it would work.

The ATR process supports the goal of continuously improving service to our community in the area of ammunition logistical support. We provide other ships with ordnance ranging from small arms to missiles. A real big nightmare is keeping track of all the small arms that cross your hands. Whenever ordnance is expended or transferred, we and any ship receiving ordnance must file an ATR within a specified time period. We then need to check those other ATRs. ATRs were done in the past by a lieutenant and an E-6 who were not the process owners. The process owners had not been allowed to monitor small arms ammunition usage because of errors. I decided to return this responsibility to the division because they need to account for their own ammunition transactions.

PART II: SAMPLE STORIES

"Although my Navy upbringing said, 'Bring in the chief and tell him to fix this,' I decided to try a different approach."

First, I decided to collect some data on this ATR process. I proved to myself that there were some real problems with these reports. I also had some people in my division collect over 90 days' worth of data on these reports that had 60 to 70 transaction errors. Although my Navy upbringing said, "Bring in the chief and tell him to fix this," I decided to try a different approach.

I called in three people from the division and said, "Tell me how this process works." No one knew, although they all agreed that it is a difficult process. So I said, "If it is within my power to reduce these counting and reporting errors, what should I do?" One person said, "What we need is someone to check my work." "Classic," I thought. "His answer is to hire another inspector." This is just what Deming was saying about how most people respond. So I taught them about flowcharts and gave them 3 days to report back to me on how the process works.

Guess what happened? In three days, the division officer gave me a complete briefing on the ATR process with input from the others. They were all happy now because everyone knew how the process worked. The relationship among the three men had improved also.

The four of us, as a team, looked at the flowchart to determine areas in the process for improvement. After using the affinity diagram to group the errors into four areas, we prioritized them and brainstormed possible improvements.

In January, 36 out of 42 reports submitted had transmission or counting errors in them. After introducing one improvement change on a small scale, our error rate dropped in February to 14 out of 32 reports. We let the process run for 2 months while the team collected data. About this time we noticed errors from outside our division that impacted the reports. So we talked to these others and taught them how to identify their process and look for errors. The next month, errors dropped to 1 out of 25 reports for our division, and 1 out of 25 reports from the others. At this point, based on the results of the test change, we made a permanent change to the process in our division.

PART II: SAMPLE STORIES

We used a bar chart to record our data over a 14-month period (Figure C-1). Over a 9-month period (March through the next January), the number of monthly reports varied from 12 to 25, with errors never occurring in more than 2 reports monthly. In the last quarter our error rate was 0.

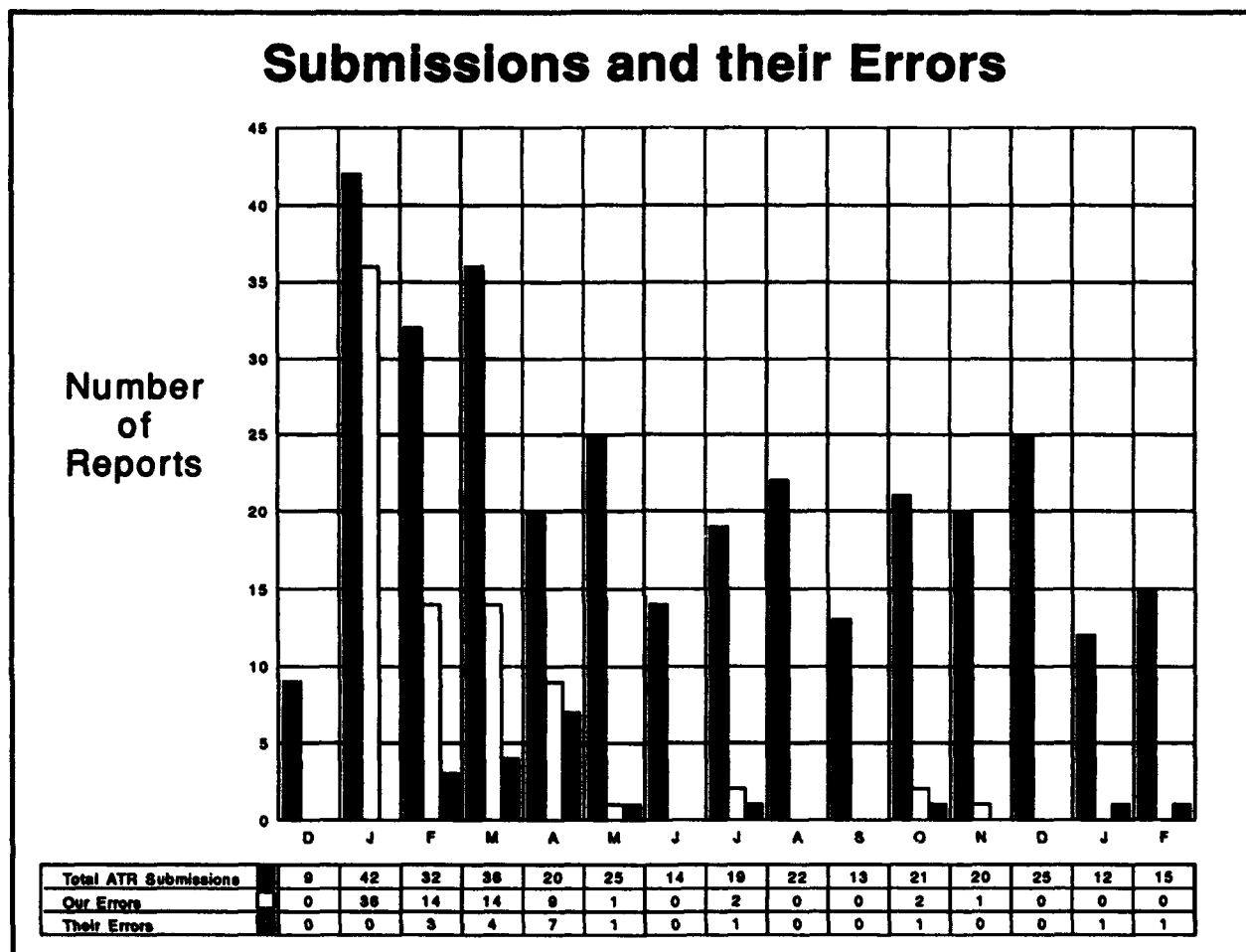


Figure C-1 — Ammunition transaction reports submitted over a 14-month period. Internal and external sources of error are given.

This improvement did not happen because a "nasty boss" chewed someone out. It happened because the "nasty boss" taught people how to identify a process and improve it. I did not fix one thing. Now the people in this division have a document worthy of any textbook. Morale has increased because the system is supporting them.

PART II: SAMPLE STORIES

"With a well-identified and flow-charted process, anyone, within limits, can come in and understand a new process well enough to be productive. Maybe we don't have to automatically 'fly in the ace' or contend with a long learning curve before people become productive. With limited funding, that's good news for the Navy."

