AD-A280 538

PAGE

Form Approved
OMB No. 0704-0188

Public reporting gathering and collection of in Davis Highway.

per response, including the time for reviewing instructions, searching existing data sources, n of information. Send comments regarding this burden estimate or any other aspect of this Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY

2. REPORT DATE

3. REPORT TYPE AND DATES COVERED
FINAL

4. TITLE AND SUBTITLE
QUALITY AT THE TOP OF THE SPEAR

5. FUNDING NUMBERS

6. AUTHOR(S)
2. P. MAY
CMDR, USN

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
AIR WAR COLLEGE
325 CHENNAULT CIRCLE
MAXWELL AFB AL 36112-6427

8. PERFORMING ORGANIZATION REPORT NUMBER
Unnumbered AWC research paper

DTIC ELECTE JUN 23 1994 S F D

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
N/A

10. SPONSORING/MONITORING AGENCY REPORT NUMBER
N/A

11. SUPPLEMENTARY NOTES
PAPER IS WRITTEN TO FULFILL ACADEMIC RESEARCH REQUIREMNTS FOR AN IN-RESIDENCE SENIOR SERVICE PROFESSIONAL MILITARY SCHOOL.

12a. DISTRIBUTION/AVAILABILITY STATEMENT
APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED

12b. DISTRIBUTION CODE

13. ABSTRACT (Maximum 200 words)

94-19178
2480

DTIC QUALITY INSPECTED 3

94 6 22 105

14. SUBJECT TERMS
Quality, Tip, Spear

15. NUMBER OF PAGES
20

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
UNCLAS	UNCLAS	UNCLAS	UL

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. Z39-18
298-102

AIR WAR COLLEGE

AIR UNIVERSITY

QUALITY AT THE TIP OF THE SPEAR

by

Z. P. MAY
Commander, USN

A RESEARCH REPORT SUBMITTED TO THE FACULTY
IN
FULFILLMENT OF THE CURRICULUM
REQUIREMENT

Commander Zachary P. May is a Naval Aviator who has completed deployments on five different carriers. He recently completed a tour as Commanding Officer of Strike Fighter squadron Eighty-Six where he flew FA-18s from USS America and participated in Desert Storm. Commander May is student in the Air War College, class of 1994.

TABLE OF CONTENTS

SUBJECT	PAGE
Introduction	1
What is Quality?	2
18th Maintenance Squadron	7
USS George Washington	8
What Does Quality Buy in Terms of Warfighting?	13
The Cost of Quality	15
What Happens to Quality When the Shooting Starts?	17
Conclusions	18

Introduction

Motivated by a shrinking defense budget and the lure of successes in the corporate world, military services have joined the Quality movement. The Army initiative is called Total Army Quality (TAQ), the Navy and Marine Corps call it Total Quality Leadership (TQL), the Air Force calls it Quality Air Force (QAF) and the Coast Guard calls it Total Quality Management (TQM). Each service has a formal training program on Quality and, to a varied extent, has started implementation.

Generally, Quality implementation in the military started in support activities such as hospitals and supply depots where the lessons learned from business were relatively easy to adapt and use. With a few exceptions, front-line combat units have acted more slowly to adopt Quality because it has been more difficult to translate these lessons from business to organizations with a primary responsibility of preparing for war. This may also be because the success of a business can be clearly evaluated in financial terms while the success of an institution that operates for the public welfare is harder to determine.

Quality implementation requires organizations to get to know their customers and to look at themselves through their customers' eyes. One reason combat units have been slower to implement Quality may be that they have difficulty in identifying their customers. The customer may be your boss, who could be in a peacetime or wartime chain of command, individuals or organizations that you provide a service (training) or product (aircraft parts) for, or the American people. This ambiguity in determining the identity of customers makes it difficult to focus on the needs of your customers and getting feedback from them.

Another reason for slower implementation in combat units may be that some leaders fear Quality will break down the effectiveness of the chain of command, considered critical to combat operations. Quality trains people at all levels in an organization to ask, "Why?" in order improve processes and build teams. Employees are encouraged to ask, "Why do we do it this way?", in hopes they will find a better way to do their job. Leaders are encouraged to empower people to make decisions at the lowest levels practical and make them responsible for the outcome. This empowerment seems inconsistent with the history of warfare in which good leaders are decisive and "lonely at the top." Additionally, some leaders are reluctant to break down hierarchical authoritarian organizations and turn over some of their power to teams.