I wanted to try one more thing. Could someone outside this unit understand the process that we flowcharted? About 6 months ago, I brought in an untrained person who had never worked in the weapons counting area. He was given 4 days of training on the ATR process. He ran 21 reports in a 30-day period with errors in only 2 reports. This taught me something. With a well-identified and flow-charted process, anyone, within limits, can come in and understand a new process well enough to be productive. Maybe we don't have to automatically "fly in the ace" or contend with a long learning curve before people become productive. With limited funding, that's good news for the Navy.

We've presented our results in ESC meetings and been communicating on a regular basis with the other folks who are involved in these reports. Now we have a 2-member team that monitors the process and reports to me on a monthly basis.

Lessons Learned

People responsible for the process and those involved in the process do not always understand it.

A process was improved through study and data collection, not by assigning blame to individuals.

Documenting the process helps people working in the process to more fully understand it, and helps those unfamiliar with the process to understand it enough to become productive early in their new job.

STORY D — CLEANING TEETH

Authors' Note: *The following story illustrates what a process action team (PAT) can do to improve customer service. Although the PAT did not make use of the seven basic graphic tools in its analyses, it did survey customers, gather relevant data, and use the information to change its operations to meet customer needs.*

"The technicians and the dentist, who was a member of the ESC, decided to investigate why people were missing appointments with the goal of increasing the number of 'shows.'"

There was a problem with people not showing up for their dental appointments onboard this ship. There were two technicians (one Navy and one Marine Corps) and two dental chairs onboard. The technicians and the dentist, who was a member of the ESC, decided to investigate why people were missing appointments with the goal of increasing the number of "shows."

As a matter of routine, cleanings were scheduled for morning hours. Each cleaning took one hour. Only 80 percent of those scheduled for appointments were showing up. Surveys were subsequently sent out to a sample of people onboard ship in an effort to find out why appointments were missed.

Everyone onboard (420) was assigned a number. A computer was then used to select a random sample from this population for the survey. Sixty people received and returned the survey. The survey results showed that ship personnel did not want to get their teeth cleaned during the day because it interfered with their jobs. While the ship was deployed, they preferred evening hours.

As a result of the survey, the technicians changed the dental hours for teeth cleaning to evening. Another dental technician was added to the staff to attend to the additional work this change generated.

PART II: SAMPLE STORIES

Results

1. The number of cleanings increased from 20/7-day week to 45/7-day week, which is as much as they can handle and meet other demands for training, General Quarters, etc.
2. The number of people showing up for appointments increased from 80 to 98 percent.
3. Although increase in productivity onboard ship was not measured as a result of this change, it is assumed it did increase because of the labor hours gained during the day.

STORY E — FLASHLIGHT RELIABILITY

("It keeps going, and going, and going . . .")

"Flashlight failure in an aviation squadron has significant consequences. Safety is a big factor in directing aircraft at night. We use two flashlights to direct taxiing aircraft. If one flashlight breaks, the aircraft must be stopped while another flashlight is found. This delay can mean that the aircraft will not be ready in time for training purposes."

Problem

Several people in the command had questioned what could be done about flashlight reliability in the work areas. Flashlights would often stop working in the middle of use. To solve this immediate problem, people would tap them on the ground to get them to work. Our guess was that we had some unusual problems with our flashlights—either design flaws or defective materials.

Flashlight failure in an aviation squadron has significant consequences. Safety is a big factor in directing aircraft at night. We use two flashlights to direct taxiing aircraft. If one flashlight breaks, the aircraft must be stopped while another flashlight is found. This delay can mean that the aircraft will not be ready in time for training purposes.

Flashlights are also used to illuminate portions of the aircraft to facilitate cleaning, perform maintenance, and conduct routine inspections.

The maintenance officer—a member of the ESC—selected this pilot project for study after receiving many complaints from departments about flashlight failure. The goal of the effort was to improve portable lighting in the work areas.

Process Improvement Team Efforts

The team, formed by the maintenance officer, included a supply petty officer and representatives from the tool room and each of the maintenance divisions. Members from the Quality Assurance Department and supervisors from specific work units also joined the team if their operations affected flashlight reliability in some way.

PART II: SAMPLE STORIES

"The purpose of the effort was to gather and analyze data to define (1) reliability, (2) causes of failure, (3) flashlight life span, and (4) frequent users."

The purpose of the effort was to gather and analyze data to define (1) reliability, (2) causes of failure, (3) flashlight life span, and (4) frequent users. The flashlight was considered to be reliable if the bulb came on whenever the switch was turned on without the application of external force, such as tapping the flashlight on the ground.

Just-in-time training was given to help the team collect data on possible causes of failure.

The life span of the flashlights could not be determined. Frequent users were defined by work centers.

Data were collected from team members and other users. The team began its work by surveying users, including themselves, on the problems encountered with flashlight use.

Each work center is issued several toolboxes. Each toolbox contains 2-4 flashlights. Toolroom personnel maintain a logbook of all flashlights issued. A flashlight is only issued when one is returned to the toolroom.

The toolroom stocks the flashlights, bulbs, and batteries. Although there are two different types of batteries that can be used, the toolroom only stocked regular batteries, not long-life batteries.

Logbook entries were collected from the toolroom for the previous 12 months on the number of flashlight failures. The data are displayed on a run chart (Figure E-1). Since most flights are conducted between 0700 and 2200, aircraft maintenance must accommodate those hours. During the summer months, when there is more daylight, flashlights are used less often than during winter months. Flashlight failures are also less frequent. During October, November, and December, the number of failed flashlights starts to increase, reflecting decreased daylight and increased use.

During March, April, and May of 1991, the unit had 3 shifts, working 24 hours a day. After this period, the midnight to 0800 shift was dropped, which could explain the reduced incidence of failures beginning in June. Also, there were some errors in logbook entries.