Through a short review of Quality and an analysis of two examples of Quality implementation in combat organizations, I will attempt to answer the following questions. Is Quality going to encourage empowered warriors to ask "Why?", when they should be acting during wartime? Will leaders become so accustomed to cooperative decision making that they will themselves be inadequate to the tasks of leadership in fast-paced operations? What impact will Quality have on the warfighting capability of combat units?

What is Quality?

The Quality movement is generally attributed to an American statistician Dr. W. Edwards Deming. He is known for helping change the "Made in Japan" label from symbolizing cheap plastic toys to well engineered and manufactured high-tech products. Deming's teachings on Statistical Quality Control were widely used to increase wartime production

in the United States during World War II.[1] After the war, as the American economy started to boom, Quality techniques were dropped as time consuming and unnecessary.[2] In contrast, the Japanese, who were seeking to rebuild their industry after the war, sought and followed the teachings of Dr. Deming. After the NBC news documentary, "If Japan Can. . .Why Can't We?" was broadcast in 1980 and in response to America's declining share of the international market, Dr. Deming and his teachings were rediscovered in America.

Although many books have been written on Quality, I believe there are four key features to Quality: customer focus, process improvement, empowerment of workers through teams and leadership commitment.

Quality focuses on customers. Are they satisfied with your service or product? Do you meet their needs today? Will their needs change in the future? Can you keep up with the customer's needs? Do you communicate with your customers regularly? The main point is that management needs to look at their organization through the eyes of their customers. For military organizations this can be particularly difficult due to the ambiguity of their customers. Businesses which satisfy their customers will stay competitive. If the customer is not satisfied they will eventually go to another provider more in tune with their requirements. For example, to stay competitive in the overnight delivery business, Federal Express has set a goal of complete customer satisfaction, which means both the shipper and receiver are totally satisfied with their service.[3] The term customer

---

[1] Mary Walton, *The Deming Management Method* (New York: Perigree Books, 1986) pg. 8.
[2] Mary Walton, *The Deming Management Method* (New York: Perigree Books, 1986) pg. 9.
[3] Federal Express Corporation Quality Profile

should not be limited to those outside the organization. Satisfying needs of internal customers will lead to overall organizational improvement and help focus the organization on processes.

Process improvement is another key to Quality. Substantial long-term improvement is possible by breaking down the process used to provide a service or produce a product and analyzing it to find roadblocks or steps which do not add value or quality. Many processes actually have barriers that prevent individuals from doing their job. Through improved processes, costs are kept lower because it is much cheaper to do the job right the first time than to redo it or throw it away because there is a flaw in the process. Federal Express uses the 1-10-100 rule to show the cost of not doing the job right.

> The 1-10-100 rule states that if a problem is prevented at its source, the cost is one dollar or one hour. If the mistake is caught downstream in another department or location, it may cost 10 times as much to fix. If the customer catches the mistake or is impacted by it, it can cost 100 times as much to resolve.[4]

Additionally, unnecessary steps in the process increase the cost of a service or product. Doing the job right the first time also satisfies the customer. High production costs, high warranty costs and low customer satisfaction are often synonymous with failure in today's competitive marketplace. For military organizations, processes normally involve preparing for war, which includes strategy making, acquisition, training and administration.

---

[4] Federal Express Corporation Quality Profile

One method which can be used for process improvement is the Plan, Do, Check, Act (PDCA) cycle.[5] The PDCA cycle includes:

1. Plan what you are going to do. Decide upon an issue or process which needs improvement and select a team to focus on the problem. This team will define the process, gather data for analysis, brainstorm ideas for improvement and develop a written plan based on consensus.
2. Do a trial. Once management has approved a plan for improvement, pilot projects are implemented.
3. Check the results. Data collection is used to analyze the results. If the analysis does not provide the desired results, you may refine the plan and start over. The most difficult parts of this step are collecting the right data and providing meaningful analysis.
4. Act on the results. Incorporate improvements required throughout the organization.

This cycle does not end once the change is incorporated. Leaders must resist the temptation to rest on their accomplishments once a change is made. Continuous improvement through Quality efforts uses a host of management tools. These include data collection and analysis which look for opportunities to repeat the PDCA cycle when deviation appears in the process.

Building teams and empowering people to make decisions at a lower level brings the answers closer to the problems. This is based upon the idea that the people working directly with the product or customer are more likely to best understand the process, recognize and anticipate its shortcomings and determine how it can be improved. Empowerment also

---

[5] David K. Carr and Ian D. Littman, *Excellence in Government* (Arlington: Coopers and Lybrand, 1993) pg. 86-88.

gives a bigger sense of ownership of the process to the people actually doing the work. It is especially beneficial in dynamic situations where change is routine. Empowerment provides a much faster response to change which means an organization is able to adjust a process more quickly and meet new customer demands sooner. Many leaders (particularly those in the middle) fear that empowerment means that they lose all their power.

The last, but not least, key to Quality is a strong leadership commitment to making it work. Leadership must be willing to take some risk by trying new ways to do business. Leaders must be willing to listen to recommendations of workers. They must also be willing to provide time and resources as well as set priorities for implementation. Initial implementation of Quality generally increases the daily workload of an organization because of the additional training time required before any benefits are realized through process improvement. Combat organizations tend to focus on the short-term because they do not have the luxury of picking when the war will start and must be ready to fight today. This short-term focus makes Quality implementation a greater challenge in combat organizations.

Two cases of Quality implementation in combat organizations illustrate how Quality has affected front-line units. The 18th Maintenance Squadron which maintains F-15s at Kadena Airbase, Japan, shows how a single process was improved using Quality methods and USS George Washington (CVN-73), the Navy's newest aircraft carrier, shows the impact of Quality implementation that was driven top-down throughout an organization.

18th Maintenance Squadron, Kadena Airbase, Japan

Kadena based F-15 aircraft had experienced problems with the AIM-9 weapons system because of poor LAU-114 missile launcher reliability.[6] Prior to process improvements, over 50% of all in-use launchers had failed requiring more than 1000 man-hours of repair time during a six month period. The armament systems element of the 18th Maintenance Squadron formed a process action team to improve the maintenance process and increase AIM-9 weapons system reliability.

The team's statistical analysis identified electrical problems as the primary source of launcher failure. Repair of the launchers was made more difficult because the technicians were often unable to duplicate the problem when troubleshooting. The team was able to improve the process by closely tracking all CND (can not duplicate) discrepancies to find common faults. Based upon this information, they were able to develop procedures to detect and correct wiring problems with a new test box they had constructed and tested. These improvements were not developed as one time fixes, but were done over a year while closely monitoring the results. As a result of these improvements the squadron experienced a 23% increase in system reliability and received a 752 man-hour savings over a six month period.

Prior to incorporating Quality many individuals had said of QAF, "We don't have time for it, we need to be fixing airplanes." The process improvements were passed to other Air Force units for incorporation. These improvements were made to a 20 year old weapons system about

---

6 18th Maintenance Squadron, Kadena Airbase, Japan Process Improvement Story Book of 23 September 1993

which many people would assume; "We must have figured out the best way to fix it by now."

USS George Washington (CVN-73)

The USS George Washington (CVN-73) was the Navy's first aircraft carrier to implement Quality as the Atlantic Fleet TQL Demonstration Unit. The process started when the ship was a precommissioning unit. This offered the advantage of trying a new way of doing business with a new ship and a newly formed crew. It also presented a major challenge in training and selling Quality to a crew of nearly 3000 sailors which would grow to over 5500 when Carrier Air Wing Seven moved aboard.

Quality indoctrination and training was completed in a "cascading" or "top down" method. From the very beginning, TQL training stressed and supported the chain of command. The Commanding Officer, Executive Officer and the department heads received the first training and it continued down the chain. This same group made up the Executive Steering Council which developed strategy for the incorporation of Quality. The Executive Steering Council supervised a TQL structure including the Strategic Quality Management Boards and Quality Management Boards overseeing Process Action Teams. This structure mirrored and supported the chain of command. For example, analysis of data and recommendations for improvement went up the chain while direction and resources came down the chain.

TQL implementation strategy began with a short contractor supported retreat. The Executive Steering Council continued to meet weekly for an hour and a half to refine development and choose improvement projects. The council also drafted the ship's vision

statement, identified strategic goals and developed supporting strategies for each goal. Strategic goals included:

-Upgrade Material Readiness and Equipment Capability

-Enhance Professional Knowledge and Skills of Crew

-Improve Operating Doctrine, Operational Planning and Coordination Control

-Prevent Mishaps On and Off the Ship

-Enhance Crew and Family Support

-Improve Information Management and Internal Communications

-Enhance TQL Environment

Adapting Deming's popularly known Fourteen Points and Seven Deadly Diseases[7], the Commanding Officer developed his own TQL precepts in order to make a clear statement of his philosophy of Quality and to ensure focus on the warship's mission.