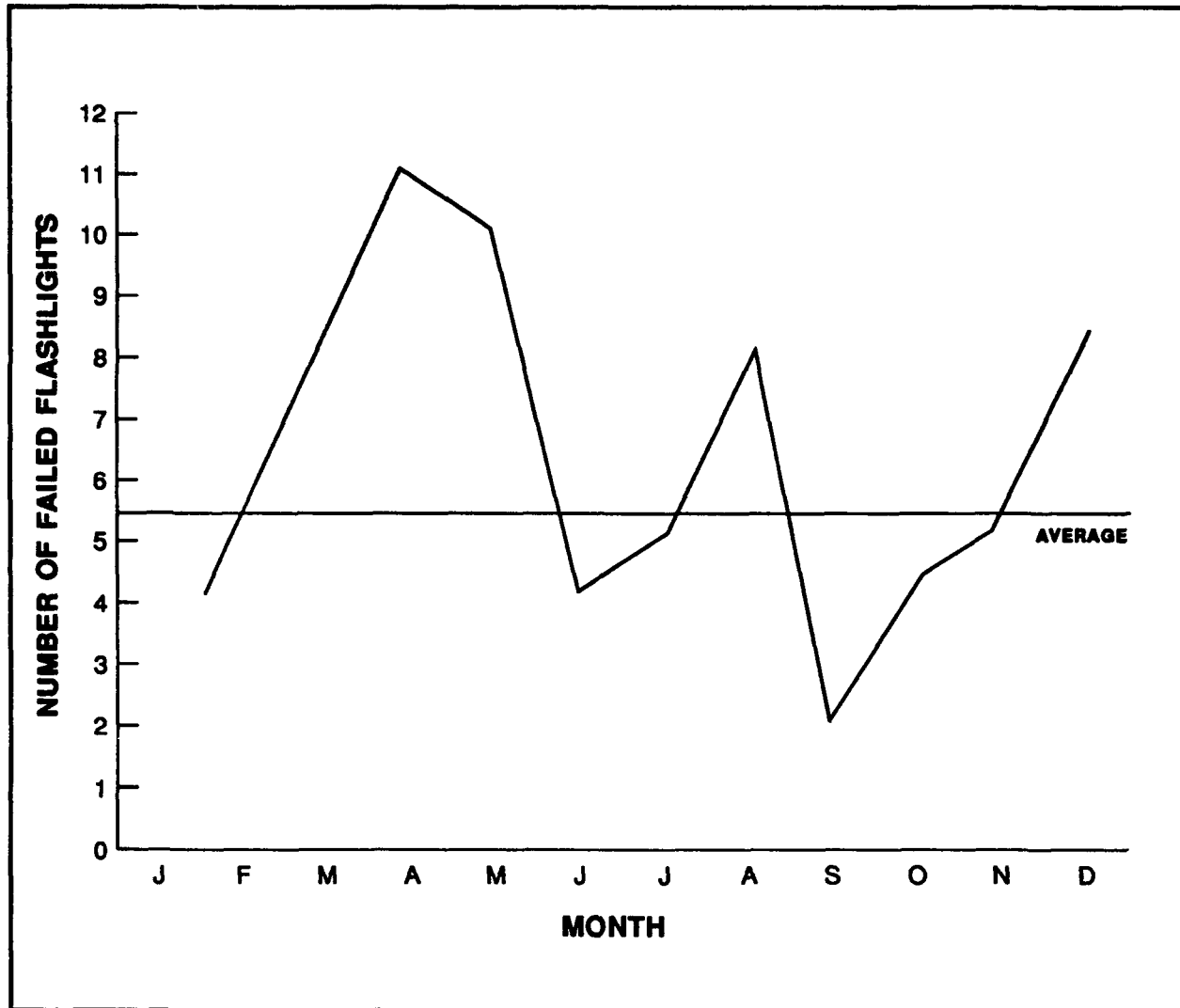


Figure E-1 —Run chart displaying the number of flashlight failures over a 12-month period.

The team also looked at frequency of failed flashlights by work centers and displayed the data using a Pareto chart (Figure E-2). The Pareto chart shows that the Line Division (Work Center 310) had the highest frequency of flashlight failure. This same division has the highest frequency of flashlight use of any of the work centers. The Line Division personnel are responsible for daily maintenance and upkeep of aircraft, launches and recoveries, and getting the aircraft out on time.

PART II: SAMPLE STORIES

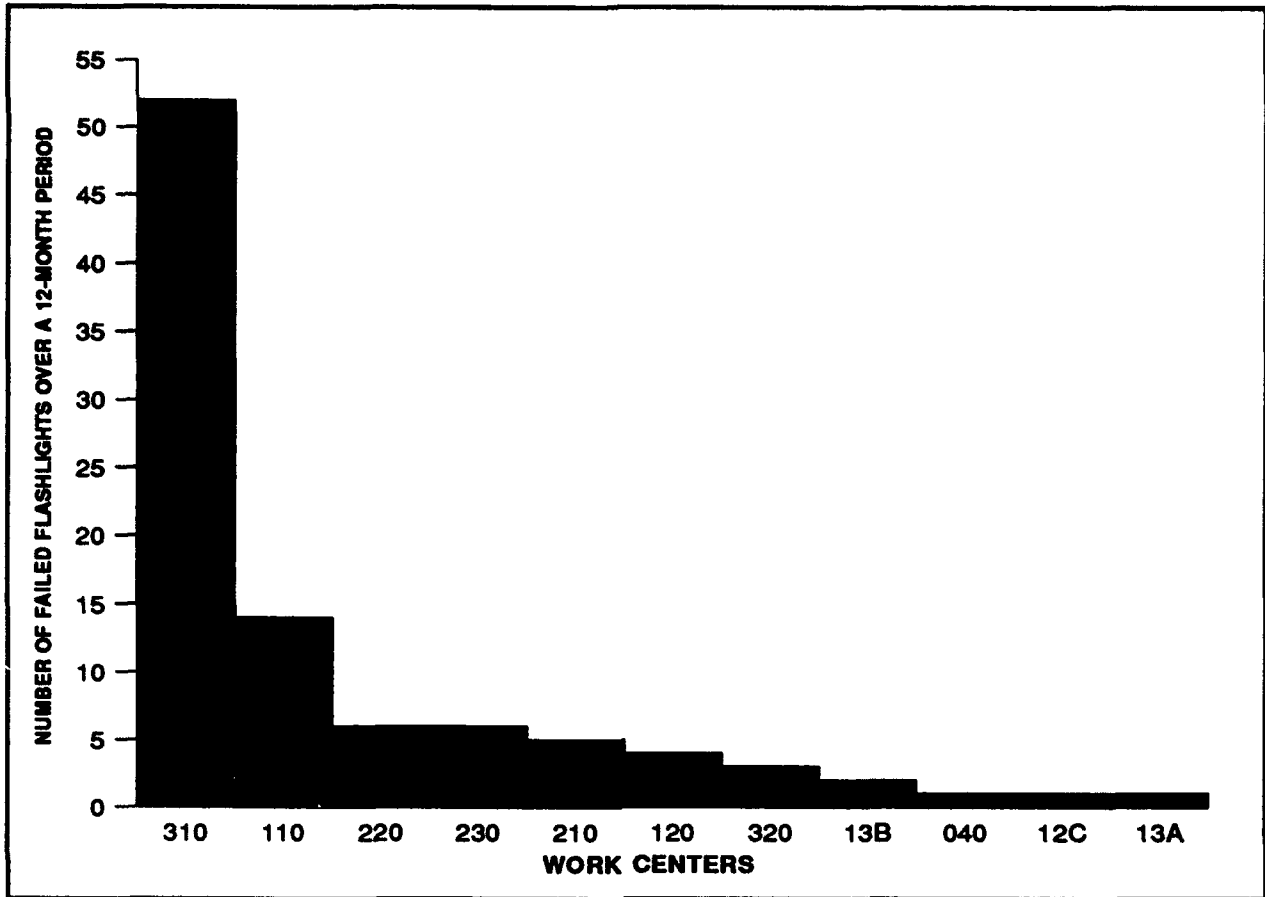


Figure E-2 — A Pareto chart displaying number of failed flashlights by work center.