TQL Precepts[8]

1. Ensure mission and customer focus. All hands must understand the mission and product of the work center, how it contributes to the ship's mission and who the customers of their work centers are. They should understand that the customer defines quality, and that satisfying its 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.

---

[7] Mary Walton, *The Deming Management Method.* (New York: Perigree Books, 1986) pg. 34-36.

[8] Radm Robert Nutwell, "TQL at Sea" US Naval Proceedings (September 1993).

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 improve performance continually.
6. Institutionalize all significant work processes in a "Living SOP" that standardizes operating procedures but is continually improved by operator inputs.
7. Foster 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 crewmembers.
9. Create constancy of purpose to improve mission readiness and performance.
10. Be responsible for quality and therefore be thoroughly and visibly involved in quality improvement efforts. This responsibility cannot be delegated.

Within 6 months nearly all E-6 and above had completed at least TQL indoctrination training and all newly reporting personnel were getting this indoctrination as they checked aboard. Training was provided by the Atlantic Fleet Aviation TQL Training Team and home grown trainers. This training stressed that:

1. Quality teams are in support of the chain of command by researching and brainstorming process improvements.

2. The Quality structure is not intended to weaken the responsibility, authority or accountability of the chain of command.

3. Quality is not a shield that the poor performer can stand behind, individuals are still responsible and accountable for their actions.

Training also included guidelines on when the TQL process of decision making was not appropriate. "TQL . . . is not intended for fast-paced operations, in a critical situation when immediate action is required, and in minor routine matters, the authoritarian leadership style is more appropriate."[9]

The ship's leadership made a commitment to TQL, attendance at process improvement team meetings and TQL training sessions took precedence over all other work except emergencies and urgent operational tasks. The ship's daily schedules set aside periods for interdepartmental activities including process improvement team meetings and TQL training to minimize the impact. Without strong support and visible commitment for the program, implementation would not have been possible.

Process improvement teams used a method similar to PDCA and were tasked with the following projects[10]:

-Internal TAD[11]

-In-port Watchstanding

-Shipboard Quality of Life

-Family Quality of Life

-George Washington Information System Implementation

-Information Systems Management

-Damage Control Readiness

-Command Safety Program

-Surface Operations

---

9 Radm Robert Nutwell, "TQL at Sea" US Naval Proceedings (September 1993).

10 Radm Robert Nutwell, "TQL at Sea" US Naval Proceedings (September 1993).

11 Temporary additional duty

-Recognition

-Internal Communications

-Zone Inspections

Working relationships improved on the ship by breaking down barriers between divisions and departments.[12] Instead of working against individuals in other divisions the teamwork encouraged by Quality brought the ship together. Process improvement teams on TAD, mass casualty training and hazardous waste brought people together and gave them a greater appreciation of problems others faced and encouraged a team concept. Quality changed attitudes on the ship, people started looking beyond, "We have always done it this way." For instance, the ship had a policy which prevented crewmembers from bringing fast food aboard because "No carrier allows it." When the policy was examined in light of quality of life, they found no reason to continue it.

George Washington has performed extremely well in her initial operations. She has won two Golden Anchors[13] in recognition of quality of life improvements and an outstanding retention program. The ship has maintained a fatality free safety record both on and off duty for over three years, a record seldom matched in the dangerous carrier environment.[14] Additionally, George Washington has maintained a FOD[15] free record and has had no major fire or flooding incidents during the same period. The ship's principle customer, Carrier Air Wing Seven has reaped many

---

12 Phone interview with George Washington TQL Coordinator, Cdr. George Yacus December 1993.

13 Golden Anchor is a unit award given annually for a strong retention program and quality of life initiatives.

14 Phone interview with George Washington TQL Coordinator, Cdr. George Yacus December 1993.

15 Foreign Object Damage to jet engines.

rewards from the implementation of TQL on George Washington. The Air Wing Commander noted an increase in support and cooperation from the ship compared to previous carriers when the air wing moved aboard.[16] This allowed more time for training, which resulted in an increase in combat capability for the ship and air wing. The benefits from TQL prompted the air wing to accelerate its own TQL program. This record should not be attributed to the implementation of TQL alone. Good leadership, hard work and attention to detail have no substitutes but the product of these attributes is enhanced through TQL.