The team then looked at the causes of failure over a 12-month period (battery failure, corrosion, inoperable switches, damage from being dropped, etc.). They could not determine what caused the most failures ("doesn't work") (Figure E-3).

When the toolroom began to stock longer life batteries, the number of complaints dropped. We assumed that because flashlights failed less often there was also a reduction in flashlight failure due to abuse, defined here as tapping the flashlight on the ground or shaking it to get the bulb to work.

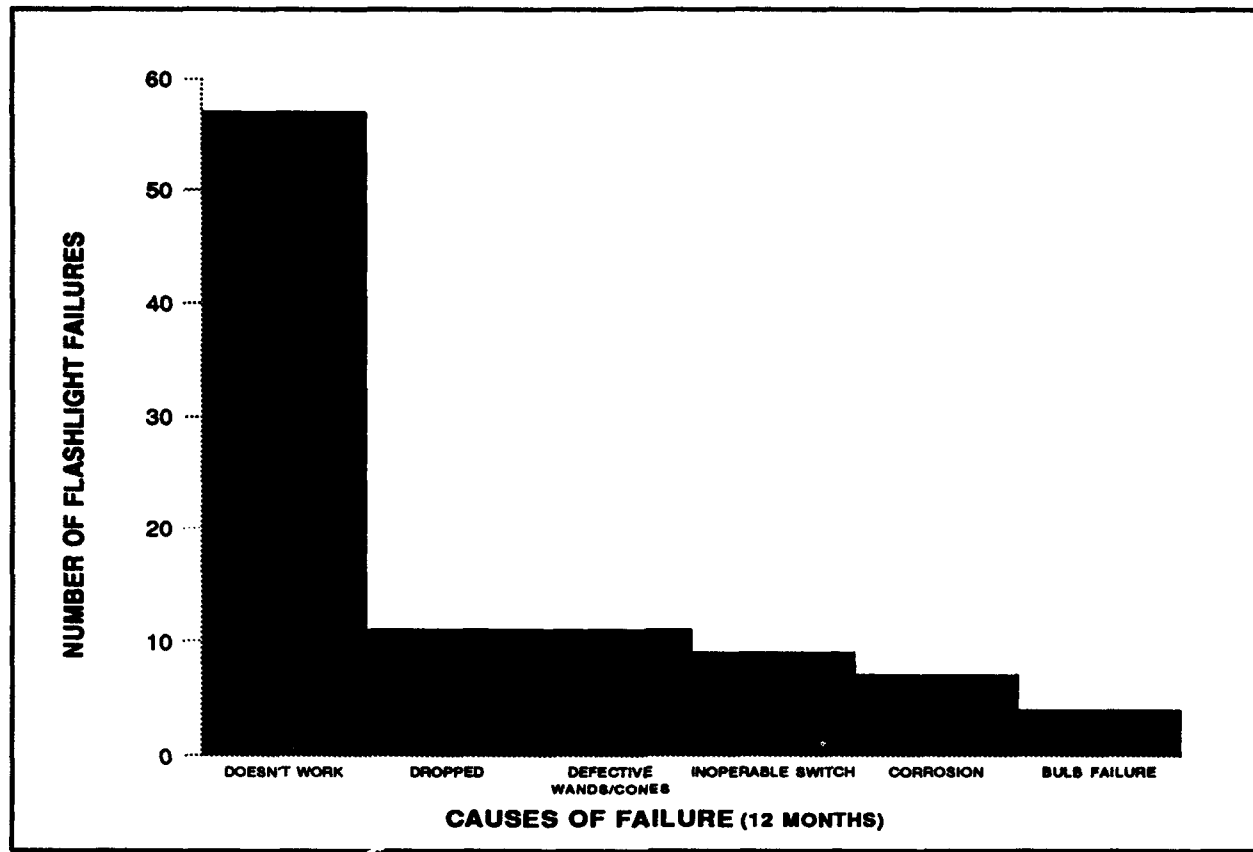


Figure E-3 — A Pareto chart identifying causes of failure over a 12-month period.

The team also looked at cost and time factors in considering changes that would improve illumination. They investigated using portable light carts. However, use of these carts requires one day of training for users and a checkout procedure from the base. Since the data showed that design flaws or defective materials were not the causes of failure (*all* bulbs will fail after 5 hours of use), the team did not recommend the use of portable light carts.

The team also set up a plan to collect further data on user satisfaction with flashlights. Data were collected over a 6-month period. Complaints decreased—there were fewer service requests and fewer flashlights turned in to the toolroom. Failures that occurred over this 6-month period of data collection were attributed to use. Only 15 new flashlights had to be issued in this 6-month period. In the previous 6 months, approximately 33 new flashlights were issued. New flashlights are now issued with a serial number to track their performance and life span.

PART II: SAMPLE STORIES

"Flashlight failure was not caused by design flaws or defective material, as originally thought; rather, it was caused by frequency of use. Data helped the team determine that there was no need to invest money in expensive equipment."

Conclusions

Our study shows the usefulness of data collection. Flashlight failure was not caused by design flaws or defective material, as originally thought; rather, it was caused by frequency of use. Data helped the team determine that there was no need to invest money in expensive equipment. The collection of data also made people more aware of flashlight abuse, which led to its decrease.

**STORY F — TQL GOES TO SEA:
THE USS GEORGE WASHINGTON
EXPERIENCE**

**RADM Robert M. Nutwell, USN
Deputy Director for Plans and Policy
(J-5) HQ USEUCOM**



Figure F-1—USS GEORGE WASHINGTON at sea.

PART II: SAMPLE STORIES

Authors' Note: *The USS GEORGE WASHINGTON was formally added to the list of Atlantic Fleet demonstration units midway through the project. Before he left to take on new duties as Deputy Director for Plans and Policy (J-5), HQ USEUCOM, RADM Robert M. Nutwell documented the story of TQL implementation onboard the USS GEORGE WASHINGTON for the TQL Office. The story appeared in shortened form in an issue of the TQL Leader, the Department of the Navy's newsletter dedicated to quality issues.*

I describe here the implementation of Total Quality Leadership (TQL) onboard precommissioning unit USS GEORGE WASHINGTON (CVN 73) from February 1991 to my change of command on 23 January 1993. I explain why we decided to embark on such an ambitious undertaking, how we went about it, the more important results achieved, and the principal lessons learned.