What does Quality buy in terms of warfighting?

The principal product of peacetime military forces is readiness, which is enabled through training, procurement and maintenance of equipment and conservation of material and human assets. Process improvements have the potential to provide better testing and maintenance of weapons systems, improved communications, better training and a safer working environment. The list of improvement projects chosen on George Washington includes areas where the warfighting impact is easy to see, such as damage control and surface operations.

George Washington also sought improvements in quality of life and morale by focusing on their own troops as customers. Decreased waiting time in chow lines and dispersing, improved communications with families and even improved parking have a high potential for payoff in warfighting capabilities by increasing retention (which keeps trained individuals in the

16 Phone interview with Commander Carrier Air Wing Seven, Capt. Steve Baker January 1994.

service). These improvements also let the sailor concentrate more on his job. The ship found that solving the problems of its internal customers improved morale and went a long way towards making them more productive in solving the problems of external customers.

Streamlining administrative tasks can provide additional time for combat training and readiness. One commanding officer made the following comment about training time. He noted, "There is one key element that affects material and training readiness: time - the total number of available ships force man-hours and the smaller number of man-hours left to the commanding officer for pursuing his own readiness agenda, after spending time on housekeeping and administration."[17] When a team on George Washington looked at the check-in process for the ship, they found room for improvement. They found several steps with no value added because they simply were not needed or were repeated during the indoctrination process. These extra steps took time from the individual checking in and also took time and disrupted the schedule of the person they were trying to check in with. The new check-in procedures also give new crewmembers a better first impression of the ship.

According to Clausewitz, fog and friction have always been part of warfare.[18] Intelligence is key to understanding the "what" and "how" parts of the enemy equation. Fog results in wrong or late intelligence and poor communication. Clearing the fog enables fact-based decision making. Improvements in intelligence gathering, communication, and command and control possible through the use of Quality will reduce (but not totally

---

[17] Commander Arthur H. Barber III "Ready or Not?" US Naval Proceedings (November 1993) pp. 60.

[18] Michael Howard and Peter Paret, *Carl Von Clausewitz: On War* (Princeton: Princeton University Press, 1984) pp. 119-120.

remove) the impact of fog. Information systems are emerging and changing faster than they ever have in the past. These systems are fertile ground for substantial improvements in the process of intelligence dissemination and other processes which involve large amounts of data which must be shared. These improvements will enable leaders to react more quickly and get inside the decision making process of an enemy.

Friction is the breakdown of man or machine during battle, it has also been called "Murphy's Law." Friction could be the airplane returning before getting to the target with a mechanical problem or the cold, scared, hungry soldier on the battlefield whose ability to fight has been reduced. Improvements in the processes used to procure, maintain and use equipment will reduce the likelihood of failure. The 18th Maintenance Squadron improvements to the missile launcher provides a good example of this. If Quality provides more realistic training and better services to the soldier or sailor, the individual will be better prepared to deal with friction in any situation, including a crisis or battle.

The cost of Quality

Quality is work. Initially, the time spent starting the program and training everyone is in additive to the normal workload and may cause a temporary decline in output. Some of Deming's principles do not apply to the military. Leaders must take time to learn Quality themselves and then determine which points are right for their organization. The rewards can take time but should eventually result in a reduced workload to produce the same output. Data collection and analysis is time consuming and can be frustrating until an organization determines the appropriate data to collect and what it means. Most organizations do not get it right the first

time. Continuous improvement through Quality will involve continuous work even after initial implementation.

The former Commanding Officer of George Washington made the following comments about the challenge of Quality implementation.

> The biggest challenge in implementing TQL has been finding the time to conduct TQL training and to work on improvement issues and improvement projects when the ship's operating tempo is high. Navy leaders cannot neglect their operational and planning responsibilities for long-term improvement activities, no matter how valuable. Therefore a balance must be struck among these three areas. The exact balance will vary with the ship's operational tempo: when it is low more time should be devoted to planning and to TQL. Even the near-term commitments and problems should be addressed using the precepts of TQL.[19]

Another challenge is dealing with middle managers who are unwilling to change. On George Washington, they changed attitudes through training, counseling and demonstrating successes. Those few individuals that were not receptive to change were moved to billets where they would do the least harm and evaluated accordingly.