Why We Started

In February 1991, the USS GEORGE WASHINGTON precommissioning unit was approximately 1 year into a 2-1/2-year period leading up to the commissioning of the ship. The carrier was in the water, initial propulsion plant testing was underway, and final construction was in full swing throughout the ship. The crew numbered about 750 personnel, mostly senior, including myself, my executive officer, the command master chief, and most of the ship's 18 department heads.

I had heard about TQL from a variety of sources prior to taking command. However, I wasn't clear about how it could be applied to an operational command. In January 1991, we were given a copy of the CNO's Flag Officer Memorandum of August 1990 in which ADM Kelso defined TQL and stated his intention to implement this philosophy throughout the Fleet.

"We were excited by the CNO's bold initiative. Furthermore, we realized that since a precommissioning unit is actually creating a new culture, the 'precom' phase was an ideal time to begin the implementation of this new philosophy."

We were excited by the CNO's bold initiative. Furthermore, we realized that since a precommissioning unit is actually creating a new culture, the "precom" phase was an ideal time to begin the implementation of this new philosophy.

Most importantly, the "GW" wardroom was blessed with two senior officers who had considerable experience with TQL. With their support, and that of my executive officer and of the other department heads, I resolved to "give it a shot."

Training and Initial Implementation

We started by training the Executive Steering Council (ESC), using the 8-hour Aviation Supply Office (ASO) indoctrination course, condensed to 4 hours. We scheduled a meeting of the ESC every Friday morning. The initial meetings were used to achieve a "critical mass" of willing participants among the department heads. The regular meetings provided essential formal and informal follow-on training for the members.

To ensure that the members of the ESC understood the total quality philosophy and were fully prepared to write the ship's mission statement, we held a 2-day facilitated retreat in May 1991. This highly successful exercise was the catalyst for the building of a strong rapport among the department heads that has continued to grow.

The Council's next task was to develop an implementation plan, which was based on the ASO model. The implementation plan laid out an organizational structure to support TQL implementation (Figure F-2).

The Quality Improvement Councils in each department and division are standing bodies, analogous to the GW ESC. They provide continuing process improvement guidance and supervise implementation in their organizations.

The implementation plan also specified a top-down training plan. All leaders (E-6 and above) received the 4-hour indoctrination course. During this time the course was introduced into the ship's regular indoctrination training.

PART II: SAMPLE STORIES

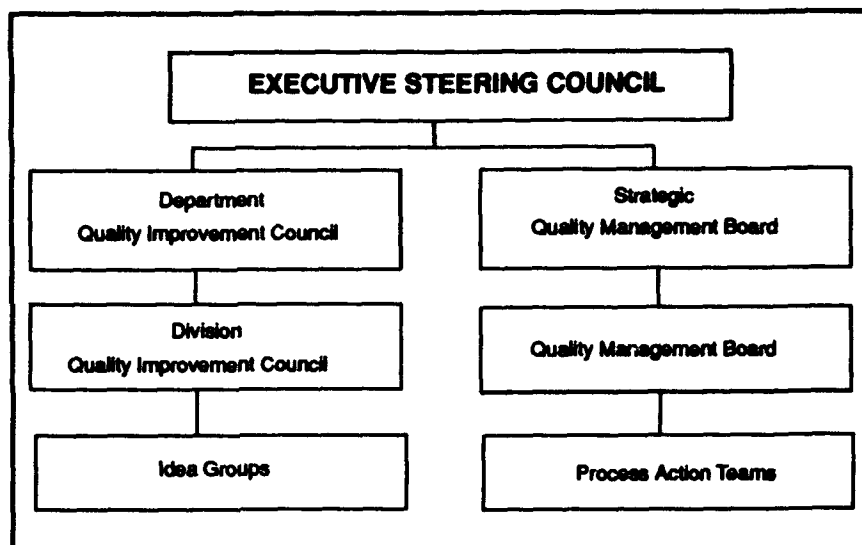


Figure F-2 — USS GEORGE WASHINGTON TQL organization

Initially, implementation and training represented a "bootstrap" effort because the DON courses were still under development. By the fall of 1991 we were offering a 2-hour Introduction to TQL for E-5s and below. This class has been taught continuously since then through the ship's regular indoctrination training. We also had help, beginning in August 1991, from the CNO's TQL Aviation Fleet Team. They have worked with the ESC on virtually a weekly basis, providing invaluable guidance.

Improvement Projects

Below is a list of the principal cross-departmental improvement projects undertaken so far on GW. Each is managed by a Quality Management Board (QMB). I will discuss six of them in some detail.

- Internal Temporary Additional Duty
- Inport Watchstanding
- Shipboard Quality of Life
- Family Quality of Life
- GW Information System Implementation
- Damage Control Readiness
- Command Safety Program
- Surface Operations
- Recognition
- Internal Communications
- Zone Inspections

PART II: SAMPLE STORIES

The **GW Information System (GWIS) Implementation QMB** was chartered to brainstorm the actions needed to prepare for and to use GWIS, a shipwide PC network. The introduction of GWIS proceeded smoothly, and the network has already achieved at least a 30-percent reduction in paperwork while significantly improving internal communications.

Perhaps the greatest contribution of the GWIS QMB was to surface the need to establish a better organization to manage the ship's information systems. This insight spawned a second QMB dedicated to developing a better organization. The QMB's recommendation—to expand the Communications Department into an Information Systems Department to manage all communications/information systems—parallels the merger of the communications and ADP communities ashore. It could represent the biggest step forward in shipboard organization in many years.

The **Inport Watchstanding QMB** was the principal vehicle for developing the shipboard watch organization in preparation for move-aboard. The success of its efforts was demonstrated in a very smooth stand-up of the inport watches following move-aboard in January 1992. This QMB, which was chaired by the navigator, showed that the TQL approach can be used to design as well as to improve a process or organization.

The **Damage Control Readiness QMB** devised a "DC Mart," now in operation, to improve the availability of DC preventive maintenance materials. It is now tackling the Fleet-wide problem of improving watertight fitting maintenance.

The **Safety QMB** was chartered to improve the management of shipwide safety programs. It has made significant progress in improving the management of hazardous materials. It has also played a role in the ship's remarkable safety record, which as of this writing included no fatal accidents on or off the ship in the nearly 3 years since the precommissioning unit was formed.

"The TQL approach can be used to design as well as to improve a process or organization."

PART II: SAMPLE STORIES

The Surface Operations QMB was chartered to improve doctrine and training in piloting/navigation, ship handling, underway replenishment, boating, and other surface operations. This QMB has contributed significantly to the quality of the ship's operating doctrine. Prior to sea trials it produced a major revision of the sea and anchor detail checklist. Following shakedown, the QMB systematically reviewed each applicable operational bill and ensured that the lessons learned and improvements identified during shakedown had been incorporated.

The Recognition QMB was chaired by the command master chief and consisted of the departmental leading chief petty officers. Its purpose was to improve the quantity, quality, and equity of recognition given to the crew for outstanding performance. This QMB produced a draft article for the ship's Procedures Manual, which established or better defined recognition programs in several areas. Of equal importance, the Recognition QMB helped to get the chiefs and first class petty officers more involved in the implementation of TQL.

Strategic Planning

The ESC met over a 2-month period to develop its mission, vision, and guiding principles. The resulting GW mission, vision, and guiding principles follow:

Mission: To conduct sustained combat air operations, to support our battle group and its commander, and to take care of our shipmates and families.

Vision: GEORGE WASHINGTON consistently achieves excellence in underway operations and in all other endeavors through sound doctrine, quality training, and careful planning. We stand ready to prevail in combat, and we are the "carrier of choice" in the eyes of operational commanders, our air wing and other embarked units, our battle group, and the crew.

We work and live in a total quality culture in which continued improvement results from strong leadership, intelligent innovation, and enthusiastic teamwork.

Crew members are inspired and empowered to achieve personal excellence and to contribute to their fullest ability. We take exceptionally good care of our shipmates and our families. Morale, spirit and pride are consistently high. GEORGE WASHINGTON does everything with "class" and is a great ship in which to sail.

Guiding Principles:

- Integrity/moral courage
- Professional expertise
- Teamwork
- Safeguarding people, resources and the environment

"While this organization [Strategic QMBs] has not yet been proven, I believe it will be a significant improvement over the conventional organization because it provides a means to attack all strategic goals simultaneously and to get many more people involved in process improvement."

Strategic Goals:

We settled on a planning horizon of 36 months (or two deployment cycles) and developed a list of strategic goals.

Upgrade material readiness and equipment capability

Enhance professional knowledge and skills of crew

Improve operating doctrine and operational planning/coordination control

Prevent mishaps on and off the ship

Enhance crew and family support

Improve internal communications and information management

Enhance Total Quality Leadership environment

We created Strategic QMBs to address all but the final goal; the ESC retained oversight of it. While this organization has not yet been proven, I believe it will be a significant improvement over the conventional organization because it provides a means to attack all strategic goals simultaneously and to get many more people involved in process improvement.

Lessons Learned

"The involvement of the CPOs is crucial to the success of any shipwide endeavor."

- 1. Clarify the relationship of the TQL organization to the chain of command.*** All hands must understand that the TQL organization serves in a supporting, consensus-building capacity to the chain of command. It must not weaken the responsibility, authority, or accountability of the traditional structure. The TQL teams support the chain of command by researching, brainstorming, and initiating process improvements.
- 2. Provide each QMB with a well-defined charter, refresher/just-in-time training, and a quality advisor.***
- 3. Get the CPO mess on board early.*** The involvement of the CPOs is crucial to the success of any shipwide endeavor. This effort is doubly important because they understandably represent some of the strongest skeptics about TQL.
- 4. Select an effective methodology prior to commencing strategic planning.*** Since a suitable methodology for constructing the goal trees did not appear to be available, we invented our own.
- 5. Publicize the philosophy, improvement projects, and successes to the crew.***
- 6. Don't skimp on indoctrination training.*** Our 4-hour introductory course for seniors and 2-hour course for juniors were not long enough. The DON 8-hour Introduction to TQL course seems about right.
- 7. Establish a policy on attendance at process improvement team meetings and TQL training sessions.*** Conflicts can be minimized by designating separate periods in the daily schedule for departmental work and for interdepartmental activities (including those of QMBs and PATs).

8. *Ensure that the TQL philosophy, particularly its focus on processes, is not used as a shield for poor performance by individuals.* Stress that personal responsibility and accountability are in no way weakened by the philosophy. On the contrary, TQL depends for its success on motivated, responsible individuals.

9. *Ensure that the crew understands when the TQL method of decision-making—through analysis, participation by all concerned, and consensus-building—is not appropriate.* During fast-paced operations and even in minor routine matters, the traditional authoritative form of decision-making is more appropriate. TQL can contribute significantly to operational performance and crisis response because it can help us improve our training and procedures, as well as help us build trust and confidence among team members. Most crew members understand this distinction.

10. *Reconsider the appropriateness of the strategic goals as the organization gains experience in implementing TQL.* The strategic goals cited here were appropriate for the GW as a precommissioning unit, but once a unit becomes operational, the goals probably need to be revised to become more mission- or performance-oriented. (Authors' Note: RADM Nutwell's experience is a common one. As a unit applies TQL principles to its operations, leaders often find that the strategic goals need more "stretch," need to be more ambitious.)

11. *Clarify the precepts.* To ensure the success of TQL in the DON, I believe that we need a clear statement of our philosophy. I offer a list of precepts below as a starting point.

"TQL can contribute significantly to operational performance and crisis response because it can help us improve our training and procedures, as well as help us build trust and confidence among team members."

TQL Precepts

"Leaders are responsible for quality and therefore they must be thoroughly and visibly involved in quality improvement efforts. This responsibility cannot be delegated."

- 1. Ensure mission and customer focus.** All hands must understand the mission and "product" of their work center, how it contributes to the ship's mission, and who the work center "customers" are. They should understand that the customer defines quality, and that satisfying their customers is the work center's main responsibility.
- 2. Continually improve work processes** through the systems approach, scientific management tools, and fact-based decision making.
- 3. Promote open communications** up and down the chain of command by driving fear out of the work centers and encouraging improvement suggestions.
- 4. Promote teamwork** throughout the command by breaking down barriers between departments and divisions and encouraging mutual respect, assistance, and effective lateral communications.
- 5. Conduct strategic planning** to focus improvement efforts on those processes most critical to the command's mission and to involve all departments and divisions in a systematic, organized effort to continually improve performance.
- 6. Institutionalize all significant work processes** in a "Living SOP" that standardizes operating procedures but is continually improved through operator inputs.
- 7. Enable pride of workmanship** by giving workers the training, tools, supervision, and other help they need to do a quality job and by giving appropriate recognition for quality work.
- 8. Invest generously in the training and education** of crew members.
- 9. Create constancy of purpose** for improving mission readiness and performance.
- 10. Leaders are responsible for quality** and therefore they must be thoroughly and visibly involved in quality improvement efforts. This responsibility cannot be delegated.

Assessment

TQL has had both a practical and a cultural impact on the ship. The practical benefits are implicit in the process improvement projects. While the practical benefits have been important, I believe that the cultural effects have been more significant.

The training of nearly all hands in the TQL philosophy, and the TQL-related activities that have been underway around the ship for nearly 2 years, have significantly enhanced sensitivity among many key members of the chain of command to such key precepts as customer service, continual improvement, teamwork, open communications, and fact-based decision-making.