The impact of these challenges should be reduced once Quality is implemented throughout the services. Initial training requirements will be reduced as more people join a command with previous Quality training. Individuals who are unwilling to accept Quality will be weeded out of the services.

---

[19] Radm Robert Nutwell, "TQL at Sea" US Naval Proceedings (September 1993).

What happens when the shooting starts?

Dan Howard, the Under Secretary of the Navy made the following comment about the relationship between Quality and warfighting.

> ...TQL is not to manage the conduct of war; it is to improve the way we prepare for war-from strategy making, to acquisition, to logistical support, to training, to the day-to-day operation and administration of individual commands. The point is to focus the attention of the entire Department of the Navy on its one and only mission-to provide the National Command Authority with the capability to wage prompt and sustained combat on and from the sea.[20]

While it is easy to say Quality does not apply on the battlefield, some leaders fear the Quality movement will encourage the solder or sailor to ask "Why?" when he should be acting. On George Washington the vast majority of crew members had no difficulty in determining when Quality decision making was appropriate because of their training. additionally, many instinctively knew when authoritative leadership was the right way to do business. When an answer is needed right now, they did not look to a process action team. Instead, they felt greater trust and confidence in their leaders because TQL had improved operational and crisis response training and procedures.

Separation of Quality and combat is reinforced by both Quality training and combat training. During combat training exercises soldiers and sailors use an authoritarian chain of command for decision making with little regard for Quality. Training to handle emergency situations also

---

[20] Dan Howard "The Only Way Ahead" US Naval Proceedings (June, 1992).

stresses conditioned response to orders. This training reduces the risk that individuals will look to Quality for answers in fast-paced operations.

Another example of where Quality is not appropriate is aviation. Although Quality may improve the processes in the flying business, including how best to operate the airplane, aviators do not use Quality during flight operations. The aircraft commander or flight leader is in charge and "Why?" is not asked or answered during flight in a time critical situation. Most organizations, including those that have nothing to do with the military or warfighting, find several areas where team building, empowerment or consensus is not appropriate.

Quality does come into play during the analysis of combat or crisis response training operations. Openness and improvement are key to effective debriefs and critiques of combat training. The Quality approach of PDCA can easily be entered from this phase. This will allow for the changes in combat processes including tactics, fighting procedures or even the level decisions are made at. Even if changes in tactics or procedures are recommended and adopted as the result of Quality principles, they will most likely be used in an authoritarian style in an actual or training combat environment.

Conclusions

I believe Quality is viable and will provide a significant payoff for all military organizations including front line combat units. Quality will result in a more skilled warrior working with better tactics and equipment as a result of more and improved training and better maintenance of equipment. Identifying your troops and their families as customers is key

to improving the quality of life in the military and will pay dividends through increased retention and morale.

The overhead costs of implementing Quality is in time spent for initial training and selling the program will continue to be a detractor to some leaders. Quality takes time and work to implement and show rewards. Leaders faced with implementing a Quality program may not see the rewards during their tenure but will be burdened with the additional work of implementation. The military must recognize and support leaders put in this situation. Quality is worth the extra work.

Empowered warriors are not likely to ask "Why?" about short-fused decisions when the shooting starts or even before. Because of their training and asking "Why?" earlier in training situations, they will already know the answer. The same training will strengthen leadership skills and give leaders more confidence in their decisions. Leaders, particularly those in the middle, will be less threatened by loss of power once they see how it works. As more individuals see how Quality fits in combat units, questions about its application will be asked less. There is still a place for authoritarian decision making and there are times in crisis situations where short-term goals (such as survival) are more important than long-term goals (win the war). Even support organizations (and non military organizations) will have many instances where authoritarian leadership is the most appropriate for short-fused or top-level decisions. For instance, no one would want doctors forming a process action team to determine their treatment in the emergency room.

The uncertainties of the threat and the variety of missions that the armed forces may face in the future require great flexibility in our forces. Quality will enable military leaders to react to change more quickly

through empowerment and improved decision making processes. Once we are involved in a conflict, improvements in intelligence gathering, communication, and command and control will aid faster decision making and allow our leaders to get inside of the enemy's decision making and action cycle. Improvements in strategy, tactics, equipment and training combined with improved decision making will greatly improve our combat capability or retain our capability with fewer forces.