Challenges

Our biggest challenge was finding the time to do TQL training and to work on TQL implementation issues and process improvement projects when the ship's operating tempo was high. Since DON leaders cannot neglect their operational and planning responsibilities for long-term improvement activities, no matter how valuable, we must strike a balance among these areas. When the "optempo" is high, near-term commitments must take up most of our time and energy. When the ship is in port, more time should be devoted to planning and long-term improvements.

Resistance to change, especially among the veteran middle managers, is certainly a challenge, but we were surprised at how many chiefs and first class petty officers became quick converts to the TQL philosophy. Resistance to change is easily overcome in most cases with training and demonstrated successes.

"TQL has had both a practical and a cultural impact on the ship. . .While the practical benefits have been important, I believe that the cultural effects have been more significant."

"Resistance to change is easily overcome in most cases with training and demonstrated successes."

PART II: SAMPLE STORIES

"I believe that the TQL philosophy will ultimately revolutionize our culture because it can capture the hearts and minds of all hands to a degree that we never envisioned."

Conclusion

TQL has been a resounding success on GW, and the ship's experience demonstrates that this philosophy has much to contribute to the Navy. To be sure, the precommissioning environment provided fertile soil for a new philosophy, but the GW experience can and is being replicated on other ships. I believe that the TQL philosophy will ultimately revolutionize our culture because it can capture the hearts and minds of all hands to a degree that we never envisioned.

APPENDIX

FACT SHEETS ON CNO TQL FLEET TEAM MEMBERS AND DEMONSTRATION UNITS

**FACT SHEET ON
CINCLANTFLT TEAM MEMBERS AND DEMO UNITS⁺**

Officer in Charge: CAPT Peter Kerr

Aviation Team Leader and Members: CAPT Peter Kerr
LCDR Terry Merritt
LCDR Cheryl Fitzgerald
ETCM D. J. Kilpatrick
ETCS (SW) Emily Shannon
ATC (AW) Steven O'Green

Aviation Demonstration Units:

VA-35: Part of Airwing 17

VF- 103: Part of Airwing 17

USS GEORGE WASHINGTON: This aircraft carrier was not an original demo unit but was later so designated by CINCLANTFLT.

*HC-8 (Helicopter Combat Support Squadron EIGHT)

*HSL-42 (Helicopter Anti-Submarine Squadron Light FORTY TWO), Mayport, FL

Surface Team Leader and Members: CAPT William Nurthen
CAPT (Sel) Harry Elam
CDR Jack Shick
MMCM (SW) Dean Mullis
EMC (SW) Steven Drew

Surface Demonstration Units:

USS CONOLLY (DD 979) (destroyer)

USS TRENTON (LPD 14) (amphibious transport)

*USS EL PASO (LKA 117) (amphibious cargo ship)

*Commander, Destroyer Squadron 10 Staff

Submarine Team Leader and Members: CAPT James Voter
LCDR Ron Thompson
LCDR Jon Iverson
MMCM (SS) Brad Nelson
STSCM (SS) J. D. Delano
STSCM (SS) Dennis Dooling

Submarine Demonstration Units:

USS EMORY S. LAND (AS 39) (submarine tender)

USS BALTIMORE (SSN 704) (attack submarine)

*HSA (Headquarters Support Activity), Norfolk, VA

⁺ Includes original team members and their successors.

* Not a formal demo unit. The CNO TQL Fleet Teams did not provide the same level of education and consultation to these units.

ATLANTIC FLEET DEMONSTRATION UNIT DESCRIPTIONS

USS GEORGE WASHINGTON (CVN 73)

Newest of six Nimitz-class nuclear-powered aircraft carriers. The primary mission of USS GEORGE WASHINGTON and her embarked airwing is to conduct sustained combat air operations. Her secondary mission is to serve as the flag ship for a battle group commander and his staff. Crew of over 6000 with embarked airwing. Homeport: Norfolk, VA.

VA-35

Fly the A-6 Intruder long-range all-weather attack aircraft. Two-man crew. Homeported at Naval Air Station, Oceana, VA. Assigned to Airwing 17 aboard USS SARATOGA. Approximately 325 officers and enlisted assigned.

VF-103

Fly the F-14 Tomcat. Long-range fighter aircraft. Two-man crew. Homeported at NAS Oceana, VA. Approximately 265 officers and enlisted assigned.

USS CONNOLLY (DD-979)

Spruance-class destroyer equipped for escort duty, naval gunfire support, and Tomahawk strike missions. Crew of over 300. Homeported in Norfolk, VA.

USS TRENTON (LPD-14)

Austin-class amphibious transport dock (LPD) equipped for transport of Marine infantry and support equipment wherever required. Primary delivery ashore by helicopter from large helo deck and by assault craft from floodable "wet" well. Crew of over 800. Carries 1200-1500 Marines. Homeported at Little Creek, VA.

USS EMORY S. LAND (AS-39)

Submarine tender designed to support the Los Angeles-class nuclear attack submarine. Provides food, water, electricity, consumables, spare parts, medical, dental, disbursing, mail, legal services, and any parts or equipment repair a submarine may require. Also supports the commander and staff of Submarine Squadron EIGHT. Homeported in Norfolk, VA, with a crew size of over 1,000. Will normally provide these services to several submarines simultaneously.

USS BALTIMORE (SSN-709)

Nuclear-powered attack submarine. Homeported in Norfolk, VA, and assigned to Submarine Squadron Eight. Crew size of approximately 135. Primary weapons consist of the MK48 torpedo and Harpoon and Tomahawk cruise missiles.

***HC-8**

Fly the H-46 helicopter. Primary mission is to provide fleet logistics support by moving personnel, material, and mail between ships and to and from shore. Normally operate in two aircraft detachments with approximately 20 personnel deploying aboard combat logistics force ships. Homeport: Norfolk, VA. Total squadron manning is approximately 300 officers and enlisted.

* Not a formal demo unit.

***HSL-42**

Fly the SH-60B helicopter. Aircraft provides an airborne ASW platform for the battle group. Normally operates in one or two aircraft detachments with approximately 20 personnel deploying aboard surface combatants. Homeport: Mayport, FL. Total squadron manning is approximately 300 officers and enlisted.

***USS EL PASO (LKA-117)**

Amphibious cargo ship equipped for transport of palletized bulk cargo. Boats that are carried on board are used to move cargo ashore.

***DESTROYER SQUADRON TEN**

Maintenance and readiness squadron staff for about 20 destroyer-type ships homeported in the Norfolk, VA, area. Approximately 20 personnel.

***ATLANTIC FLEET HEADQUARTERS SUPPORT ACTIVITY (HSA)**

Primarily provides facility support to Fleet and Force Commanders whose headquarters are located in the Norfolk, VA, area, including, but not limited to, SACLANT, CINCLANTFLT, USCINCLANT, SURFLANT, SUBLANT. Has 350 military and civilian personnel.

**FACT SHEET ON
CINCPACFLT TEAM MEMBERS AND DEMO UNITS⁺**

Officer in Charge: CAPT Paul Hennessy

Team Members:

CAPT Robert McClendon*
CAPT Paul Hennessy
CAPT Bill Gerken
CDR Joseph F. Driscoll
CDR Lew Witherspoon
CDR Troy Erwin
CDR Kirk S. Burgamy
ENS Garfield M. Sicard
ETCM (SW) Martin H. Teasdale
SMC (SW) Jim Norrell
ACCS (AW) Carol Kalinowski
SKCS (SW) David W. Thompson
STSCS (SS) Bill Colyar
ICC (SW) Everett Jones

Aviation Demonstration Units:

HS-10 (Helicopter Anti-Submarine Squadron TEN)—Helo FRS

HSL-41 (Helicopter Anti-Submarine Squadron Light FORTY ONE)—Helo FRS

VS-41 (Air Anti-Submarine Squadron FOUR ONE)—S3 FRS

Surface Demonstration Units:

USS McKEE (AS 41) (submarine tender)

USS DURHAM (LKA 114) (amphibious cargo ship)

USS FOX (CG-33) (cruiser)

USS CARL VINSON (CVN 70) Battle Group: Designated as the primary customer for the CNO TQL Fleet Team as a follow-on to the demonstration units.

⁺ Includes original team members and their successors.

* Team members serve both aviation and surface demonstration units.

PACIFIC FLEET DEMONSTRATION UNIT DESCRIPTIONS

Helicopter Anti-Submarine Squadron TEN (HS-10)

The mission of HS-10 is to indoctrinate and train pilots, aircrewmen, and maintenance personnel in carrier-based rotary-wing anti-submarine warfare (ASW) aircraft. Since its commissioning, HS-10 has trained more than 2,000 pilots, 2,000 aircrewmen, and 6,450 maintenance personnel in the operation, tactics, and maintenance of the Sikorsky SH-3 "Sea King" helicopters and most recently, the SH60F "Seahawk" helicopter.

Helicopter Anti-Submarine Squadron Light FORTY ONE (HSL-41)

The mission of HSL-41 is to train naval aviators, enlisted aircrewmen, and maintenance personnel in the operation and maintenance of the SH-60B aircraft in order to provide combat-ready aircrews to fleet ASW units. In fiscal year 93, HSL-41 flew over 6,800 hours, trained 98 naval aviators, 48 enlisted aircrewmen, and 350 maintenance personnel.

Air Anti-Submarine Squadron FOUR ONE (VS-41)

The mission of VS-41 is to indoctrinate and train naval aviators, naval flight officers, enlisted aircrew, and maintenance personnel in the S-3B, ES-3, and US-3 systems to provide air combat readiness to carrier ASW forces. VS-41 flies in excess of 7,000 hours per year, qualifying approximately 65 fleet pilots, 70 tactical coordinators, and 60 ASW sensor operators. In addition, all pilots are refreshed or initially qualified for day and night carrier operations.

USS McKEE (AS-41)

USS McKEE is a 641-foot submarine repair ship with a crew of 1,400 men and women. The ship, homeported in San Diego, CA, has a primary mission of providing complete support to a squadron of submarines, either in port or while anchored at a remote site. Support includes a wide range of repair capabilities, supply parts, food, medical and dental services, postal services and weapon storage and delivery capability. The USS McKEE began implementing TQL in the fall of 1991.

USS DURHAM (LKA 114)

The mission of the USS DURHAM is to serve as a platform for the transportation and delivery of troops and supplies in support of amphibious operations. USS DURHAM is the second amphibious cargo ship of her class and is supported by 35 officers and more than 300 crewmen with the ability to carry approximately 250 Marine Corps officers and troops. Maintaining 11 landing craft and carrying over 50,000 cubic feet of cargo, USS DURHAM is capable of placing more than 26,000 men or 9,000 tons of equipment ashore every 24 hours. In addition, her three 3-inch twin-mount gun batteries can be tasked for gunfire support to Marines ashore.

USS FOX (CG-33)

The primary mission of the USS FOX is to provide fleet and coastal defense in support of national interests. Her vast capabilities allow the USS FOX to be tasked in command control, anti-air warfare, anti-submarine warfare, surface warfare, special warfare, fleet support, and noncombatant operations. The USS FOX is supported by over 25 officers and 200 enlisted personnel.

USS CARL VINSON

The USS CARL VINSON Battle Group is composed of Commander Cruiser Destroyer Group THREE, Commander Destroyer Squadron FIVE, and Commander Air Wing FOURTEEN. Airwing squadrons include VFA-25, VFA-113, VA-196, VF-11, VF-31, VS-35, VAQ-139, VAW-113, and HS-8. Surface ships include the USS ANTIETAM, USS VINCENNES, USS CUSHING, USS REUBEN JAMES, USS ARKANSAS, USS ENGLAND, USS FLETCHER, USS HARRY W. HILL, USS CAMDEN, and the submarines USS SAN FRANCISCO AND USS ASHEVILLE.

ABOUT THE AUTHORS

Judy Wasik

Judy Wasik received her B.A. in psychology from Bucknell University and her M.A. degree in experimental psychology from the University of Delaware. Her career in the Department of the Navy began in 1980 when she joined the Training Department at the Navy Personnel Research and Development Center (NPRDC) in San Diego, CA.

From 1980 to 1989, she was involved with computer-based training applications, training in map interpretation and terrain analysis, and the development of individual training standards. In 1989, she joined the Organizational Systems Department where she assisted the Department Director in developing a training curriculum plan in Total Quality Leadership for the Department of the Navy's newly formed Executive Steering Group. She helped develop course materials for commanding officers as well as for the CNO TQL Fleet Teams on the principles and skills related to TQL. She was also part of a team that developed a fundamentals course in TQL for the DON TQL schoolhouses. For this work she received a Fleet Support Service Award and the NPRDC's Technical Director's Award for Special Accomplishments. Currently Ms. Wasik is working on the revision of the TQL Senior Leaders Seminar for commanding officers and on a TQL requirements analysis effort.

Bobbie Ryan

Bobbie Ryan received her B.A. in English from Bucknell University and her M.A. degree in English and American Literature from the University of Pennsylvania.

Ms. Ryan has worked as a technical writer-editor for both academic and government organizations—the University of Washington, Seattle, WA; Western Washington University, Bellingham, WA; U.S. Forest Service, Libby, MT; and the Navy Personnel Research and Development Center (NPRDC), San Diego, CA.

Her career at NPRDC began in 1985. As a member of the Organizational Systems Department, she wrote and edited materials on quality and productivity, including Department of the Navy Total Quality Leadership course offerings. While at NPRDC she received a Fleet Support Service Award for contributions to the initial training of the CNO TQL Fleet Teams. In 1991, she joined the staff of the Department of the Navy's Total Quality Leadership Office. She is the editor of the DON's *TQLeader* newsletter and prepares speeches and other materials on quality issues.